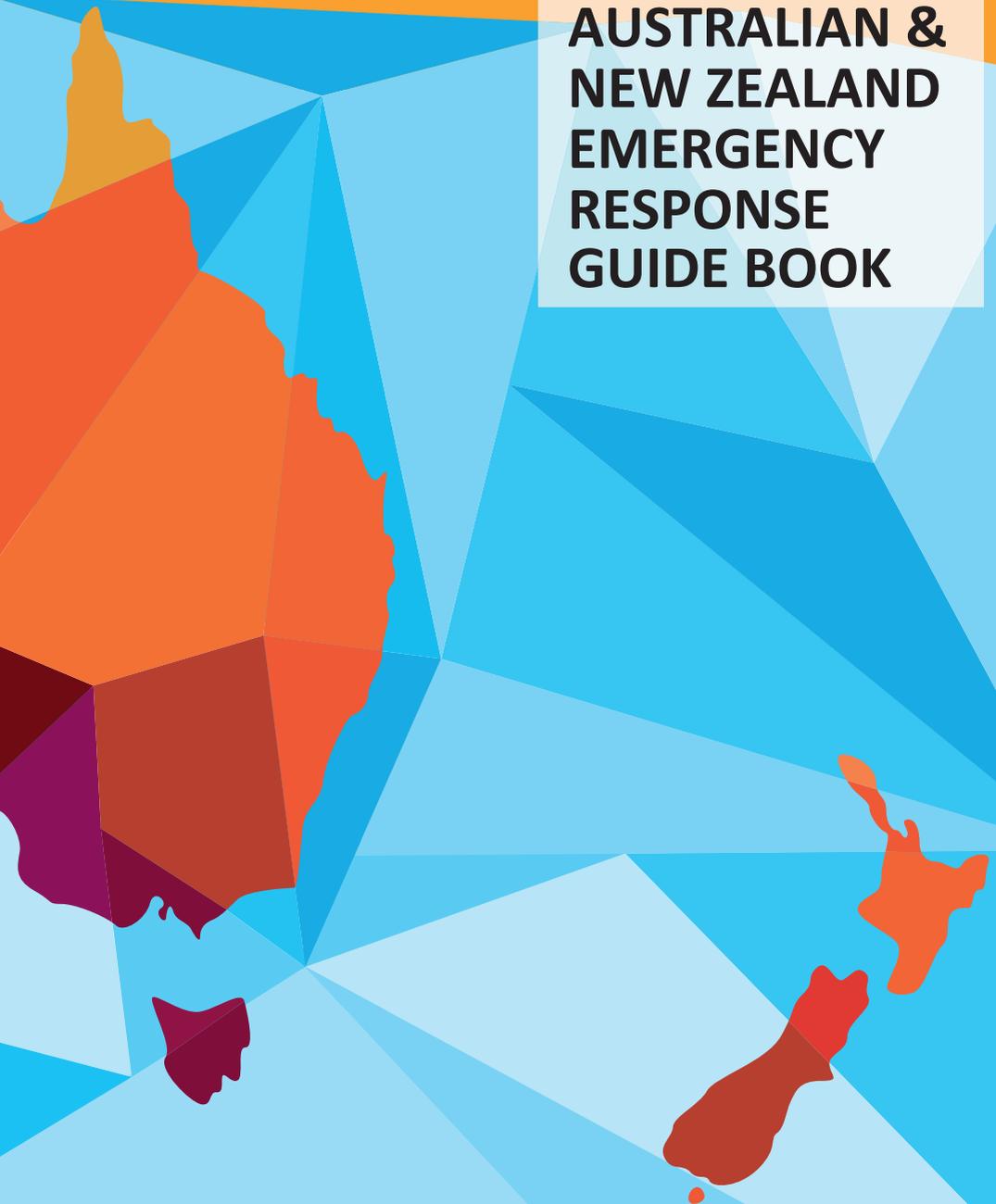


A guidebook intended for use by first responders during the initial phase of a transportation incident involving dangerous goods/hazardous materials.

2021

AUSTRALIAN & NEW ZEALAND EMERGENCY RESPONSE GUIDE BOOK



HOW TO USE THIS GUIDEBOOK

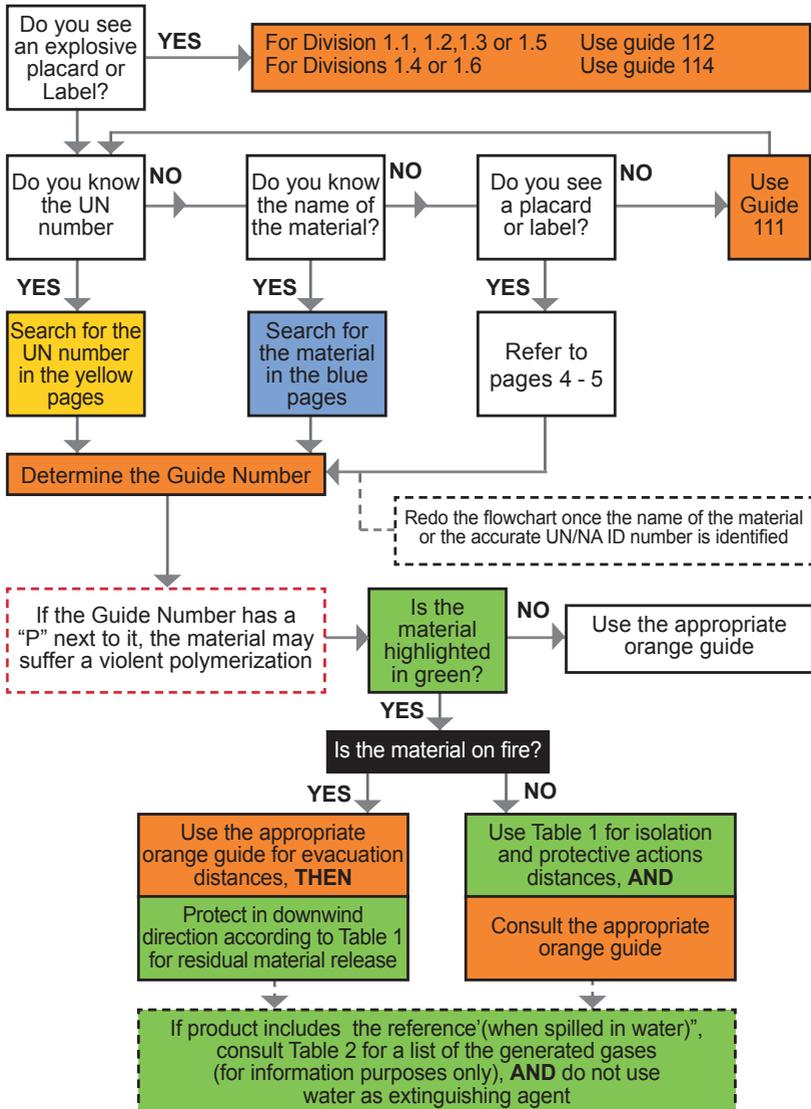
RESIST RUSHING IN!

APPROACH INCIDENTS FROM UPWIND, UPHILL OR UPSTREAM

STAY CLEAR OF SPILLS, VAPOURS, FUMES, SMOKE AND POTENTIAL HAZARDS

WARNING

DO NOT USE THIS FLOWCHART if more than one hazardous material/dangerous good is involved. Immediately call the appropriate emergency response agency.



BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK

First responders must be trained in the use of this guidebook.

EMERGENCY PROCEDURE GUIDE EXTRACTS

Prime contractors may use extracts of the individual guides from this guide book as emergency procedure guides. If individual extracts are used, ensure the following information is extracted and carried in the vehicle:

- The relevant guides for all dangerous goods being transported
- All relevant information referred to in those guides (e.g. information from Table 1)
- The vehicle fire guide (Guide 00)

Note: the information must be in the form, or substantially in the form as presented in the guide book.

TRANSPORT DOCUMENTATION

Transport Documents can be found as follows:

- Road – kept in the cab of a motor vehicle
- Rail – kept in possession of the train driver
- Aviation – kept in possession of the aircraft pilot
- Marine – kept with the Master of the vessel

Transport Documents provide vital information regarding the hazardous materials/dangerous goods to initiate protective actions.

Information provided:

- 4-digit identification number, UN number (go to yellow pages)
- Proper shipping name (go to blue pages)
- Hazard class or division number of material, including sub-hazard
- Packing group
- Emergency response telephone number
- Information describing the hazards of the material (entered on or attached to transport document)

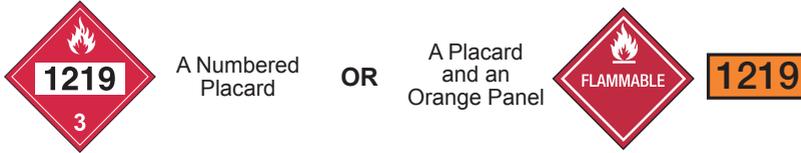
Liquid Chemical Company 123 Through Street UPTOWN 02 9876 5432		EXAMPLE OF EMERGENCY CONTACT DETAILS	Delivery to: Sparkling Pools 1 Main Road DOWNTOWN	
DANGEROUS GOODS DETAILS				
UN 1230	METHANOL	HAZARD CLASS OR DIVISION NO.	480L	12 x 40L Jerricans
UN 1824	SODIUM HYDROXIDE SOLUTION	Class 8, PG II	1200L	6 x 200L Drums
UN NUMBER	PROPER SHIPPING NAME	PACKING GROUP		

IF TRANSPORT DOCUMENTS ARE NOT AVAILABLE

The UN number may be available from other sources for example:

PLACARD AND PANEL WITH UN NUMBER

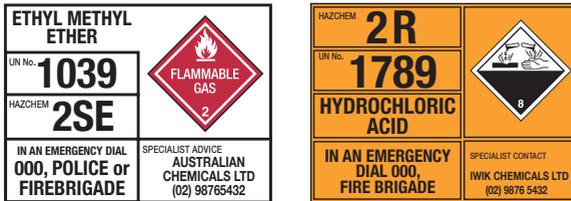
The 4-digit UN Number may be shown on the diamond-shaped placard or on an adjacent orange panel displayed on the ends and sides of a cargo tank, vehicle or rail car.



* For the purposes of this guidebook, the terms hazardous materials/dangerous goods are synonymous.

EMERGENCY INFORMATION PANEL (EIP)

If the goods are in bulk containers or placardable units, the UN number and proper shipping name should appear on the emergency information panel attached to the vehicle or container.



PACKAGE MARKINGS AND LABELS

All packages containing dangerous goods should be marked and labelled with a class label, UN number and proper shipping name.



IF THE UN NUMBER OR PROPER SHIPPING NAME IS NOT AVAILABLE

Placarding on the vehicle should be matched with the labels on pages 4 and 5. The appropriate guide should then be used.



INTRODUCTION TO THE TABLE OF MARKINGS, LABELS AND PLACARDS

USE THIS TABLE ONLY WHEN THE UN NUMBER OR PROPER SHIPPING NAME IS NOT AVAILABLE.

The next two pages display the placards used on transport vehicles carrying dangerous goods with the applicable reference GUIDE circled. Follow these steps:

1. **Approach scene from upwind, uphill or upstream at a safe distance to safely identify and/or read the placard or orange panel. Use binoculars if available.**
2. **Match the vehicle placard(s) with one of the placards displayed on the next two pages.**
3. **Consult the circled guide number associated with the placard. Use that guide information for now. For example:**

- Use GUIDE **127** for a FLAMMABLE (Class 3) placard 
- Use GUIDE **153** for a CORROSIVE (Class 8) placard 
- Use GUIDE **111** when the MIXED / DANGEROUS placard is displayed or the nature of the spilled, leaking or burning material is not known. Also use this GUIDE when the presence of dangerous goods is suspected but no placards can be seen.

If multiple placards point to more than one guide, initially use the most conservative guide (i.e., the guide requiring the greatest degree of protective actions).

4. **Guides associated with the placards provide the most significant risk and/or hazard information.**
5. **When specific information, such as UN number or proper shipping name, becomes available, the more specific Guide recommended for that material must be consulted.**
6. **A single asterisk (*) on orange placards represent an explosive's compatibility group letter. The asterisk must be replaced with the appropriate compatibility group letter. Refer to the Glossary.**
7. **Double asterisks (**) on orange placards represent the division of the explosive. The double asterisks must be replaced with the appropriate division number.**

TABLE OF MARKINGS, LABELS, AND PLACARDS AND INITIAL RESPONSE GUIDE TO USE ON-SCENE

While not all of these labels are permitted for use in Australia or New Zealand, they may be seen on imported containers

111



112



For Divisions 1.1, 1.2, 1.3 and 1.5, enter division number (**), compatibility group letter(*), when required

114



For Divisions 1.4 and 1.6, enter compatibility group letter(*) when required

118



121



122



123



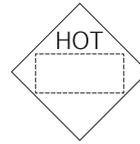
125

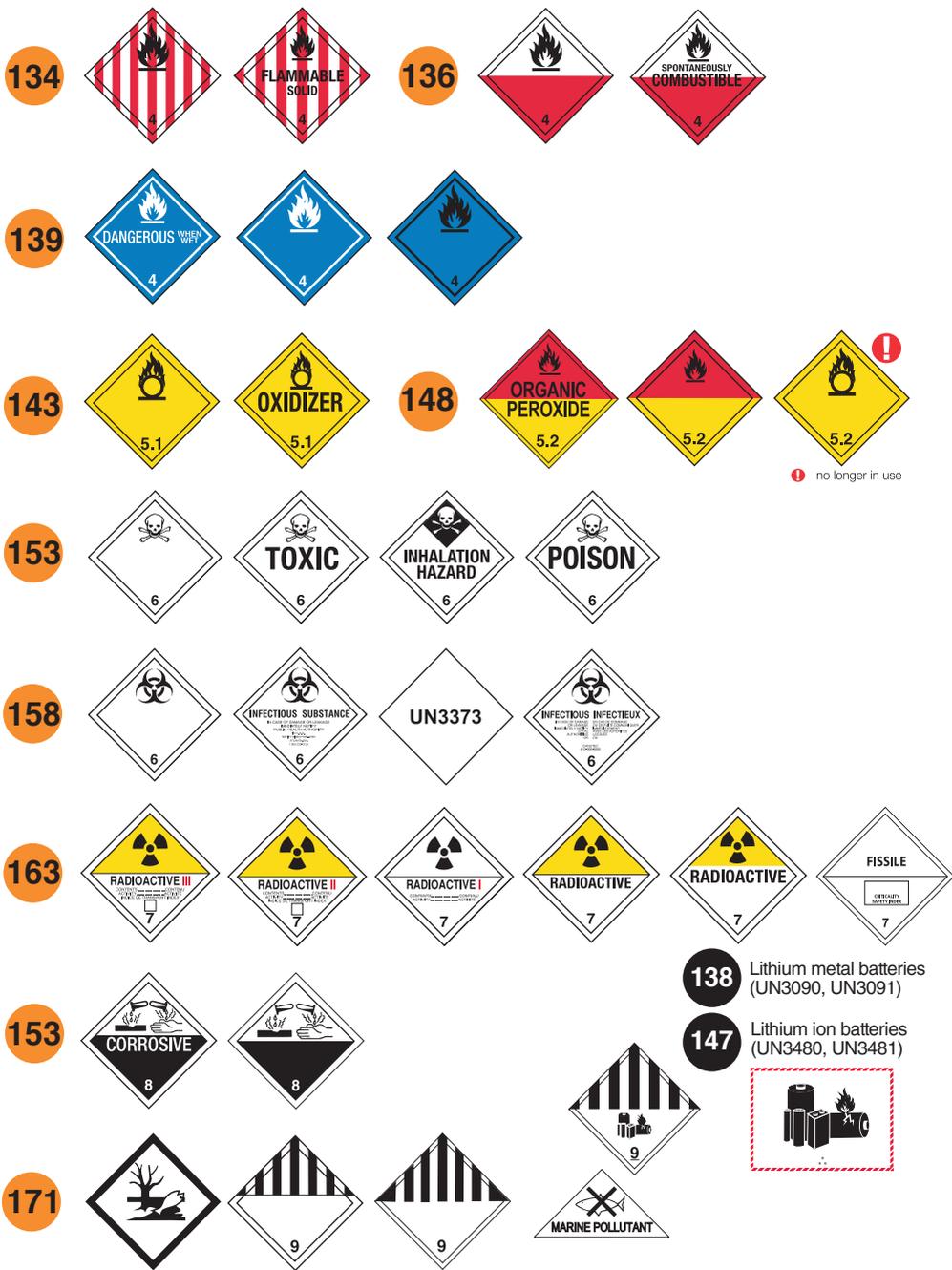


127



128





i no longer in use

138 Lithium metal batteries (UN3090, UN3091)

147 Lithium ion batteries (UN3480, UN3481)

FOREWORD

The Australian & New Zealand Emergency Response Guidebook 2021 (ANZ-ERG2021) is published by the Competent Authorities Panel (CAP), a national body comprising state and territory Competent Authorities for the transport of dangerous goods by road and rail in Australia. CAP is established under state and territory legislation derived from the national Model Legislation – Transport of Dangerous Goods by Road or Rail.

ANZ-ERG2021 is made available free of charge and approved by CAP as emergency information satisfying the requirements of Chapter 11.2 of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

ANZ-ERG2021 is substantially based on the CANUTEC 2020 Emergency Response Guidebook developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Transport and Communications of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Información Química para Emergencias) of Argentina.

While the basic structure of the CANUTEC 2020 ERG has been retained, the following modifications have been made to ensure an appropriate fit for the Australian and New Zealand context:

- Modify spelling and measurements to suit Australia and New Zealand
- Inclusion of a guide for responding to a vehicle fire
- Removal or modification of technical information specific to Canada, North America and South America

ANZ-ERG2021 is primarily a guide to aid transport operators and first responders in quickly identifying the specific or generic hazards of the material involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.

This guidebook will assist transport operators and responders in making decisions at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. ANZ-ERG2021 does not address all possible circumstances that may be associated with a dangerous goods incident. It is primarily designed for use at a dangerous goods incident occurring on a highway or railroad. The ANZ-ERG2021 is not intended for responding to incidents at fixed facility locations.

ACKNOWLEDGEMENTS

I wish to acknowledge the efforts of the CAP Working Party and to thank the following organisations:

- National Transport Commission
- Environmental Protection Authority NSW
- Waka Kotahi - NZ Transport Agency and Responsible Care NZ
- Australasian Fire and Emergency Services Authorities Council
- Department of Mines, Industry Regulation and Safety WA

The CAP Working Party also thanks CANUTEC for the generous provision of the original ERG2020 materials and permission to use this material for the ANZ-ERG2021

Peter Xanthis

Chair - Australian & New Zealand Emergency Response Guidebook Working Party

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SAFETY PRECAUTIONS – RESIST RUSHING IN!

RAISE THE ALARM

- Move upwind and get help
- If you are alone, raise the alarm before you take any action
- Help will arrive sooner and you will not be on your own, should you get into difficulties

APPROACH CAUTIOUSLY FROM UPWIND, UPHILL OR UPSTREAM:

- Stay clear of **Vapour, Fumes, Smoke and Spills**
- Keep vehicle at a safe distance from the scene

SECURE THE SCENE:

- Isolate the area and protect yourself and others

IDENTIFY THE HAZARDS USING ANY OF THE FOLLOWING:

- Placards
- Container labels
- Transport Documentation (Shipping documents)
- Rail Car and Road Trailer Identification Chart
- Safety Data Sheets (SDS)
- Knowledge of persons on scene
- Consult applicable guide page

ASSESS THE SITUATION:

- Is there a fire, a spill or a leak?
- What are the weather conditions?
- What is the terrain like?
- Who/what is at risk: people, property or the environment?
- What actions should be taken – evacuation, shelter in-place or dike?
- What resources (human and equipment) are required?
- What can be done immediately?

RESPOND:

- Enter only when wearing appropriate protective gear
- Rescue attempts and protecting property must be weighed against you becoming part of the problem
- Establish a command post and lines of communication
- Continually reassess the situation and modify response accordingly
- Consider safety of people in the immediate area first, including your own safety

ABOVE ALL: Do not assume that gases or vapours are harmless because of lack of a smell – odourless gases or vapours may be harmful. Use **CAUTION** when handling empty containers because they may still present hazards until they are cleaned and purged of all residues.

Refer to Isolation Information starting page 296.

NOTIFICATION AND REQUEST FOR TECHNICAL INFORMATION

Follow the steps outlined in your organisation's local Transport Emergency Response Plan (TERP) for obtaining qualified assistance. Generally, the notification sequence and requests for technical information beyond what is available in this guidebook should occur in the following order:

1. NOTIFY YOUR ORGANISATION/AGENCY

- Based on information provided, this will set in motion a series of events
- Actions may range from dispatching additional trained personnel to the scene, to activating the local Transport Emergency Response Plan
- Ensure that local fire and police departments have been notified

2. CALL THE EMERGENCY RESPONSE TELEPHONE NUMBER ON THE TRANSPORT DOCUMENTATION (SHIPPING DOCUMENT) OR EMERGENCY INFORMATION PANEL

- If transport documentation is not available, notify the emergency services

3. PROVIDE AS MUCH OF THE FOLLOWING INFORMATION AS POSSIBLE:

- Your name, call-back telephone number, fax number
- Location and nature of problem (spill, fire, etc.)
- Name and UN number of material(s) involved
- Shipper/consignee/point-of-origin
- Carrier name, rail car or truck number
- Container type and size
- Quantity of material transported/released
- Local conditions (weather, terrain)
- Proximity to schools, hospitals, waterways, etc.
- Injuries and exposures
- Local emergency services that have been notified

POINTS TO CONSIDER IN THE MANAGEMENT OF AN EMERGENCY

To manage a dangerous goods emergency effectively, many different questions need to be addressed by the first responder. Consider the following when at an incident site involving dangerous goods.

- a) Identify the products involved from any available documents. If not possible, identify the hazards from the vehicle or container placards.
- b) Minimise exposure to chemicals by working upwind (blowing from you to the incident). If possible, also approach from uphill. Wear appropriate protective clothing and avoid inhaling gases, fumes, and smoke.
- c) Use the information on the physical and chemical properties of the product to judge response
- d) Many chemicals lack colour or odour. Do not assume they are harmless.
- e) Remember that many gases are heavier than air.
- f) Decontaminate equipment, clothing and personnel on site if safe to do so.
- g) Dispose of contaminated equipment and materials only after receiving specialist advice
- h) Replenish used equipment
- i) If human exposure occurs, obtain medical assistance, ensuring full exposure details are advised.

HAZCHEM CODES (Emergency Action Codes)

The Hazchem Code is fully titled “Hazchem Emergency Action Code”. In European publications, it is now frequently referred to simply as “Emergency Action Code” or “EAC”.

The Hazchem Code advises on:

- Firefighting media
- Personal protection requirements
- Risk of violent reaction
- Spillage handling
- Evacuation consideration

A Hazchem Code offers guidance on appropriate initial emergency response in a potentially dangerous situation such as leakage, spillage or fire involving the dangerous goods to which it relates.

The Hazchem Code is composed of a number, followed by one or more letters

EXTINGUISHING MEDIA

The firefighting extinguishing media is determined by reference to the first character of the Hazchem Code as follows:

1	Indicates coarse water spray
2	Indicates fine water spray
•2	Indicates alcohol resistant foam is the preferred firefighting medium but, if not available, fine water spray can be used
3	Indicates normal foam (i.e. protein based foam that is not alcohol resistant)
•3	Indicates alcohol resistant foam is preferred firefighting medium but, if not available normal foam can be used
4	Indicates dry agent (water must not be allowed to come in contact with substance)

NOTE: Any higher number than the one shown can be used, but a lower number must not be used.

A bullet ‘•’ sometimes precedes the number 2 or 3.

•2 and •3, have the following meanings:

•2 denotes that alcohol resistant foam is the preferred firefighting medium but, if it is not available, fine water spray can be used.

•3 denotes that alcohol resistant foam is the preferred firefighting medium but, if it is not available, normal foam can be used.

For example, the Hazchem Code assigned to UN 1193 Ethyl Methyl Ketone is •2YE. The ‘•’ here indicates to the emergency services that alcohol resistant foam is the preferred firefighting medium. However, if such foam is not available, fine water spray, as the next most effective medium, should be used.

Meaning of Second Character of Hazchem Code

Letter	Risk or violent reaction or explosion	Recommended personal protection	Appropriate measures
P	Yes	Liquid-tight chemical protective clothing and breathing apparatus	Dilute Due care must be taken to avoid unnecessary pollution of water courses
R	No		
S	Yes	Full fire kit and breathing apparatus	
T	No		
W	Yes	Liquid-tight chemical protective clothing and breathing apparatus	Contain Prevent by any means available, spillage from entering drains and water course
X	No		
Y	Yes	Full fire kit and breathing apparatus	
Z	No		
E	PUBLIC SAFETY HAZARD. People should be warned to stay indoors with all doors and windows closed, but evacuation may need to be considered. Consult Control, Police, and product experts.		

Where the second character of the Hazchem Code is S, T, Y or Z, normal firefighting clothing is appropriate, i.e. self-contained open circuit positive pressure compressed air breathing apparatus, worn in combination with fire kit, firefighters’ gloves and firefighters’ boots.

Where the second character of the Hazchem Code is P, R, W or X, liquid-tight chemical protective clothing in combination with breathing apparatus specified.

Violent Reaction

Where the second character of a Hazchem Code is a P, S, W or Y there is a danger that the substance can be violently or explosively reactive. This danger may be present due to one of the following:

- Violent or explosive decomposition of the material involved, including ignition or friction.
- The ignition of a flammable gas or vapour cloud (this danger exists for all flammable gases and flammable liquids with a flash point below 60 °C)
- The rapid acceleration of combustion due to the involvement of an oxidiser.
- A reaction with water which is itself violent, and may also evolve flammable gases.

Contain/dilute

Where the second character of a Hazchem Code is W, X, Y or Z spillages and decontamination run-off should be prevented from entering drains and watercourses. Where the second character of the code is P, R, S or T spillages and decontamination run-off may be washed to drains with large quantities of water. Due care must however still be exercised to avoid unnecessary pollution of watercourses.

E “Public Safety Hazard”

An ‘E’ following the first two characters of a Hazchem Code indicates that there may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered. People should be warned to stay indoors with all doors and windows closed, but evacuation may need to be considered. Consult Incident Control, Police, and product experts.

HAZARD CLASSIFICATION SYSTEM

The hazard class of dangerous goods is indicated either by its class (or division) number or name. Placards are used to identify the class or division of a material. The hazard class or division number must be displayed in the lower corner of a placard and is required for both primary and subsidiary hazard classes and divisions, if applicable. For other than Class 7 placards, text indicating a hazard (for example, "CORROSIVE") is not required. The hazard class or division number and subsidiary hazard classes or division numbers placed in parentheses (when applicable), must appear on the transport documentation.

Class 1 - Explosives

Division 1.1	Explosives which have a mass explosion hazard
Division 1.2	Explosives which have a projection hazard but not a mass explosion hazard
Division 1.3	Explosives which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
Division 1.4	Explosives which present no significant blast hazard
Division 1.5	Very insensitive explosives with a mass explosion hazard
Division 1.6	Extremely insensitive articles which do not have a mass explosion hazard

Class 2 - Gases

Division 2.1	Flammable gases
Division 2.2	Non-flammable, non-toxic* gases
Division 2.3	Toxic* gases

Class 3 - Flammable liquids (and Combustible liquids)

Class 4 - Flammable solids; Substances liable to spontaneous combustion; Substances which, on contact with water, emit flammable gases

Division 4.1	Flammable solids, self-reactive substances, solid desensitized explosives and polymerising substances.
Division 4.2	Substances liable to spontaneous combustion
Division 4.3	Substances which in contact with water emit flammable gases

Class 5 - Oxidizing substances and Organic peroxides

Division 5.1	Oxidizing substances
Division 5.2	Organic peroxides

Class 6 - Toxic* substances and Infectious substances

Division 6.1	Toxic* substances
Division 6.2	Infectious substances

Class 7 - Radioactive materials

Class 8 - Corrosive substances

Class 9 - Miscellaneous dangerous substances including environmentally hazardous substances

* The words "poison" or "poisonous" are synonymous with the word "toxic".

Desensitised explosive

A desensitised explosive is an explosive substance that has had its explosive properties suppressed by:

- wetting the substance with water or alcohol, or
- diluting the substance by mixing with another non-explosive substance. or
- dissolving the substance in water, alcohol or other liquid; and
- packing the substance in such a way to be excluded from Class 1 by virtue of test results

Subsidiary hazards

Many dangerous goods present more than one hazard. These goods are classified according to their primary hazard, and their additional hazards are called subsidiary hazards.

A subsidiary hazard is identified on transport documentation and by the presence of more than one class or division label. All primary and sub-hazards must be considered when determining emergency response.

Packing Group (PG) = Degree of danger

Most dangerous goods of classes 3, 4, 8 and 9 and divisions 5.1 and 6.1 have been divided into three packing groups indicating the degree of danger presented by the substance. This information is shown on documentation in roman numerals. It is not required to be displayed on packaging and substance labels, but it is permitted and is common practice in New Zealand.

Packing Group I (PG I) High danger – substances that pose an immediate threat to life, health or property whenever there is a leak, spill or fire, even in very small quantities.

Packing Group II (PG II) Medium danger – substances that pose a significant threat in a fire or larger spill or leak. Flammable substances of PG II will ignite readily at ambient temperatures.

Packing Group III (PG III) Low danger – substances that are similar in hazard to many found in domestic situations. Flammable substances of PG III will usually be difficult to ignite at ambient temperatures. Generally, PG III substances pose a significant threat to health or property in open areas only when involved in a large fire or in a major spill or leak

Note – Packing Groups are not assigned to self-reactive substances of Division 4.1 and articles of any class or division

CRIMINAL/TERRORIST USE OF CHEMICAL/BIOLOGICAL/RADIOLOGICAL AGENTS

The following is intended to supply information to first responders for use in making a preliminary assessment of a situation that they suspect involves criminal/terrorist use of chemical, biological agents and/or radioactive materials (CBRN). To aid in the assessment, a list of observable indicators of the use and/or presence of a CB agent or radioactive material is provided in the following paragraphs. This section ends with a Safe Standoff Distance Chart for various threats when Improvised Explosive Devices are involved.

DIFFERENCES BETWEEN A CHEMICAL, BIOLOGICAL AND RADIOLOGICAL AGENT

Chemical and biological agents as well as radioactive materials can be dispersed in the air we breathe, the water we drink, or on surfaces we physically contact. Dispersion methods may be as simple as opening a container, using conventional (garden) spray devices, or as elaborate as detonating an improvised explosive device.

Chemical Incidents are characterised by the rapid onset of medical symptoms (minutes to hours) and easily observed signatures (coloured residue, dead foliage, pungent odour, dead insects and animals).

Biological Incidents are characterised by the onset of symptoms in hours to days. Typically, there will be no characteristic signatures because biological agents are usually odourless and colourless. Because of the delayed onset of symptoms in a biological incident, the area affected may be greater due to the movement of infected individuals.

Radiological Incidents are characterized by the onset of symptoms, if any, in days to weeks or longer. Typically, there will be no characteristic signatures because radioactive materials are usually odourless and colourless. Specialized equipment is required to determine the size of the affected area, and whether the level of radioactivity presents an immediate or long-term health hazard. Because radioactivity is not detectable without special equipment, the affected area may be greater due to the migration of contaminated individuals.

The most probable sources would not generate enough radiation to kill people or cause severe illness. In a radiological incident generated by a dirty bomb, or Radiological Dispersal Device (RDD), in which a conventional explosive is detonated to spread radioactive contamination, the primary hazard is from the explosion. However, certain radioactive materials dispersed in the air could contaminate up to several city blocks, creating fear and possibly panic, and requiring potentially costly cleanup.

INDICATORS OF A POSSIBLE CHEMICAL INCIDENT

Dead animals/birds/fish

Not just an occasional road kill, but numerous animals (wild and domestic, small and large), birds, and fish in the same area.

Lack of insect life

If normal insect activity (ground, air, and/or water) is missing, check the ground/water surface/shore line for dead insects. If near water, check for dead fish/aquatic birds.

INDICATORS OF A POSSIBLE CHEMICAL INCIDENT (Continued)

Unexplained odours	Smells may range from fruity to flowery to sharp/pungent to garlic/horseradish-like to bitter almonds/peach kernels to newly mown hay. It is important to note that the particular odour is completely out of character with its surroundings.
Unusual numbers of dying or sick people (mass casualties)	Health problems including nausea, disorientation, difficulty in breathing, convulsions, localized sweating, conjunctivitis (reddening of eyes/nerve agent symptoms), erythema (reddening of skin/vesicant symptoms) and death.
Pattern of casualties	Casualties will likely be distributed downwind, or if indoors, by the air ventilation system.
Blisters/rashes	Numerous individuals experiencing unexplained waterlike blisters, weals (like bee stings), and/or rashes.
Illness in confined area	Different casualty rates for people working indoors versus outdoors dependent on where the agent was released.
Unusual liquid droplets	Numerous surfaces exhibit oily droplets/film; numerous water surfaces have an oily film. (No recent rain.)
Different-looking areas	Not just a patch of dead weeds, but trees, shrubs, bushes, food crops, and/or lawns that are dead, discoloured, or withered. (No current drought.)
Low-lying clouds	Low-lying cloud/fog-like condition that is not consistent with its surroundings.
Unusual metal debris	Unexplained bomb/munitions-like material, especially if it contains a liquid.

INDICATORS OF A POSSIBLE BIOLOGICAL INCIDENT

Unusual numbers of sick or dying people or animals	Any number of symptoms may occur. Casualties may occur hours to days after an incident has occurred. The time required before symptoms are observed is dependent on the agent used.
Unscheduled and unusual spray being disseminated	Especially if outdoors during periods of darkness.
Abandoned spray devices	Devices may not have distinct odours.

INDICATORS OF A POSSIBLE RADIOLOGICAL INCIDENT

Radiation Symbols	Containers may display a “propeller” radiation symbol.
Unusual metal debris	Unexplained bomb/munitions-like material.
Heat-emitting material	Material that is hot or seems to emit heat without any sign of an external heat source.
Glowing material	Strongly radioactive material may emit or cause radioluminescence.
Sick people/animals	In very improbable scenarios there may be unusual numbers of sick or dying people or animals. Casualties may occur hours to days or weeks after an incident has occurred. The time required before symptoms are observed is dependent on the radioactive material used, and the dose received. Possible symptoms include skin reddening or vomiting.

PERSONAL SAFETY CONSIDERATIONS

When approaching a scene that may involve CB agents or radioactive materials, the most critical consideration is the safety of oneself and other responders. Use protective clothing and respiratory protection of an appropriate level of safety.

In incidents where it is suspected that CBRN materials have been used as weapons, NIOSH-certified respirators with CBRN protection are highly recommended. Be aware that the presence and identification of CB agents or radioactive materials may not be verifiable, especially in the case of biological or radiological agents. The following actions/ measures to be considered are applicable to either a chemical, biological or radiological incident. The guidance is general in nature, not all encompassing, and its applicability should be evaluated on a case-by-case basis.

Approach and response strategies.

- Minimise exposure time.
- Maximise the distance between you and the item that is likely to harm you.
- Use cover as protection.
- Wear appropriate personal protective equipment as respiratory protection.
- Identify and estimate the hazard by using the indicated above.
- Isolate and secure the area.
- Isolate and decontaminate potentially contaminated people as soon as possible.
- To the extent possible, take measures to limit the spread of contamination

In the event of a chemical incident, the fading of chemical odours does not necessarily indicate reduced vapour concentrations. Some chemicals deaden the senses, giving you the false perception that the chemical is no longer present. If there is any indication that an area may be contaminated with radioactive materials, including the site of any non-accidental explosion, responder personnel should be equipped with radiation detection equipment that would alert them if they are entering a radiologically compromised environment, and should have received adequate training in its use. This equipment should be designed in such a way that it can also alert the responders when an unacceptable ambient dose rate or ambient dose has been reached.

Initial actions to consider in a potential CBRN/Hazmat Terrorism Event:

- Avoid using cell phones, radios, etc. within 100 metres (300 feet) of a suspect device
- NOTIFY your local police by calling 000 in Australia or 111 in New Zealand.
- Set up Incident command upwind and uphill of the area.
- Do NOT touch or move suspicious packages/containers.
- Be cautious regarding potential presence of secondary devices (e.g. Improvised Explosive Devices (IEDs)).
- Avoid contamination.
- Limit access to only those responsible for rescue of victims or assessment of unknown materials or devices.
- Evacuate and isolate individuals potentially exposed to dangerous goods/hazardous materials.
- Isolate contaminated areas and secure the scene for analysis of material.

Decontamination measures.

For chemical and biological agents: Emergency responders should follow standard decontamination procedures (flush-strip-flush). Mass casualty decontamination should begin as soon as possible by stripping (all clothing) and flushing (soap and water).

For persons contaminated with radioactive material:

Take care to minimize the spread of contamination to the extent possible. Move them to a low radiation area if necessary and if it can be done safely. Remove their clothing and place it in a clearly marked and sealed receptacle, such as a plastic bag, for later testing. Use decontamination methods described above, but avoid breaking the skin, e.g., from shaving, or overly vigorous brushing. External radiological contamination on intact skin surface rarely causes a high enough dose to be a hazard to either the contaminated person or the first responders. For this reason, prioritise medical stabilisation for a contaminated individual.

Note: The above information was developed in part by the Department of National Defence (Canada), the U.S. Department of the Army, Aberdeen Proving Ground and the Federal Bureau of Investigation (FBI).

CLEAR COMMUNICATION

It is absolutely vital that the communication of incident details is accurate. The names of a number of chemicals can vary by only one or two letters, and they may sound similar, but their hazards may be widely different. To avoid confusion, the key item for transmitting chemical details should always be the UN number, which should be available from the transport documents. All information available should be transmitted. Whenever it is necessary to transmit names, it is strongly advised that the phonetic alphabet is used to avoid errors and ensure accurate spelling of product names.

PHONETIC ALPHABET

A Alpha	H Hotel	O Oscar	V Victor
B Bravo	I India	P Papa	W Whisky
C Charlie	J Juliet	Q Quebec	X X-ray
D Delta	K Kilo	R Romeo	Y Yankee
E Echo	L Lima	S Sierra	Z Zulu
F Foxtrot	M Mike	T Tango	
G Golf	N November	U Uniform	

Example – Chemical name NITRIC ACID would be spelled out as:

N November	A Alpha
I India	C Charlie
T Tango	I India
R Romeo	D Delta
I India	
C Charlie	

GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELING OF CHEMICALS (GHS)

In some cases, such as on drums or intermediate bulk containers (IBCs), which must address information for all sectors, the GHS label may be found in addition to the required transport labels and placards. Both types of labels (GHS and transport) will differ in a way that will make them easy to identify during an emergency.

The GHS is a system used to classify and communicate chemical hazards using internationally consistent terms and information on chemical labels and Safety Data Sheet (SDS). While the GHS provides for a single system, it is intended for users of chemicals and is specific to workplace legislation; **it does not replace dangerous goods classification and labelling requirements for transport.**

In the GHS, hazards are communicated to chemical users through a combination of symbols (pictograms) as well as words, in the form of signal words, hazard statements and precautionary statements. These are intended to appear on labels and in SDS.

Dangerous goods markings and labels are aimed at preventing and mitigating incidents related to the transport of dangerous goods and provide information for preventing and responding to emergencies that occur in transit.

GHS Pictograms	Physical hazards	GHS Pictograms	Health and Environmental hazards
	Explosive; Self-reactive; Organic peroxide		Skin corrosion; Serious eye damage
	Flammable; Pyrophoric; Self-reactive; Organic peroxide; Self-heating; Emits flammable gases when in contact with water		Acute toxicity (harmful); Skin sensitizer; Irritant (skin and eye); Narcotic effect; Respiratory tract irritant; Hazardous to ozone layer (environment)
	Oxidizer		Respiratory sensitizer; Mutagen; Carcinogen; Reproductive toxicity; Target organ toxicity; Aspiration hazard
	Gas under pressure		Hazardous to aquatic environment
	Corrosive to metals		Acute toxicity (fatal or toxic)

HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

Hazard identification numbers, utilized under European and some South American regulations, may be found in the top half of an orange panel on some intermodal bulk containers. The United Nations 4-digit identification number is in the bottom half of the orange panel.



ADR EXPLANATION

The upper half contains the ADR Hazard Identification Number (or Kemler Code) which indicates the properties of the substance involved.

The ADR Hazard Identification Number consists of two or three digits. The first digit indicates the primary hazard, the second and third digit generally indicate secondary hazards.

- Doubling of a digit indicates an intensification of that particular hazard. (i.e., 33, 66, 88)
- Where the hazard associated with a substance can be adequately indicated by a single figure, this is followed by a zero. (i.e., 30, 40, 50)
- A hazard identification number prefixed by the letter 'X', indicates that the substance will react dangerously with water. (i.e., X88)

The first digit/letter indicates the primary hazard

The second and third digits generally secondary hazards

2	Emission of gas due to pressure or chemical reaction	0	the hazard is adequately described by the first digit
3	Flammability of liquids (vapours) and gases or self-heating liquid	2	(flammable) gas may be given off
4	Flammability of solids or self-heating solid	3	fire risk
5	Oxidising (fire-intensifying) effect	4	fire risk
6	Toxicity	5	oxidising risk
7	Radioactivity	6	toxic risk
8	Corrosivity	8	corrosive risk
9	Risk of spontaneous violent reaction	9	risk of spontaneous violent reaction
X	reacts dangerously with water		

GREEN HIGHLIGHTED ENTRIES IN YELLOW PAGES

For entries highlighted in green follow these steps:

- **IF THERE IS NO FIRE:**
 - Go directly to Table 1 (green bordered pages)
 - Look up the UN number and name of material
 - Identify initial isolation and protective action distances
- **IF A FIRE IS INVOLVED:**
 - Use the appropriate Orange Guide for **EVACUATION** distances
 - Also protect in downwind direction according to Table 1 for residual material release

Note 1: If the name in **Table 1** is shown with “*(when spilled in water)*”, these materials produce large amounts of Toxic Inhalation Hazard (TIH) (PIH in the US) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2 do NOT** apply and safety distances will be found within the appropriate orange guide.

Note 2: Explosives are not individually listed by their UN number because in an emergency situation, the response will be based only on the division of the explosive, not on the individual explosive.

For divisions 1.1, 1.2, 1.3 and 1.5, refer to GUIDE 112.

For divisions 1.4 and 1.6, refer to GUIDE 114.

Note 3: Chemical warfare agents do not have an assigned UN number because they are not commercially transported. In an emergency situation, the assigned orange guide will provide guidance for the initial response. Also consult “Criminal or Terrorist Use of Chemical, Biological and Radiological Agents”, pp. 368 to 372.

UN No.	Guide No.	Name of Material
---	112	Ammonium nitrate-fuel oil mixtures
---	158	Biological agents
---	112	Blasting agent, n.o.s.
---	112	Explosives, division 1.1, 1.2, 1.3 or 1.5
---	114	Explosives, division 1.4 or 1.6
---	153	Toxins
1001	116	Acetylene, dissolved
1002	122	Air, compressed
1003	122	Air, refrigerated liquid (cryogenic liquid)
1003	122	Air, refrigerated liquid (cryogenic liquid), non-pressurised
1005	125	Ammonia, anhydrous
1005	125	Anhydrous ammonia
1006	120	Argon
1006	120	Argon, compressed
1008	125	Boron trifluoride
1008	125	Boron trifluoride, compressed
1009	126	Bromotrifluoromethane
1009	126	Refrigerant gas R-13B1
1010	116P	Butadienes, stabilised
1010	116P	Butadienes and hydrocarbon mixture, stabilised
1010	116P	Hydrocarbon and butadienes mixture, stabilised
1011	115	Butane
1012	115	Butylene
1013	120	Carbon dioxide
1013	120	Carbon dioxide, compressed
1014	122	Carbon dioxide and Oxygen mixture, compressed
1014	122	Oxygen and Carbon dioxide mixture, compressed

UN No.	Guide No.	Name of Material
1015	126	Carbon dioxide and Nitrous oxide mixture
1015	126	Nitrous oxide and Carbon dioxide mixture
1016	119	Carbon monoxide
1016	119	Carbon monoxide, compressed
1017	124	Chlorine
1018	126	Chlorodifluoromethane
1018	126	Refrigerant gas R-22
1020	126	Chloropentafluoroethane
1020	126	Refrigerant gas R-115
1021	126	1-Chloro-1,2,2,2-tetrafluoroethane
1021	126	Refrigerant gas R-124
1022	126	Chlorotrifluoromethane
1022	126	Refrigerant gas R-13
1023	119	Coal gas
1023	119	Coal gas, compressed
1026	119	Cyanogen
1027	115	Cyclopropane
1028	126	Dichlorodifluoromethane
1028	126	Refrigerant gas R-12
1029	126	Dichlorofluoromethane
1029	126	Refrigerant gas R-21
1030	115	1,1-Difluoroethane
1030	115	Refrigerant gas R-152a
1032	118	Dimethylamine, anhydrous
1033	115	Dimethyl ether
1035	115	Ethane
1035	115	Ethane, compressed
1036	118	Ethylamine
1037	115	Ethyl chloride
1038	115	Ethylene, refrigerated liquid (cryogenic liquid)

UN No.	Guide No.	Name of Material
1039	115	Ethyl methyl ether
1039	115	Methyl ethyl ether
1040	119P	Ethylene oxide
1040	119P	Ethylene oxide with Nitrogen
1041	115	Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide
1041	115	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide
1043	125	Fertilizer, ammoniating solution, with free Ammonia
1044	126	Fire extinguishers with compressed gas
1044	126	Fire extinguishers with liquefied gas
1045	124	Fluorine
1045	124	Fluorine, compressed
1046	120	Helium
1046	120	Helium, compressed
1048	125	Hydrogen bromide, anhydrous
1049	115	Hydrogen
1049	115	Hydrogen, compressed
1050	125	Hydrogen chloride, anhydrous
1051	117	AC
1051	117P	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide
1051	117P	Hydrogen cyanide, anhydrous, stabilised
1051	117P	Hydrogen cyanide, stabilised
1052	125	Hydrogen fluoride, anhydrous
1053	117	Hydrogen sulfide
1053	117	Hydrogen sulphide
1055	115	Isobutylene

UN No.	Guide No.	Name of Material
1056	120	Krypton
1056	120	Krypton, compressed
1057	115	Lighter refills (cigarettes) (flammable gas)
1057	115	Lighters (cigarettes) (flammable gas)
1057	128	Lighters, non-pressurised, containing flammable liquid
1058	120	Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air
1060	116P	Methylacetylene and Propadiene mixture, stabilised
1060	116P	Propadiene and Methylacetylene mixture, stabilised
1061	118	Methylamine, anhydrous
1062	123	Methyl bromide
1063	115	Methyl chloride
1063	115	Refrigerant gas R-40
1064	117	Methyl mercaptan
1065	120	Neon
1065	120	Neon, compressed
1066	120	Nitrogen
1066	120	Nitrogen, compressed
1067	124	Dinitrogen tetroxide
1067	124	Nitrogen dioxide
1069	125	Nitrosyl chloride
1070	122	Nitrous oxide
1070	122	Nitrous oxide, compressed
1071	119	Oil gas
1071	119	Oil gas, compressed
1072	122	Oxygen
1072	122	Oxygen, compressed

UN No.	Guide No.	Name of Material
1073	122	Oxygen, refrigerated liquid (cryogenic liquid)
1075	115	Butane
1075	115	Butylene
1075	115	Isobutane
1075	115	Isobutylene
1075	115	Liquefied petroleum gas
1075	115	LPG
1075	115	Petroleum gases, liquefied
1075	115	Propane
1075	115	Propylene
1076	125	CG
1076	125	DP
1076	125	Phosgene
1077	115	Propylene
1078	126	Dispersant gas, n.o.s.
1078	126	Refrigerant gas, n.o.s.
1079	125	Sulfur dioxide
1079	125	Sulphur dioxide
1080	126	Sulfur hexafluoride
1080	126	Sulphur hexafluoride
1081	116P	Tetrafluoroethylene, stabilised
1082	119P	Refrigerant gas R-1113
1082	119P	Trifluorochloroethylene, stabilised
1083	118	Trimethylamine, anhydrous
1085	116P	Vinyl bromide, stabilised
1086	116P	Vinyl chloride, stabilised
1087	116P	Vinyl methyl ether, stabilised
1088	127	Acetal
1089	129P	Acetaldehyde
1090	127	Acetone
1091	127	Acetone oils

UN No.	Guide No.	Name of Material
1092	131P	Acrolein, stabilised
1093	131P	Acrylonitrile, stabilised
1098	131	Allyl alcohol
1099	131P	Allyl bromide
1100	131P	Allyl chloride
1104	129	Amyl acetates
1105	129	Pentanols
1106	132	Amylamine
1107	129	Amyl chloride
1108	128	n-Amylene
1108	128	1-Pentene
1109	129	Amyl formates
1110	127	n-Amyl methyl ketone
1110	127	Methyl amyl ketone
1111	130	Amyl mercaptan
1112	128	Amyl nitrate
1113	129	Amyl nitrite
1114	130	Benzene
1120	129	Butanols
1123	129	Butyl acetates
1125	132	n-Butylamine
1126	130	1-Bromobutane
1126	130	n-Butyl bromide
1127	130	n-Butyl chloride
1127	130	Chlorobutanes
1128	129	n-Butyl formate
1129	129P	Butyraldehyde
1130	128	Camphor oil
1131	131	Carbon bisulfide
1131	131	Carbon bisulphide
1131	131	Carbon disulfide
1131	131	Carbon disulphide

UN Guide No. No. Name of Material

UN Guide No. No. Name of Material

1133 128 Adhesives (flammable)
1134 130 Chlorobenzene
1135 131 Ethylene chlorohydrin
1136 128 Coal tar distillates, flammable
1139 127 Coating solution
1143 131P Crotonaldehyde
1143 131P Crotonaldehyde, stabilised
1144 128 Crotonylene
1145 128 Cyclohexane
1146 128 Cyclopentane
1147 130 Decahydronaphthalene
1148 129 Diacetone alcohol
1149 128 Butyl ethers
1149 128 Dibutyl ethers
1150 130P 1,2-Dichloroethylene
1152 130 Dichloropentanes
1153 127 Ethylene glycol diethyl ether
1154 132 Diethylamine
1155 127 Diethyl ether
1155 127 Ethyl ether
1156 127 Diethyl ketone
1157 128 Diisobutyl ketone
1158 132 Diisopropylamine
1159 127 Diisopropyl ether
1160 132 Dimethylamine, aqueous solution
1160 132 Dimethylamine, solution
1161 129 Dimethyl carbonate
1162 155 Dimethyldichlorosilane
1163 131 1,1-Dimethylhydrazine
1163 131 Dimethylhydrazine, unsymmetrical
1164 130 Dimethyl sulfide

1164 130 Dimethyl sulphide
1165 127 Dioxane
1166 127 Dioxolane
1167 128P Divinyl ether, stabilised
1169 127 Extracts, aromatic, liquid
1170 127 Ethanol
1170 127 Ethanol, solution
1170 127 Ethyl alcohol
1170 127 Ethyl alcohol, solution
1171 127 Ethylene glycol monoethyl ether
1172 129 Ethylene glycol monoethyl ether acetate
1173 129 Ethyl acetate
1175 130 Ethylbenzene
1176 129 Ethyl borate
1177 130 2-Ethylbutyl acetate
1177 130 Ethylbutyl acetate
1178 130 2-Ethylbutyraldehyde
1179 127 Ethyl butyl ether
1180 130 Ethyl butyrate
1181 155 Ethyl chloroacetate
1182 155 Ethyl chloroformate
1183 139 Ethyldichlorosilane
1184 131 Ethylene dichloride
1185 131P Ethyleneimine, stabilised
1188 127 Ethylene glycol monomethyl ether
1189 129 Ethylene glycol monomethyl ether acetate
1190 129 Ethyl formate
1191 129 Ethylhexaldehydes
1191 129 Octyl aldehydes
1192 129 Ethyl lactate

UN No.	Guide No.	Name of Material
1193	127	Ethyl methyl ketone
1193	127	Methyl ethyl ketone
1194	131	Ethyl nitrite, solution
1195	129	Ethyl propionate
1196	155	Ethyltrichlorosilane
1197	127	Extracts, flavoring, liquid
1197	127	Extracts, flavouring, liquid
1198	132	Formaldehyde, solution, flammable
1198	132	Formalin (flammable)
1199	153P	Furaldehydes
1199	153P	Furfural
1199	153P	Furfuraldehydes
1201	127	Fusel oil
1202	128	Diesel fuel
1202	128	Fuel oil
1202	128	Gas oil
1202	128	Heating oil, light
1203	128	Gasohol
1203	128	Gasoline
1203	128	Motor spirit
1203	128	Petrol
1204	127	Nitroglycerin, solution in alcohol, with not more than 1% Nitroglycerin
1206	128	Heptanes
1207	130	Hexaldehyde
1208	128	Hexanes
1208	128	Neohexane
1210	129	Ink, printer's, flammable
1210	129	Printing ink, flammable
1210	129	Printing ink related material
1212	129	Isobutanol

UN No.	Guide No.	Name of Material
1212	129	Isobutyl alcohol
1213	129	Isobutyl acetate
1214	132	Isobutylamine
1216	128	Isooctenes
1218	130P	Isoprene, stabilised
1219	129	Isopropanol
1219	129	Isopropyl alcohol
1220	129	Isopropyl acetate
1221	132	Isopropylamine
1222	130	Isopropyl nitrate
1223	128	Kerosene
1224	127	Ketones, liquid, n.o.s.
1228	131	Mercaptan mixture, liquid, flammable, poisonous, n.o.s.
1228	131	Mercaptan mixture, liquid, flammable, toxic, n.o.s.
1228	131	Mercaptans, liquid, flammable, poisonous, n.o.s.
1228	131	Mercaptans, liquid, flammable, toxic, n.o.s.
1229	129	Mesityl oxide
1230	131	Methanol
1230	131	Methyl alcohol
1231	129	Methyl acetate
1233	130	Methylamyl acetate
1234	127	Methylal
1235	132	Methylamine, aqueous solution
1237	129	Methyl butyrate
1238	155	Methyl chloroformate
1239	131	Methyl chloromethyl ether
1242	139	Methyldichlorosilane
1243	129	Methyl formate
1244	131	Methylhydrazine
1245	127	Methyl isobutyl ketone

UN Guide **Name of Material**
No. No.

UN Guide **Name of Material**
No. No.

1246 **127P** Methyl isopropenyl ketone, stabilised
1247 **129P** Methyl methacrylate monomer, stabilised
1248 **129** Methyl propionate
1249 **127** Methyl propyl ketone
1250 155 Methyltrichlorosilane
1251 131P Methyl vinyl ketone, stabilised
1259 131 Nickel carbonyl
1261 **129** Nitromethane
1262 **128** Isooctane
1262 **128** Octanes
1263 **128** Paint (flammable)
1263 **128** Paint related material (flammable)
1264 **129** Paraldehyde
1265 **128** Isopentane
1265 **128** Pentanes
1266 **127** Perfumery products, with flammable solvents
1267 **128** Petroleum crude oil
1268 **128** Petroleum distillates, n.o.s.
1268 **128** Petroleum products, n.o.s.
1270 **128** Oil, petroleum
1270 **128** Petroleum oil
1272 **129** Pine oil
1274 **129** n-Propanol
1274 **129** Propyl alcohol, normal
1275 **129P** Propionaldehyde
1276 **129** n-Propyl acetate
1277 **132** Propylamine
1278 **129** 1-Chloropropane
1278 **129** Propyl chloride
1279 **130** 1,2-Dichloropropane

1280 **127P** Propylene oxide
1281 **129** Propyl formates
1282 **129** Pyridine
1286 **127** Rosin oil
1287 **127** Rubber solution
1288 **128** Shale oil
1289 **132** Sodium methylate, solution in alcohol
1292 **129** Ethyl silicate
1292 **129** Tetraethyl silicate
1293 **127** Tinctures, medicinal
1294 **130** Toluene
1295 139 Trichlorosilane
1296 **132** Triethylamine
1297 **132** Trimethylamine, aqueous solution
1298 155 Trimethylchlorosilane
1299 **128** Turpentine
1300 **128** Turpentine substitute
1301 **129P** Vinyl acetate, stabilised
1302 **127P** Vinyl ethyl ether, stabilised
1303 **130P** Vinylidene chloride, stabilised
1304 **127P** Vinyl isobutyl ether, stabilised
1305 155P Vinyltrichlorosilane
1305 155P Vinyltrichlorosilane, stabilised
1306 **129** Wood preservatives, liquid
1307 **130** Xylenes
1308 **170** Zirconium suspended in a flammable liquid
1308 **170** Zirconium suspended in a liquid (flammable)
1309 **170** Aluminum powder, coated
1310 **113** Ammonium picrate, wetted with not less than 10% water

UN No.	Guide No.	Name of Material
1312	133	Borneol
1313	133	Calcium resinate
1314	133	Calcium resinate, fused
1318	133	Cobalt resinate, precipitated
1320	113	Dinitrophenol, wetted with not less than 15% water
1321	113	Dinitrophenolates, wetted with not less than 15% water
1322	113	Dinitroresorcinol, wetted with not less than 15% water
1323	170	Ferrocium
1324	133	Films, nitrocellulose base
1325	133	Flammable solid, organic, n.o.s.
1325	133	Fusee (rail or highway)
1326	170	Hafnium powder, wetted with not less than 25% water
1327	133	Bhusa, wet, damp or contaminated with oil
1327	133	Hay, wet, damp or contaminated with oil
1327	133	Straw, wet, damp or contaminated with oil
1328	133	Hexamethylenetetramine
1330	133	Manganese resinate
1331	133	Matches, "strike anywhere"
1332	133	Metaldehyde
1333	170	Cerium, slabs, ingots or rods
1334	133	Naphthalene, crude
1334	133	Naphthalene, refined
1336	113	Nitroguanidine, wetted with not less than 20% water
1336	113	Picrite, wetted with not less than 20% water
1337	113	Nitrostarch, wetted with not less than 20% water
1338	133	Phosphorus, amorphous

UN No.	Guide No.	Name of Material
1338	133	Red phosphorus
1339	139	Phosphorus heptasulfide, free from yellow and white Phosphorus
1339	139	Phosphorus heptasulphide, free from yellow and white Phosphorus
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus
1341	139	Phosphorus sesquisulfide, free from yellow and white Phosphorus
1341	139	Phosphorus sesquisulphide, free from yellow and white Phosphorus
1343	139	Phosphorus trisulfide, free from yellow and white Phosphorus
1343	139	Phosphorus trisulphide, free from yellow and white Phosphorus
1344	113	Picric acid, wetted with not less than 30% water
1344	113	Trinitrophenol, wetted with not less than 30% water
1345	133	Rubber scrap, powdered or granulated
1345	133	Rubber shoddy, powdered or granulated
1346	170	Silicon powder, amorphous
1347	113	Silver picrate, wetted with not less than 30% water
1348	113	Sodium dinitro-o-cresolate, wetted with not less than 15% water
1349	113	Sodium picramate, wetted with not less than 20% water
1350	133	Sulfur

UN No.	Guide No.	Name of Material
1350	133	Sulphur
1352	170	Titanium powder, wetted with not less than 25% water
1353	133	Fabrics impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	133	Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	133	Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.
1354	113	Trinitrobenzene, wetted with not less than 30% water
1355	113	Trinitrobenzoic acid, wetted with not less than 30% water
1356	113	TNT, wetted with not less than 30% water
1356	113	Trinitrotoluene, wetted with not less than 30% water
1357	113	Urea nitrate, wetted with not less than 20% water
1358	170	Zirconium powder, wetted with not less than 25% water
1360	139	Calcium phosphide
1361	133	Carbon, animal or vegetable origin
1361	133	Charcoal
1362	133	Carbon, activated
1363	135	Copra
1364	133	Cotton waste, oily
1365	133	Cotton
1365	133	Cotton, wet
1366	135	Diethylzinc
1369	135	p-Nitrosodimethylaniline
1370	135	Dimethylzinc
1372	133	Fibres, animal or vegetable, burnt, wet or damp
1372	133	Fibres, animal or vegetable, burnt, wet or damp

UN No.	Guide No.	Name of Material
1373	133	Fabrics, animal or vegetable or synthetic, n.o.s. with oil
1373	133	Fibres, animal or vegetable or synthetic, n.o.s. with oil
1373	133	Fibres, animal or vegetable or synthetic, n.o.s. with oil
1374	133	Fish meal, unstabilised
1374	133	Fish scrap, unstabilised
1376	135	Iron oxide, spent
1376	135	Iron sponge, spent
1378	170	Metal catalyst, wetted
1379	133	Paper, unsaturated oil treated
1380	135	Pentaborane
1381	136	Phosphorus, white, dry or under water or in solution
1381	136	Phosphorus, yellow, dry or under water or in solution
1381	136	White phosphorus, dry
1381	136	White phosphorus, in solution
1381	136	White phosphorus, under water
1381	136	Yellow phosphorus, dry
1381	136	Yellow phosphorus, in solution
1381	136	Yellow phosphorus, under water
1382	135	Potassium sulfide, anhydrous
1382	135	Potassium sulfide, with less than 30% water of crystallization
1382	135	Potassium sulphide, anhydrous
1382	135	Potassium sulphide, with less than 30% water of crystallization
1383	135	Aluminum powder, pyrophoric
1383	135	Pyrophoric alloy, n.o.s.
1383	135	Pyrophoric metal, n.o.s.
1384	135	Sodium dithionite
1384	135	Sodium hydrosulfite

UN No.	Guide No.	Name of Material
1384	135	Sodium hydrosulphite
1385	135	Sodium sulfide, anhydrous
1385	135	Sodium sulfide, with less than 30% water of crystallization
1385	135	Sodium sulphide, anhydrous
1385	135	Sodium sulphide, with less than 30% water of crystallization
1386	135	Seed cake, with more than 1.5% oil and not more than 11% moisture
1387	133	Wool waste, wet
1389	138	Alkali metal amalgam
1389	138	Alkali metal amalgam, liquid
1390	139	Alkali metal amides
1391	138	Alkali metal dispersion
1391	138	Alkaline earth metal dispersion
1392	138	Alkaline earth metal amalgam
1392	138	Alkaline earth metal amalgam, liquid
1393	138	Alkaline earth metal alloy, n.o.s.
1394	138	Aluminum carbide
1395	139	Aluminum ferrosilicon powder
1396	138	Aluminum powder, uncoated
1397	139	Aluminum phosphide
1398	138	Aluminum silicon powder, uncoated
1400	138	Barium
1401	138	Calcium
1402	138	Calcium carbide
1403	138	Calcium cyanamide, with more than 0.1% Calcium carbide
1404	138	Calcium hydride
1405	138	Calcium silicide
1407	138	Caesium
1407	138	Cesium

UN No.	Guide No.	Name of Material
1408	139	Ferrosilicon
1409	138	Metal hydrides, water-reactive, n.o.s.
1410	138	Lithium aluminum hydride
1411	138	Lithium aluminum hydride, ethereal
1413	138	Lithium borohydride
1414	138	Lithium hydride
1415	138	Lithium
1417	138	Lithium silicon
1418	138	Magnesium alloys powder
1418	138	Magnesium powder
1419	139	Magnesium aluminum phosphide
1420	138	Potassium, metal alloys
1420	138	Potassium, metal alloys, liquid
1421	138	Alkali metal alloy, liquid, n.o.s.
1422	138	Potassium sodium alloys
1422	138	Potassium sodium alloys, liquid
1422	138	Sodium potassium alloys
1422	138	Sodium potassium alloys, liquid
1423	138	Rubidium
1423	138	Rubidium metal
1426	138	Sodium borohydride
1427	138	Sodium hydride
1428	138	Sodium
1431	138	Sodium methylate
1431	138	Sodium methylate, dry
1432	139	Sodium phosphide
1433	139	Stannic phosphides
1435	138	Zinc ashes
1435	138	Zinc dross
1435	138	Zinc residue

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1435 **138** Zinc skimmings
1436 **138** Zinc dust
1436 **138** Zinc powder
1437 **138** Zirconium hydride
1438 **140** Aluminum nitrate
1439 **141** Ammonium dichromate
1442 **143** Ammonium perchlorate
1444 **140** Ammonium persulfate
1444 **140** Ammonium persulphate
1445 **141** Barium chlorate
1445 **141** Barium chlorate, solid
1446 **141** Barium nitrate
1447 **141** Barium perchlorate
1447 **141** Barium perchlorate, solid
1448 **141** Barium permanganate
1449 **141** Barium peroxide
1450 **140** Bromates, inorganic, n.o.s.
1451 **140** Caesium nitrate
1451 **140** Cesium nitrate
1452 **140** Calcium chlorate
1453 **140** Calcium chlorite
1454 **140** Calcium nitrate
1455 **140** Calcium perchlorate
1456 **140** Calcium permanganate
1457 **140** Calcium peroxide
1458 **140** Borate and Chlorate mixture
1458 **140** Chlorate and Borate mixture
1459 **140** Chlorate and Magnesium
chloride mixture
1459 **140** Chlorate and Magnesium
chloride mixture, solid
1459 **140** Magnesium chloride and
Chlorate mixture

UN Guide **Name of Material**
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1459 **140** Magnesium chloride and
Chlorate mixture, solid
1461 **140** Chlorates, inorganic, n.o.s.
1462 **143** Chlorites, inorganic, n.o.s.
1463 **141** Chromium trioxide, anhydrous
1465 **140** Didymium nitrate
1466 **140** Ferric nitrate
1467 **143** Guanidine nitrate
1469 **141** Lead nitrate
1470 **141** Lead perchlorate
1470 **141** Lead perchlorate, solid
1471 **140** Lithium hypochlorite, dry
1471 **140** Lithium hypochlorite mixture
1471 **140** Lithium hypochlorite mixtures,
dry
1472 **143** Lithium peroxide
1473 **140** Magnesium bromate
1474 **140** Magnesium nitrate
1475 **140** Magnesium perchlorate
1476 **140** Magnesium peroxide
1477 **140** Nitrates, inorganic, n.o.s.
1479 **140** Oxidising solid, n.o.s.
1481 **140** Perchlorates, inorganic, n.o.s.
1482 **140** Permanganates, inorganic,
n.o.s.
1483 **140** Peroxides, inorganic, n.o.s.
1484 **140** Potassium bromate
1485 **140** Potassium chlorate
1486 **140** Potassium nitrate
1487 **140** Potassium nitrate and Sodium
nitrite mixture
1487 **140** Sodium nitrite and Potassium
nitrate mixture
1488 **140** Potassium nitrite

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1489	140	Potassium perchlorate
1490	140	Potassium permanganate
1491	144	Potassium peroxide
1492	140	Potassium persulfate
1492	140	Potassium persulphate
1493	140	Silver nitrate
1494	140	Sodium bromate
1495	140	Sodium chlorate
1496	143	Sodium chlorite
1498	140	Sodium nitrate
1499	140	Potassium nitrate and Sodium nitrate mixture
1499	140	Sodium nitrate and Potassium nitrate mixture
1500	141	Sodium nitrite
1502	140	Sodium perchlorate
1503	140	Sodium permanganate
1504	144	Sodium peroxide
1505	140	Sodium persulfate
1505	140	Sodium persulphate
1506	143	Strontium chlorate
1507	140	Strontium nitrate
1508	140	Strontium perchlorate
1509	143	Strontium peroxide
1510	143	Tetranitromethane
1511	140	Urea hydrogen peroxide
1512	140	Zinc ammonium nitrite
1513	140	Zinc chlorate
1514	140	Zinc nitrate
1515	140	Zinc permanganate
1516	143	Zinc peroxide
1517	113	Zirconium picramate, wetted with not less than 20% water

UN No.	Guide No.	Name of Material
1541	155	Acetone cyanohydrin, stabilised
1544	151	Alkaloids, solid, n.o.s. (poisonous)
1544	151	Alkaloid salts, solid, n.o.s. (poisonous)
1545	155	Allyl isothiocyanate, stabilised
1546	151	Ammonium arsenate
1547	153	Aniline
1548	153	Aniline hydrochloride
1549	157	Antimony compound, inorganic, solid, n.o.s.
1550	151	Antimony lactate
1551	151	Antimony potassium tartrate
1553	154	Arsenic acid, liquid
1554	154	Arsenic acid, solid
1555	151	Arsenic bromide
1556	152	Arsenic compound, liquid, n.o.s.
1556	152	Arsenic compound, liquid, n.o.s., inorganic
1556	152	MD
1556	152	Methyldichloroarsine
1556	152	PD
1557	152	Arsenic compound, solid, n.o.s.
1557	152	Arsenic compound, solid, n.o.s., inorganic
1558	152	Arsenic
1559	151	Arsenic pentoxide
1560	157	Arsenic chloride
1560	157	Arsenic trichloride
1561	151	Arsenic trioxide
1562	152	Arsenical dust
1564	154	Barium compound, n.o.s.
1565	157	Barium cyanide

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1566 **154** Beryllium compound, n.o.s.
1567 **134** Beryllium powder
1569 131 Bromoacetone
1570 **152** Brucine
1571 **113** Barium azide, wetted with not less than 50% water
1572 **151** Cacodylic acid
1573 **151** Calcium arsenate
1574 **151** Calcium arsenate and Calcium arsenite mixture, solid
1574 **151** Calcium arsenite and Calcium arsenate mixture, solid
1575 **157** Calcium cyanide
1577 **153** Chlorodinitrobenzenes, liquid
1577 **153** Chlorodinitrobenzenes, solid
1577 **153** Dinitrochlorobenzenes
1578 **152** Chloronitrobenzenes
1578 **152** Chloronitrobenzenes, solid
1579 **153** 4-Chloro-o-toluidine hydrochloride
1579 **153** 4-Chloro-o-toluidine hydrochloride, solid
1580 154 Chloropicrin
1581 123 Chloropicrin and Methyl bromide mixture
1581 123 Methyl bromide and Chloropicrin mixture
1582 119 Chloropicrin and Methyl chloride mixture
1582 119 Methyl chloride and Chloropicrin mixture
1583 154 Chloropicrin mixture, n.o.s.
1585 **151** Copper acetoarsenite
1586 **151** Copper arsenite
1587 **151** Copper cyanide

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1588 **157** Cyanides, inorganic, solid, n.o.s.
1589 125 CK
1589 125 Cyanogen chloride, stabilised
1590 **153** Dichloroanilines, liquid
1590 **153** Dichloroanilines, solid
1591 **152** o-Dichlorobenzene
1593 **160** Dichloromethane
1593 **160** Methylene chloride
1594 **152** Diethyl sulfate
1594 **152** Diethyl sulphate
1595 156 Dimethyl sulfate
1595 156 Dimethyl sulphate
1596 **153** Dinitroanilines
1597 **152** Dinitrobenzenes, liquid
1597 **152** Dinitrobenzenes, solid
1598 **153** Dinitro-o-cresol
1599 **153** Dinitrophenol, solution
1600 **152** Dinitrotoluenes, molten
1601 **151** Disinfectant, solid, poisonous, n.o.s.
1601 **151** Disinfectant, solid, toxic, n.o.s.
1602 **151** Dye, liquid, poisonous, n.o.s.
1602 **151** Dye, liquid, toxic, n.o.s.
1602 **151** Dye intermediate, liquid, poisonous, n.o.s.
1602 **151** Dye intermediate, liquid, toxic, n.o.s.
1603 **155** Ethyl bromoacetate
1604 **132** Ethylenediamine
1605 154 Ethylene dibromide
1606 **151** Ferric arsenate
1607 **151** Ferric arsenite
1608 **151** Ferrous arsenate

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1611	151	Hexaethyl tetraphosphate
1612	123	Compressed gas and hexaethyl tetraphosphate mixture
1612	123	Hexaethyl tetraphosphate and compressed gas mixture
1613	154	Hydrocyanic acid, aqueous solution, with less than 5% Hydrogen cyanide
1613	154	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide
1613	154	Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide
1614	152	Hydrogen cyanide, stabilised (absorbed)
1616	151	Lead acetate
1617	151	Lead arsenates
1618	151	Lead arsenites
1620	151	Lead cyanide
1621	151	London purple
1622	151	Magnesium arsenate
1623	151	Mercuric arsenate
1624	154	Mercuric chloride
1625	141	Mercuric nitrate
1626	157	Mercuric potassium cyanide
1627	141	Mercurous nitrate
1629	151	Mercury acetate
1630	151	Mercury ammonium chloride
1631	154	Mercury benzoate
1634	154	Mercuric bromide
1634	154	Mercurous bromide
1634	154	Mercury bromides
1636	154	Mercuric cyanide
1636	154	Mercury cyanide
1637	151	Mercury gluconate

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1638	151	Mercury iodide
1639	151	Mercury nucleate
1640	151	Mercury oleate
1641	151	Mercury oxide
1642	151	Mercuric oxycyanide
1642	151	Mercury oxycyanide, desensitised
1643	151	Mercury potassium iodide
1644	151	Mercury salicylate
1645	151	Mercuric sulfate
1645	151	Mercuric sulphate
1645	151	Mercury sulphate
1645	151	Mercury sulfate
1646	151	Mercury thiocyanate
1647	151	Ethylene dibromide and Methyl bromide mixture, liquid
1647	151	Methyl bromide and Ethylene dibromide mixture, liquid
1648	127	Acetonitrile
1649	152	Motor fuel anti-knock mixture
1650	153	beta-Naphthylamine
1650	153	beta-Naphthylamine, solid
1650	153	Naphthylamine (beta)
1650	153	Naphthylamine (beta), solid
1651	153	Naphthylthiourea
1652	153	Naphthylurea
1653	151	Nickel cyanide
1654	151	Nicotine
1655	151	Nicotine compound, solid, n.o.s.
1655	151	Nicotine preparation, solid, n.o.s.
1656	151	Nicotine hydrochloride
1656	151	Nicotine hydrochloride, liquid

UN No.	Guide No.	Name of Material
1656	151	Nicotine hydrochloride, solution
1657	151	Nicotine salicylate
1658	151	Nicotine sulfate, solid
1658	151	Nicotine sulfate, solution
1658	151	Nicotine sulphate, solid
1658	151	Nicotine sulphate, solution
1659	151	Nicotine tartrate
1660	124	Nitric oxide
1660	124	Nitric oxide, compressed
1661	153	Nitroanilines
1662	152	Nitrobenzene
1663	153	Nitrophenols
1664	152	Nitrotoluenes, liquid
1664	152	Nitrotoluenes, solid
1665	152	Nitroxylens, liquid
1665	152	Nitroxylens, solid
1669	151	Pentachloroethane
1670	157	Perchloromethyl mercaptan
1671	153	Phenol, solid
1672	151	Phenylcarbylamine chloride
1673	153	Phenylenediamines
1674	151	Phenylmercuric acetate
1677	151	Potassium arsenate
1678	154	Potassium arsenite
1679	157	Potassium cuprocyanide
1680	157	Potassium cyanide
1680	157	Potassium cyanide, solid
1683	151	Silver arsenite
1684	151	Silver cyanide
1685	151	Sodium arsenate
1686	154	Sodium arsenite, aqueous solution

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1687	153	Sodium azide
1688	152	Sodium cacodylate
1689	157	Sodium cyanide
1689	157	Sodium cyanide, solid
1690	154	Sodium fluoride
1690	154	Sodium fluoride, solid
1691	151	Strontium arsenite
1692	151	Strychnine
1692	151	Strychnine salts
1693	159	Tear gas devices
1693	159	Tear gas substance, liquid, n.o.s.
1693	159	Tear gas substance, solid, n.o.s.
1694	159	Bromobenzyl cyanides, liquid
1694	159	Bromobenzyl cyanides, solid
1694	159	CA
1695	131	Chloroacetone, stabilised
1697	153	Chloroacetophenone
1697	153	Chloroacetophenone, solid
1697	153	CN
1698	154	Adamsite
1698	154	Diphenylamine chloroarsine
1698	154	DM
1699	151	DA
1699	151	Diphenylchloroarsine, liquid
1699	151	Diphenylchloroarsine, solid
1700	159	Tear gas candles
1700	159	Tear gas grenades
1701	152	Xylyl bromide
1701	152	Xylyl bromide, liquid
1702	151	1,1,2,2-Tetrachloroethane
1702	151	Tetrachloroethane

UN No.	Guide No.	Name of Material
1704	153	Tetraethyl dithiopyrophosphate
1707	151	Thallium compound, n.o.s.
1708	153	Toluidines, liquid
1708	153	Toluidines, solid
1709	151	2,4-Toluenediamine, solid
1709	151	2,4-Toluylenediamine
1709	151	2,4-Toluylenediamine, solid
1710	160	Trichloroethylene
1711	153	Xylidines, liquid
1711	153	Xylidines, solid
1712	151	Zinc arsenate
1712	151	Zinc arsenate and Zinc arsenite mixture
1712	151	Zinc arsenite
1712	151	Zinc arsenite and Zinc arsenate mixture
1713	151	Zinc cyanide
1714	139	Zinc phosphide
1715	137	Acetic anhydride
1716	156	Acetyl bromide
1717	155	Acetyl chloride
1718	153	Acid butyl phosphate
1718	153	Butyl acid phosphate
1719	154	Caustic alkali liquid, n.o.s.
1722	155	Allyl chlorocarbonate
1722	155	Allyl chloroformate
1723	132	Allyl iodide
1724	155	Allyltrichlorosilane, stabilised
1725	137	Aluminum bromide, anhydrous
1726	137	Aluminum chloride, anhydrous
1727	154	Ammonium bifluoride, solid
1727	154	Ammonium hydrogendifluoride, solid

UN No.	Guide No.	Name of Material
1728	155	Amyltrichlorosilane
1729	156	Anisoyl chloride
1730	157	Antimony pentachloride, liquid
1731	157	Antimony pentachloride, solution
1732	157	Antimony pentafluoride
1733	157	Antimony trichloride
1733	157	Antimony trichloride, liquid
1733	157	Antimony trichloride, solid
1736	137	Benzoyl chloride
1737	156	Benzyl bromide
1738	156	Benzyl chloride
1739	137	Benzyl chloroformate
1740	154	Hydrogendifluorides, n.o.s.
1740	154	Hydrogendifluorides, solid, n.o.s.
1741	125	Boron trichloride
1742	157	Boron trifluoride acetic acid complex
1742	157	Boron trifluoride acetic acid complex, liquid
1743	157	Boron trifluoride propionic acid complex
1743	157	Boron trifluoride propionic acid complex, liquid
1744	154	Bromine
1744	154	Bromine, solution
1744	154	Bromine, solution (Inhalation Hazard Zone A)
1744	154	Bromine, solution (Inhalation Hazard Zone B)
1745	144	Bromine pentafluoride
1746	144	Bromine trifluoride
1747	155	Butyltrichlorosilane
1748	140	Calcium hypochlorite, dry

UN No.	Guide No.	Name of Material
1748	140	Calcium hypochlorite mixture, dry, with more than 39% available Chlorine (8.8% available Oxygen)
1749	124	Chlorine trifluoride
1750	153	Chloroacetic acid, solution
1751	153	Chloroacetic acid, solid
1752	156	Chloroacetyl chloride
1753	156	Chlorophenyltrichlorosilane
1754	137	Chlorosulfonic acid (with or without Sulphur trioxide mixture)
1754	137	Chlorosulphonic acid (with or without sulphur trioxide mixture)
1755	154	Chromic acid, solution
1756	154	Chromic fluoride, solid
1757	154	Chromic fluoride, solution
1758	137	Chromium oxychloride
1759	154	Corrosive solid, n.o.s.
1759	154	Ferrous chloride, solid
1760	154	Chemical kit
1760	154	Compounds, cleaning liquid (corrosive)
1760	154	Compounds, tree or weed killing, liquid (corrosive)
1760	154	Corrosive liquid, n.o.s.
1760	154	Ferrous chloride, solution
1761	154	Cupriethylenediamine, solution
1762	156	Cyclohexenyltrichlorosilane
1763	156	Cyclohexyltrichlorosilane
1764	153	Dichloroacetic acid
1765	156	Dichloroacetyl chloride
1766	156	Dichlorophenyltrichlorosilane
1767	155	Diethyldichlorosilane

UN No.	Guide No.	Name of Material
1768	154	Difluorophosphoric acid, anhydrous
1769	156	Diphenyldichlorosilane
1770	153	Diphenylmethyl bromide
1771	156	Dodecyltrichlorosilane
1773	157	Ferric chloride, anhydrous
1774	154	Fire extinguisher charges, corrosive liquid
1775	154	Fluoroboric acid
1776	154	Fluorophosphoric acid, anhydrous
1777	137	Fluorosulfonic acid
1777	137	Fluorosulphonic acid
1778	154	Fluorosilicic acid
1778	154	Hydrofluorosilicic acid
1779	153	Formic acid
1779	153	Formic acid, with more than 85% acid
1780	156	Fumaryl chloride
1781	156	Hexadecyltrichlorosilane
1782	154	Hexafluorophosphoric acid
1783	153	Hexamethylenediamine, solution
1784	156	Hexyltrichlorosilane
1786	157	Hydrofluoric acid and Sulphuric acid mixture
1786	157	Hydrofluoric acid and Sulfuric acid mixture
1786	157	Sulphuric acid and Hydrofluoric acid mixture
1786	157	Sulfuric acid and Hydrofluoric acid mixture
1787	154	Hydriodic acid
1788	154	Hydrobromic acid
1789	157	Hydrochloric acid
1789	157	Muriatic acid

UN No.	Guide No.	Name of Material
1790	157	Hydrofluoric acid
1791	154	Hypochlorite solution
1791	154	Sodium hypochlorite
1792	157	Iodine monochloride, solid
1793	153	Isopropyl acid phosphate
1794	154	Lead sulfate, with more than 3% free acid
1794	154	Lead sulphate, with more than 3% free acid
1796	157	Nitrating acid mixture with more than 50% nitric acid
1796	157	Nitrating acid mixture with not more than 50% nitric acid
1798	157	Aqua regia
1798	157	Nitrohydrochloric acid
1799	156	Nonyltrichlorosilane
1800	156	Octadecyltrichlorosilane
1801	156	Octyltrichlorosilane
1802	157	Perchloric acid, with not more than 50% acid
1803	153	Phenolsulfonic acid, liquid
1803	153	Phenolsulphonic acid, liquid
1804	156	Phenyltrichlorosilane
1805	154	Phosphoric acid, liquid
1805	154	Phosphoric acid, solid
1805	154	Phosphoric acid, solution
1806	137	Phosphorus pentachloride
1807	137	Phosphorus pentoxide
1808	137	Phosphorus tribromide
1809	137	Phosphorus trichloride
1810	137	Phosphorus oxychloride
1811	154	Potassium hydrogendifluoride
1811	154	Potassium hydrogen difluoride, solid

UN No.	Guide No.	Name of Material
1812	154	Potassium fluoride
1812	154	Potassium fluoride, solid
1813	154	Caustic potash, solid
1813	154	Potassium hydroxide, solid
1814	154	Caustic potash, solution
1814	154	Potassium hydroxide, solution
1815	132	Propionyl chloride
1816	155	Propyltrichlorosilane
1817	137	Pyrosulfuryl chloride
1817	137	Pyrosulphuryl chloride
1818	157	Silicon tetrachloride
1819	154	Sodium aluminate, solution
1823	154	Caustic soda, solid
1823	154	Sodium hydroxide, solid
1824	154	Caustic soda, solution
1824	154	Sodium hydroxide, solution
1825	157	Sodium monoxide
1826	157	Nitrating acid mixture, spent, with more than 50% nitric acid
1826	157	Nitrating acid mixture, spent, with not more than 50% nitric acid
1827	137	Stannic chloride, anhydrous
1827	137	Tin tetrachloride
1828	137	Sulfur chlorides
1828	137	Sulphur chlorides
1829	137	Sulfur trioxide, stabilised
1829	137	Sulphur trioxide, stabilised
1830	137	Sulfuric acid
1830	137	Sulfuric acid, with more than 51% acid
1830	137	Sulphuric acid
1830	137	Sulphuric acid, with more than 51% acid
1831	137	Sulfuric acid, fuming

UN No.	Guide No.	Name of Material
1831	137	Sulfuric acid, fuming, with less than 30% free Sulfur trioxide
1831	137	Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide
1831	137	Sulphuric acid, fuming
1831	137	Sulfuric acid, fuming, with less than 30% free Sulfur trioxide
1831	137	Sulfuric acid, fuming, with not less than 30% free Sulphur trioxide
1832	137	Sulfuric acid, spent
1832	137	Sulphuric acid, spent
1833	154	Sulfurous acid
1833	154	Sulphurous acid
1834	137	Sulfuryl chloride
1834	137	Sulphuryl chloride
1835	153	Tetramethylammonium hydroxide
1835	153	Tetramethylammonium hydroxide, solution
1836	137	Thionyl chloride
1837	157	Thiophosphoryl chloride
1838	137	Titanium tetrachloride
1839	153	Trichloroacetic acid
1840	154	Zinc chloride, solution
1841	171	Acetaldehyde ammonia
1843	141	Ammonium dinitro-o-cresolate
1843	141	Ammonium dinitro-o-cresolate, solid
1845	120	Carbon dioxide, solid
1845	120	Dry ice
1846	151	Carbon tetrachloride
1847	153	Potassium sulfide, hydrated, with not less than 30% water of crystallization

UN No.	Guide No.	Name of Material
1847	153	Potassium sulphide, hydrated, with not less than 30% water of crystallization
1848	153	Propionic acid
1848	153	Propionic acid, with not less than 10% and less than 90% acid
1849	153	Sodium sulfide, hydrated, with not less than 30% water
1849	153	Sodium sulphide, hydrated, with not less than 30% water
1851	151	Medicine, liquid, poisonous, n.o.s.
1851	151	Medicine, liquid, toxic, n.o.s.
1854	135	Barium alloys, pyrophoric
1855	135	Calcium, pyrophoric
1855	135	Calcium alloys, pyrophoric
1856	133	Rags, oily
1857	133	Textile waste, wet
1858	126	Hexafluoropropylene
1858	126	Hexafluoropropylene, compressed
1858	126	Refrigerant gas R-1216
1859	125	Silicon tetrafluoride
1859	125	Silicon tetrafluoride, compressed
1860	116P	Vinyl fluoride, stabilised
1862	130	Ethyl crotonate
1863	128	Fuel, aviation, turbine engine
1865	128	n-Propyl nitrate
1866	127	Resin solution
1868	134	Decaborane
1869	138	Magnesium
1869	138	Magnesium, in pellets, turnings or ribbons

UN No.	Guide No.	Name of Material
1869	138	Magnesium alloys, with more than 50% Magnesium, in pellets, turnings or ribbons
1870	138	Potassium borohydride
1871	170	Titanium hydride
1872	140	Lead dioxide
1873	143	Perchloric acid, with more than 50% but not more than 72% acid
1884	157	Barium oxide
1885	153	Benzidine
1886	156	Benzylidene chloride
1887	160	Bromochloromethane
1888	151	Chloroform
1889	157	Cyanogen bromide
1891	131	Ethyl bromide
1892	151	ED
1892	151	Ethylchloroarsine
1894	151	Phenylmercuric hydroxide
1895	151	Phenylmercuric nitrate
1897	160	Perchloroethylene
1897	160	Tetrachloroethylene
1898	156	Acetyl iodide
1902	153	Diisooctyl acid phosphate
1903	153	Disinfectant, liquid, corrosive, n.o.s.
1905	154	Selenic acid
1906	153	Acid, sludge
1906	153	Sludge acid
1907	154	Soda lime, with more than 4% Sodium hydroxide
1908	154	Chlorite solution
1910	157	Calcium oxide
1911	119	Diborane

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1911	119	Diborane, compressed
1911	119	Diborane mixtures
1912	115	Methyl chloride and Methylene chloride mixture
1912	115	Methylene chloride and Methyl chloride mixture
1913	120	Neon, refrigerated liquid (cryogenic liquid)
1914	130	Butyl propionates
1915	127	Cyclohexanone
1916	152	2,2'-Dichlorodiethyl ether
1916	152	Dichloroethyl ether
1917	129P	Ethyl acrylate, stabilised
1918	130	Cumene
1918	130	Isopropylbenzene
1919	129P	Methyl acrylate, stabilised
1920	128	Nonanes
1921	131P	Propyleneimine, stabilised
1922	132	Pyrrolidine
1923	135	Calcium dithionite
1923	135	Calcium hydrosulfite
1923	135	Calcium hydrosulphite
1928	138	Methyl magnesium bromide in Ethyl ether
1929	135	Potassium dithionite
1929	135	Potassium hydrosulfite
1929	135	Potassium hydrosulphite
1931	171	Zinc dithionite
1931	171	Zinc hydrosulfite
1931	171	Zinc hydrosulphite
1932	135	Zirconium scrap
1935	157	Cyanide solution, n.o.s.
1938	156	Bromoacetic acid
1938	156	Bromoacetic acid, solution

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1939	137	Phosphorus oxybromide
1939	137	Phosphorus oxybromide, solid
1940	153	Thioglycolic acid
1941	171	Dibromodifluoromethane
1941	171	Refrigerant gas R-12B2
1942	140	Ammonium nitrate, with not more than 0.2% combustible substances
1944	133	Matches, safety
1945	133	Matches, wax "vesta"
1950	126	Aerosols
1951	120	Argon, refrigerated liquid (cryogenic liquid)
1952	126	Carbon dioxide and Ethylene oxide mixtures, with not more than 9% Ethylene oxide
1952	126	Ethylene oxide and Carbon dioxide mixtures, with not more than 9% Ethylene oxide
1953	119	Compressed gas, poisonous, flammable, n.o.s.
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
1953	119	Compressed gas, toxic, flammable, n.o.s.
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)

1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
1954	115	Compressed gas, flammable, n.o.s.
1954	115	Dispersant gases, n.o.s. (flammable)
1954	115	Refrigerant gases, n.o.s. (flammable)
1955	123	Compressed gas, poisonous, n.o.s.
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)
1955	123	Compressed gas, toxic, n.o.s.
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)
1955	123	Organic phosphate compound mixed with compressed gas

UN No.	Guide No.	Name of Material
1955	123	Organic phosphate mixed with compressed gas
1955	123	Organic phosphorus compound mixed with compressed gas
1956	126	Compressed gas, n.o.s.
1957	115	Deuterium
1957	115	Deuterium, compressed
1958	126	1,2-Dichloro-1,1,2,2-tetrafluoroethane
1958	126	Refrigerant gas R-114
1959	116P	1,1-Difluoroethylene
1959	116P	Refrigerant gas R-1132a
1961	115	Ethane, refrigerated liquid
1961	115	Ethane-Propane mixture, refrigerated liquid
1961	115	Propane-Ethane mixture, refrigerated liquid
1962	116P	Ethylene
1962	116P	Ethylene, compressed
1963	120	Helium, refrigerated liquid (cryogenic liquid)
1964	115	Hydrocarbon gas mixture, compressed, n.o.s.
1965	115	Hydrocarbon gas mixture, liquefied, n.o.s.
1966	115	Hydrogen, refrigerated liquid (cryogenic liquid)
1967	123	Insecticide gas, poisonous, n.o.s.
1967	123	Insecticide gas, toxic, n.o.s.
1967	123	Parathion and compressed gas mixture
1968	126	Insecticide gas, n.o.s.
1969	115	Isobutane
1970	120	Krypton, refrigerated liquid (cryogenic liquid)
1971	115	Methane

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1971	115	Methane, compressed
1971	115	Natural gas, compressed
1972	115	Liquefied natural gas (cryogenic liquid)
1972	115	LNG (cryogenic liquid)
1972	115	Methane, refrigerated liquid (cryogenic liquid)
1972	115	Natural gas, refrigerated liquid (cryogenic liquid)
1973	126	Chlorodifluoromethane and Chloropentafluoroethane mixture
1973	126	Chloropentafluoroethane and Chlorodifluoromethane mixture
1973	126	Refrigerant gas R-502
1974	126	Chlorodifluorobromomethane
1974	126	Refrigerant gas R-12B1
1975	124	Dinitrogen tetroxide and Nitric oxide mixture
1975	124	Nitric oxide and Dinitrogen tetroxide mixture
1975	124	Nitric oxide and Nitrogen dioxide mixture
1975	124	Nitric oxide and Nitrogen tetroxide mixture
1975	124	Nitrogen dioxide and Nitric oxide mixture
1975	124	Nitrogen tetroxide and Nitric oxide mixture
1976	126	Octafluorocyclobutane
1976	126	Refrigerant gas RC-318
1977	120	Nitrogen, refrigerated liquid (cryogenic liquid)
1978	115	Propane
1979	120	Rare gases mixture, compressed

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1980	120	Oxygen and Rare gases mixture, compressed
1980	120	Rare gases and Oxygen mixture, compressed
1981	120	Nitrogen and Rare gases mixture, compressed
1981	120	Rare gases and Nitrogen mixture, compressed
1982	126	Refrigerant gas R-14
1982	126	Refrigerant gas R-14, compressed
1982	126	Tetrafluoromethane
1982	126	Tetrafluoromethane, compressed
1983	126	1-Chloro-2,2,2-trifluoroethane
1983	126	Refrigerant gas R-133a
1984	126	Refrigerant gas R-23
1984	126	Trifluoromethane
1986	131	Alcohols, flammable, poisonous, n.o.s.
1986	131	Alcohols, flammable, toxic, n.o.s.
1987	127	Alcohols, n.o.s.
1987	127	Denatured alcohol
1988	131P	Aldehydes, flammable, poisonous, n.o.s.
1988	131P	Aldehydes, flammable, toxic, n.o.s.
1989	129P	Aldehydes, n.o.s.
1990	171	Benzaldehyde
1991	131P	Chloroprene, stabilised
1992	131	Flammable liquid, poisonous, n.o.s.
1992	131	Flammable liquid, toxic, n.o.s.
1993	128	Combustible liquid, n.o.s.
1993	128	Compounds, cleaning liquid (flammable)

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1993	128	Compounds, tree or weed killing, liquid (flammable)
1993	128	Diesel fuel
1993	128	Flammable liquid, n.o.s.
1993	128	Fuel oil
1994	136	Iron pentacarbonyl
1999	130	Asphalt
1999	130	Asphalt, cut back
1999	130	Tars, liquid
2000	133	Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap
2001	133	Cobalt naphthenates, powder
2002	135	Celluloid, scrap
2003	135	Metal alkyls, water-reactive, n.o.s.
2003	135	Metal aryls, water-reactive, n.o.s.
2004	135	Magnesium diamide
2005	135	Magnesium diphenyl
2006	135	Plastics, nitrocellulose-based, self-heating, n.o.s.
2008	135	Zirconium powder, dry
2009	135	Zirconium, dry, finished sheets, strips or coiled wire
2010	138	Magnesium hydride
2011	139	Magnesium phosphide
2012	139	Potassium phosphide
2013	139	Strontium phosphide
2014	140	Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilised as necessary)
2015	143	Hydrogen peroxide, aqueous solution, stabilised, with more than 60% Hydrogen peroxide

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2015	143	Hydrogen peroxide, stabilised
2016	151	Ammunition, poisonous, non-explosive
2016	151	Ammunition, toxic, non-explosive
2017	159	Ammunition, tear-producing, non-explosive
2018	152	Chloroanilines, solid
2019	152	Chloroanilines, liquid
2020	153	Chlorophenols, solid
2021	153	Chlorophenols, liquid
2022	153	Cresylic acid
2023	131P	1-Chloro-2,3-epoxypropane
2023	131P	Epichlorohydrin
2024	151	Mercury compound, liquid, n.o.s.
2025	151	Mercury compound, solid, n.o.s.
2026	151	Phenylmercuric compound, n.o.s.
2027	151	Sodium arsenite, solid
2028	153	Bombs, smoke, non-explosive, with corrosive liquid, without initiating device
2029	132	Hydrazine, anhydrous
2030	153	Hydrazine, aqueous solution, with more than 37% Hydrazine
2030	153	Hydrazine, aqueous solution, with not less than 37% but not more than 64% Hydrazine
2030	153	Hydrazine hydrate
2031	157	Nitric acid, other than red fuming, with more than 70% nitric acid
2031	157	Nitric acid, other than red fuming, with not more than 70% nitric acid
2032	157	Nitric acid, red fuming
2033	154	Potassium monoxide

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2034	115	Hydrogen and Methane mixture, compressed
2034	115	Methane and Hydrogen mixture, compressed
2035	115	Refrigerant gas R-143a
2035	115	1,1,1-Trifluoroethane
2036	120	Xenon
2036	120	Xenon, compressed
2037	115	Gas cartridges
2037	115	Receptacles, small, containing gas
2038	152	Dinitrotoluenes
2038	152	Dinitrotoluenes, liquid
2038	152	Dinitrotoluenes, solid
2044	115	2,2-Dimethylpropane
2045	130	Isobutyl aldehyde
2045	130	Isobutyraldehyde
2046	130	Cymenes
2047	129	Dichloropropenes
2048	130P	Dicyclopentadiene
2049	130	Diethylbenzene
2050	128	Diisobutylene, isomeric compounds
2051	132	2-Dimethylaminoethanol
2052	128	Dipentene
2053	129	Methylamyl alcohol
2053	129	Methyl isobutyl carbinol
2053	129	M.I.B.C.
2054	132	Morpholine
2055	128P	Styrene monomer, stabilised
2056	127	Tetrahydrofuran
2057	128	Tripropylene
2058	129	Valeraldehyde

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2059 **127** Nitrocellulose, solution, flammable

2067 **140** Ammonium nitrate based fertilizer

2068 **140** Ammonium nitrate fertilizers, with Calcium carbonate

2069 **140** Ammonium nitrate fertilizers, with Ammonium sulphate

2069 **140** Ammonium nitrate fertilizers, with Ammonium sulphate

2070 **143** Ammonium nitrate fertilizers, with Phosphate or Potash

2071 **140** Ammonium nitrate based fertilizer

2072 **140** Ammonium nitrate fertilizer, n.o.s.

2073 **125** Ammonia, solution, with more than 35% but not more than 50% Ammonia

2074 **153P** Acrylamide

2074 **153P** Acrylamide, solid

2075 **153** Chloral, anhydrous, stabilised

2076 **153** Cresols, liquid

2076 **153** Cresols, solid

2077 **153** alpha-Naphthylamine

2077 **153** Naphthylamine (alpha)

2078 **156** Toluene diisocyanate

2079 **154** Diethylenetriamine

2186 125 Hydrogen chloride, refrigerated liquid

2187 **120** Carbon dioxide, refrigerated liquid

2188 119 Arsine

2188 119 SA

2189 119 Dichlorosilane

2190 124 Oxygen difluoride

2190 124 Oxygen difluoride, compressed

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2191 123 Sulfuryl fluoride

2191 123 Sulphuryl fluoride

2192 119 Germane

2193 **126** Hexafluoroethane

2193 **126** Hexafluoroethane, compressed

2193 **126** Refrigerant gas R-116

2193 **126** Refrigerant gas R-116, compressed

2194 125 Selenium hexafluoride

2195 125 Tellurium hexafluoride

2196 125 Tungsten hexafluoride

2197 125 Hydrogen iodide, anhydrous

2198 125 Phosphorus pentafluoride

2198 125 Phosphorus pentafluoride, compressed

2199 119 Phosphine

2200 **116P** Propadiene, stabilised

2201 **122** Nitrous oxide, refrigerated liquid

2202 117 Hydrogen selenide, anhydrous

2203 **116** Silane

2203 **116** Silane, compressed

2204 119 Carbonyl sulfide

2204 119 Carbonyl sulphide

2205 **153** Adiponitrile

2206 **155** Isocyanate solution, poisonous, n.o.s.

2206 **155** Isocyanate solution, toxic, n.o.s.

2206 **155** Isocyanates, poisonous, n.o.s.

2206 **155** Isocyanates, toxic, n.o.s.

2208 **140** Bleaching powder

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2208	140	Calcium hypochlorite mixture, dry, with more than 10% but not more than 39% available Chlorine
2209	153	Formaldehyde, solution (corrosive)
2209	153	Formalin (corrosive)
2210	135	Maneb
2210	135	Maneb preparation, with not less than 60% Maneb
2211	171	Polymeric beads, expandable
2211	171	Polystyrene beads, expandable
2212	171	Asbestos
2212	171	Asbestos, amphibole
2212	171	Asbestos, blue
2212	171	Asbestos, brown
2212	171	Blue asbestos
2212	171	Brown asbestos
2213	133	Paraformaldehyde
2214	156	Phthalic anhydride
2215	156	Maleic anhydride
2215	156	Maleic anhydride, molten
2216	171	Fish meal, stabilised
2216	171	Fish scrap, stabilised
2217	135	Seed cake, with not more than 1.5% oil and not more than 11% moisture
2218	132P	Acrylic acid, stabilised
2219	129	Allyl glycidyl ether
2222	128	Anisole
2224	152	Benzonitrile
2225	156	Benzenesulfonyl chloride
2225	156	Benzenesulphonyl chloride
2226	156	Benzotrichloride
2227	130P	n-Butyl methacrylate, stabilised

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2232	153	Chloroacetaldehyde
2232	153	2-Chloroethanal
2233	152	Chloroanisidines
2234	130	Chlorobenzotrifluorides
2235	153	Chlorobenzyl chlorides
2235	153	Chlorobenzyl chlorides, liquid
2236	156	3-Chloro-4-methylphenyl isocyanate
2236	156	3-Chloro-4-methylphenyl isocyanate, liquid
2237	153	Chloronitroanilines
2238	129	Chlorotoluenes
2239	153	Chlorotoluidines
2239	153	Chlorotoluidines, solid
2240	154	Chromosulfuric acid
2240	154	Chromosulphuric acid
2241	128	Cycloheptane
2242	128	Cycloheptene
2243	130	Cyclohexyl acetate
2244	129	Cyclopentanol
2245	128	Cyclopentanone
2246	128	Cyclopentene
2247	128	n-Decane
2248	132	Di-n-butylamine
2249	131	Dichlorodimethyl ether, symmetrical
2250	156	Dichlorophenyl isocyanates
2251	128P	Bicyclo[2.2.1]hepta-2,5-diene, stabilised
2251	128P	2,5-Norbornadiene, stabilised
2252	127	1,2-Dimethoxyethane
2253	153	N,N-Dimethylaniline
2254	133	Matches, fusee
2256	130	Cyclohexene

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2257 **138** Potassium
2257 **138** Potassium, metal
2258 **132** 1,2-Propylenediamine
2259 **153** Triethylenetetramine
2260 **132** Tripropylamine
2261 **153** Xylenols
2261 **153** Xylenols, solid
2262 **156** Dimethylcarbamoyl chloride
2263 **128** Dimethylcyclohexanes
2264 **132** N,N-Dimethylcyclohexylamine
2264 **132** Dimethylcyclohexylamine
2265 **129** N,N-Dimethylformamide
2266 **132** Dimethyl-N-propylamine
2267 **156** Dimethyl thiophosphoryl chloride
2269 **153** 3,3'-Iminodipropylamine
2270 **132** Ethylamine, aqueous solution,
with not less than 50% but not
more than 70% Ethylamine
2271 **128** Ethyl amyl ketone
2272 **153** N-Ethylaniline
2273 **153** 2-Ethylaniline
2274 **153** N-Ethyl-N-benzylaniline
2275 **129** 2-Ethylbutanol
2276 **132** 2-Ethylhexylamine
2277 **130P** Ethyl methacrylate
2277 **130P** Ethyl methacrylate, stabilised
2278 **128** n-Heptene
2279 **151** Hexachlorobutadiene
2280 **153** Hexamethylenediamine, solid
2281 **156** Hexamethylene diisocyanate
2282 **129** Hexanols
2283 **130P** Isobutyl methacrylate,
stabilised

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2284 **131** Isobutyronitrile
2285 156 Isocyanatobenzotrifluorides
2286 **128** Pentamethylheptane
2287 **128** Isoheptenes
2288 **128** Isohexenes
2289 **153** Isophoronediamine
2290 **156** IPDI
2290 **156** Isophorone diisocyanate
2291 **151** Lead compound, soluble, n.o.s.
2293 **128** 4-Methoxy-4-methylpentan-
2-one
2294 **153** N-Methylaniline
2295 **155** Methyl chloroacetate
2296 **128** Methylcyclohexane
2297 **128** Methylcyclohexanone
2298 **128** Methylcyclopentane
2299 **155** Methyl dichloroacetate
2300 **153** 2-Methyl-5-ethylpyridine
2301 **128** 2-Methylfuran
2302 **127** 5-Methylhexan-2-one
2303 **128** Isopropenylbenzene
2304 **133** Naphthalene, molten
2305 **153** Nitrobenzenesulfonic acid
2305 **153** Nitrobenzenesulphonic acid
2306 **152** Nitrobenzotrifluorides
2306 **152** Nitrobenzotrifluorides, liquid
2307 **152** 3-Nitro-4-chlorobenzotrifluoride
2308 157 Nitrosylsulfuric acid, liquid
2308 157 Nitrosylsulfuric acid, solid
2308 157 Nitrosylsulphuric acid, liquid
2308 157 Nitrosylsulphuric acid, solid
2309 128P Octadiene

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2310 **131** Pentane-2,4-dione
2311 **153** Phenetidines
2312 **153** Phenol, molten
2313 **129** Picolines
2315 **171** Articles containing
Polychlorinated biphenyls
(PCB)
2315 **171** PCB
2315 **171** Polychlorinated biphenyls
2315 **171** Polychlorinated biphenyls,
liquid
2316 **157** Sodium cuprocyanide, solid
2317 **157** Sodium cuprocyanide, solution
2318 **135** Sodium hydrosulfide, with
less than 25% water of
crystallization
2318 **135** Sodium hydrosulphide, with
less than 25% water of
crystallization
2319 **128** Terpene hydrocarbons, n.o.s.
2320 **153** Tetraethylenepentamine
2321 **153** Trichlorobenzenes, liquid
2322 **152** Trichlorobutene
2323 **130** Triethyl phosphite
2324 **128** Triisobutylene
2325 **129** 1,3,5-Trimethylbenzene
2326 **153** Trimethylcyclohexylamine
2327 **153** Trimethylhexamethylenediamines
2328 **156** Trimethylhexamethylene
diisocyanate
2329 **130** Trimethyl phosphite
2330 **128** Undecane
2331 **154** Zinc chloride, anhydrous
2332 **129** Acetaldehyde oxime
2333 **131** Allyl acetate

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2334 **131** Allylamine
2335 **131** Allyl ethyl ether
2336 **131** Allyl formate
2337 **131** Phenyl mercaptan
2338 **127** Benzotrifluoride
2339 **130** 2-Bromobutane
2340 **130** 2-Bromoethyl ethyl ether
2341 **130** 1-Bromo-3-methylbutane
2342 **130** Bromomethylpropanes
2343 **130** 2-Bromopentane
2344 **129** Bromopropanes
2345 **130** 3-Bromopropyne
2346 **127** Butanedione
2346 **127** Diacetyl
2347 **130** Butyl mercaptan
2348 **129P** Butyl acrylates, stabilised
2350 **127** Butyl methyl ether
2351 **129** Butyl nitrites
2352 **127P** Butyl vinyl ether, stabilised
2353 **132** Butyryl chloride
2354 **131** Chloromethyl ethyl ether
2356 **129** 2-Chloropropane
2357 **132** Cyclohexylamine
2358 **128P** Cyclooctatetraene
2359 **132** Diallylamine
2360 **131P** Diallyl ether
2361 **132** Diisobutylamine
2362 **130** 1,1-Dichloroethane
2363 **129** Ethyl mercaptan
2364 **128** n-Propyl benzene
2366 **128** Diethyl carbonate
2367 **130** alpha-Methylvaleraldehyde

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2367 **130** Methyl valeraldehyde (alpha)
2368 **128** alpha-Pinene
2368 **128** Pinene (alpha)
2370 **128** 1-Hexene
2371 **128** Isopentenes
2372 **129** 1,2-Di-(dimethylamino)ethane
2373 **127** Diethoxymethane
2374 **127** 3,3-Diethoxypropene
2375 **129** Diethyl sulfide
2375 **129** Diethyl sulphide
2376 **127** 2,3-Dihydropyran
2377 **127** 1,1-Dimethoxyethane
2378 **131** 2-Dimethylaminoacetonitrile
2379 **132** 1,3-Dimethylbutylamine
2380 **127** Dimethyldiethoxysilane
2381 **131** Dimethyl disulfide
2381 **131** Dimethyl disulphide
2382 **131** Dimethylhydrazine, symmetrical
2383 **132** Dipropylamine
2384 **127** Di-n-propyl ether
2385 **129** Ethyl isobutyrate
2386 **132** 1-Ethylpiperidine
2387 **130** Fluorobenzene
2388 **130** Fluorotoluenes
2389 **128** Furan
2390 **129** 2-Iodobutane
2391 **129** Iodomethylpropanes
2392 **129** Iodopropanes
2393 **129** Isobutyl formate
2394 **129** Isobutyl propionate
2395 **132** Isobutyryl chloride
2396 **131P** Methacrylaldehyde, stabilised

2397 **127** 3-Methylbutan-2-one
2398 **127** Methyl tert-butyl ether
2399 **132** 1-Methylpiperidine
2400 **130** Methyl isovalerate
2401 **132** Piperidine
2402 **130** Propanethiols
2403 **129P** Isopropenyl acetate
2404 **131** Propionitrile
2405 **129** Isopropyl butyrate
2406 **127** Isopropyl isobutyrate
2407 **155** Isopropyl chloroformate
2409 **129** Isopropyl propionate
2410 **129** 1,2,3,6-Tetrahydropyridine
2411 **131** Butyronitrile
2412 **130** Tetrahydrothiophene
2413 **128** Tetrapropyl orthotitanate
2414 **130** Thiophene
2416 **129** Trimethyl borate
2417 **125** Carbonyl fluoride
2417 **125** Carbonyl fluoride, compressed
2418 **125** Sulfur tetrafluoride
2418 **125** Sulphur tetrafluoride
2419 **116** Bromotrifluoroethylene
2420 **125** Hexafluoroacetone
2421 **124** Nitrogen trioxide
2422 **126** Octafluorobut-2-ene
2422 **126** Refrigerant gas R-1318
2424 **126** Octafluoropropane
2424 **126** Refrigerant gas R-218
2426 **140** Ammonium nitrate, liquid (hot concentrated solution)
2427 **140** Potassium chlorate, aqueous solution

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2428	140	Sodium chlorate, aqueous solution
2429	140	Calcium chlorate, aqueous solution
2430	153	Alkylphenols, solid, n.o.s. (including C2-C12 homologues)
2431	153	Anisidines
2431	153	Anisidines, liquid
2431	153	Anisidines, solid
2432	153	N,N-Diethylaniline
2433	152	Chloronitrotoluenes, liquid
2433	152	Chloronitrotoluenes, solid
2434	156	Dibenzylchlorosilane
2435	156	Ethylphenylchlorosilane
2436	129	Thioacetic acid
2437	156	Methylphenylchlorosilane
2438	131	Trimethylacetyl chloride
2439	154	Sodium hydrogendifluoride
2440	154	Stannic chloride, pentahydrate
2441	135	Titanium trichloride, pyrophoric
2441	135	Titanium trichloride mixture, pyrophoric
2442	156	Trichloroacetyl chloride
2443	137	Vanadium oxytrichloride
2444	137	Vanadium tetrachloride
2445	135	Lithium alkyls
2445	135	Lithium alkyls, liquid
2446	153	Nitrocresols
2446	153	Nitrocresols, solid
2447	136	Phosphorus, white, molten
2447	136	White phosphorus, molten
2448	133	Molten Sulfur
2448	133	Molten sulphur

UN No.	Guide No.	Name of Material
2448	133	Sulfur, molten
2448	133	Sulphur, molten
2451	122	Nitrogen trifluoride
2451	122	Nitrogen trifluoride, compressed
2452	116P	Ethylacetylene, stabilised
2453	115	Ethyl fluoride
2453	115	Refrigerant gas R-161
2454	115	Methyl fluoride
2454	115	Refrigerant gas R-41
2455	116	Methyl nitrite
2456	130P	2-Chloropropene
2457	128	2,3-Dimethylbutane
2458	130	Hexadiene
2459	128	2-Methyl-1-butene
2460	128	2-Methyl-2-butene
2461	128	Methylpentadiene
2463	138	Aluminum hydride
2464	141	Beryllium nitrate
2465	140	Dichloroisocyanuric acid, dry
2465	140	Dichloroisocyanuric acid salts
2465	140	Sodium dichloroisocyanurate
2465	140	Sodium dichloro-s-triazinetriene
2466	143	Potassium superoxide
2468	140	Trichloroisocyanuric acid, dry
2469	140	Zinc bromate
2470	152	Phenylacetoneitrile, liquid
2471	154	Osmium tetroxide
2473	154	Sodium arsanilate
2474	157	Thiophosgene
2475	157	Vanadium trichloride
2477	131	Methyl isothiocyanate

UN No.	Guide No.	Name of Material
2478	155	Isocyanate solution, flammable, poisonous, n.o.s.
2478	155	Isocyanate solution, flammable, toxic, n.o.s.
2478	155	Isocyanates, flammable, poisonous, n.o.s.
2478	155	Isocyanates, flammable, toxic, n.o.s.
2480	155P	Methyl isocyanate
2481	155	Ethyl isocyanate
2482	155P	n-Propyl isocyanate
2483	155P	Isopropyl isocyanate
2484	155	tert-Butyl isocyanate
2485	155P	n-Butyl isocyanate
2486	155P	Isobutyl isocyanate
2487	155	Phenyl isocyanate
2488	155	Cyclohexyl isocyanate
2490	153	Dichloroisopropyl ether
2491	153	Ethanolamine
2491	153	Ethanolamine, solution
2491	153	Monoethanolamine
2493	132	Hexamethyleneimine
2495	144	Iodine pentafluoride
2496	156	Propionic anhydride
2498	129	1,2,3,6-Tetrahydrobenzaldehyde
2501	152	Tris-(1-aziridinyl)phosphine oxide, solution
2502	132	Valeryl chloride
2503	137	Zirconium tetrachloride
2504	159	Acetylene tetrabromide
2504	159	Tetrabromoethane
2505	154	Ammonium fluoride
2506	154	Ammonium hydrogen sulfate
2506	154	Ammonium hydrogen sulphate

UN No.	Guide No.	Name of Material
2507	154	Chloroplatinic acid, solid
2508	156	Molybdenum pentachloride
2509	154	Potassium hydrogen sulfate
2509	154	Potassium hydrogen sulphate
2511	153	2-Chloropropionic acid
2511	153	2-Chloropropionic acid, solid
2511	153	2-Chloropropionic acid, solution
2512	152	Aminophenols
2513	156	Bromoacetyl bromide
2514	130	Bromobenzene
2515	159	Bromoform
2516	151	Carbon tetrabromide
2517	115	1-Chloro-1,1-difluoroethane
2517	115	Difluorochloroethanes
2517	115	Refrigerant gas R-142b
2518	153	1,5,9-Cyclododecatriene
2520	130P	Cyclooctadienes
2521	131P	Diketene, stabilised
2522	153P	2-Dimethylaminoethyl methacrylate
2524	129	Ethyl orthoformate
2525	156	Ethyl oxalate
2526	132	Furfurylamine
2527	129P	Isobutyl acrylate, stabilised
2528	130	Isobutyl isobutyrate
2529	132	Isobutyric acid
2531	153P	Methacrylic acid, stabilised
2533	156	Methyl trichloroacetate
2534	119	Methylchlorosilane
2535	132	4-Methylmorpholine
2535	132	N-Methylmorpholine
2536	127	Methyltetrahydrofuran
2538	133	Nitronaphthalene

UN No.	Guide No.	Name of Material
2541	128	Terpinolene
2542	153	Tributylamine
2545	135	Hafnium powder, dry
2546	135	Titanium powder, dry
2547	143	Sodium superoxide
2548	124	Chlorine pentafluoride
2552	151	Hexafluoroacetone hydrate
2552	151	Hexafluoroacetone hydrate, liquid
2554	130P	Methylallyl chloride
2555	113	Nitrocellulose with water, not less than 25% water
2556	113	Nitrocellulose with alcohol
2556	113	Nitrocellulose with not less than 25% alcohol
2557	133	Nitrocellulose mixture, without pigment
2557	133	Nitrocellulose mixture, without plasticizer
2557	133	Nitrocellulose mixture, with pigment
2557	133	Nitrocellulose mixture, with plasticizer
2558	131	Epibromohydrin
2560	129	2-Methylpentan-2-ol
2561	128	3-Methyl-1-butene
2564	153	Trichloroacetic acid, solution
2565	153	Dicyclohexylamine
2567	154	Sodium pentachlorophenate
2570	154	Cadmium compound
2571	156	Alkylsulfuric acids
2571	156	Alkylsulphuric acids
2572	153	Phenylhydrazine
2573	141	Thallium chlorate
2574	151	Tricresyl phosphate

UN No.	Guide No.	Name of Material
2576	137	Phosphorus oxybromide, molten
2577	156	Phenylacetyl chloride
2578	157	Phosphorus trioxide
2579	153	Piperazine
2580	154	Aluminum bromide, solution
2581	154	Aluminum chloride, solution
2582	154	Ferric chloride, solution
2583	153	Alkyl sulfonic acids, solid, with more than 5% free Sulfuric acid
2583	153	Alkyl sulphonic acids, solid, with more than 5% free Sulphuric acid
2583	153	Aryl sulfonic acids, solid, with more than 5% free Sulfuric acid
2583	153	Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid
2584	153	Alkyl sulfonic acids, liquid, with more than 5% free Sulfuric acid
2584	153	Alkyl sulphonic acids, liquid, with more than 5% free Sulphuric acid
2584	153	Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid
2584	153	Aryl sulphonic acids, liquid, with more than 5% free Sulphuric acid
2585	153	Alkyl sulfonic acids, solid, with not more than 5% free Sulfuric acid
2585	153	Alkyl sulphonic acids, solid, with not more than 5% free Sulphuric acid
2585	153	Aryl sulfonic acids, solid, with not more than 5% free Sulfuric acid

UN No.	Guide No.	Name of Material
2585	153	Aryl sulphonic acids, solid, with not more than 5% free Sulphuric acid
2586	153	Alkyl sulfonic acids, liquid, with not more than 5% free Sulfuric acid
2586	153	Alkyl sulphonic acids, liquid, with not more than 5% free Sulphuric acid
2586	153	Aryl sulfonic acids, liquid, with not more than 5% free Sulfuric acid
2586	153	Aryl sulphonic acids, liquid, with not more than 5% free Sulphuric acid
2587	153	Benzoquinone
2588	151	Pesticide, solid, poisonous, n.o.s.
2588	151	Pesticide, solid, toxic, n.o.s.
2589	155	Vinyl chloroacetate
2590	171	Asbestos, chrysolite
2590	171	Asbestos, white
2590	171	White asbestos
2591	120	Xenon, refrigerated liquid (cryogenic liquid)
2599	126	Chlorotrifluoromethane and Trifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane
2599	126	Refrigerant gas R-503
2599	126	Trifluoromethane and Chlorotrifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane
2600	119	Carbon monoxide and Hydrogen mixture, compressed
2600	119	Hydrogen and Carbon monoxide mixture, compressed
2601	115	Cyclobutane

UN No.	Guide No.	Name of Material
2602	126	Dichlorodifluoromethane and Difluoroethane azeotropic mixture with approximately 74% Dichlorodifluoromethane
2602	126	Difluoroethane and Dichlorodifluoromethane azeotropic mixture with approximately 74% Dichlorodifluoromethane
2602	126	Refrigerant gas R-500
2603	131	Cycloheptatriene
2604	132	Boron trifluoride diethyl etherate
2605	155	Methoxymethyl isocyanate
2606	155	Methyl orthosilicate
2607	129P	Acrolein dimer, stabilised
2608	129	Nitropropanes
2609	156	Triallyl borate
2610	132	Triallylamine
2611	131	Propylene chlorohydrin
2612	127	Methyl propyl ether
2614	129	Methallyl alcohol
2615	127	Ethyl propyl ether
2616	129	Triisopropyl borate
2617	129	Methylcyclohexanols
2618	130P	Vinyltoluenes, stabilised
2619	132	Benzyl dimethylamine
2620	130	Amyl butyrates
2621	127	Acetyl methyl carbinol
2622	131P	Glycidaldehyde
2623	133	Firelighters, solid, with flammable liquid
2624	138	Magnesium silicide
2626	140	Chloric acid, aqueous solution, with not more than 10% Chloric acid

UN No.	Guide No.	Name of Material
2627	140	Nitrites, inorganic, n.o.s.
2628	151	Potassium fluoroacetate
2629	151	Sodium fluoroacetate
2630	151	Selenates
2630	151	Selenites
2642	154	Fluoroacetic acid
2643	155	Methyl bromoacetate
2644	151	Methyl iodide
2645	153	Phenacyl bromide
2646	151	Hexachlorocyclopentadiene
2647	153	Malononitrile
2648	154	1,2-Dibromobutan-3-one
2649	153	1,3-Dichloroacetone
2650	153	1,1-Dichloro-1-nitroethane
2651	153	4,4'-Diaminodiphenylmethane
2653	156	Benzyl iodide
2655	151	Potassium fluorosilicate
2655	151	Potassium silicofluoride
2656	154	Quinoline
2657	153	Selenium disulfide
2657	153	Selenium disulphide
2659	151	Sodium chloroacetate
2660	153	Mononitrotoluidines
2660	153	Nitrotoluidines (mono)
2661	153	Hexachloroacetone
2662	153	Hydroquinone
2664	160	Dibromomethane
2667	152	Butyltoluenes
2668	131	Chloroacetonitrile
2669	152	Chlorocresols
2669	152	Chlorocresols, solution
2670	157	Cyanuric chloride

UN No.	Guide No.	Name of Material
2671	153	Aminopyridines
2672	154	Ammonia, solution, with more than 10% but not more than 35% Ammonia
2672	154	Ammonium hydroxide
2672	154	Ammonium hydroxide, with more than 10% but not more than 35% Ammonia
2673	151	2-Amino-4-chlorophenol
2674	154	Sodium fluorosilicate
2674	154	Sodium silicofluoride
2676	119	Stibine
2677	154	Rubidium hydroxide, solution
2678	154	Rubidium hydroxide
2678	154	Rubidium hydroxide, solid
2679	154	Lithium hydroxide, solution
2680	154	Lithium hydroxide
2680	154	Lithium hydroxide, monohydrate
2681	154	Caesium hydroxide, solution
2681	154	Cesium hydroxide, solution
2682	157	Caesium hydroxide
2682	157	Cesium hydroxide
2683	132	Ammonium sulfide, solution
2683	132	Ammonium sulphide, solution
2684	132	3-Diethylaminopropylamine
2684	132	Diethylaminopropylamine
2685	132	N,N-Diethylethylenediamine
2686	132	2-Diethylaminoethanol
2687	133	Dicyclohexylammonium nitrite
2688	159	1-Bromo-3-chloropropane
2689	153	Glycerol alpha-monochlorohydrin
2690	152	N,n-Butylimidazole
2691	137	Phosphorus pentabromide

UN No.	Guide No.	Name of Material
2692	157	Boron tribromide
2693	154	Bisulfites, aqueous solution, n.o.s.
2693	154	Bisulphites, aqueous solution, n.o.s.
2698	156	Tetrahydrophthalic anhydrides
2699	154	Trifluoroacetic acid
2705	153P	1-Pentol
2707	127	Dimethyldioxanes
2709	128	Butylbenzenes
2710	128	Dipropyl ketone
2713	153	Acridine
2714	133	Zinc resinate
2715	133	Aluminum resinate
2716	153	1,4-Butynediol
2717	133	Camphor
2717	133	Camphor, synthetic
2719	141	Barium bromate
2720	141	Chromium nitrate
2721	140	Copper chlorate
2722	140	Lithium nitrate
2723	140	Magnesium chlorate
2724	140	Manganese nitrate
2725	140	Nickel nitrate
2726	140	Nickel nitrite
2727	141	Thallium nitrate
2728	140	Zirconium nitrate
2729	152	Hexachlorobenzene
2730	152	Nitroanisoles, liquid
2730	152	Nitroanisoles, solid
2732	152	Nitrobromobenzenes, liquid
2732	152	Nitrobromobenzenes, solid

UN No.	Guide No.	Name of Material
2733	132	Amines, flammable, corrosive, n.o.s.
2733	132	Polyalkylamines, n.o.s.
2733	132	Polyamines, flammable, corrosive, n.o.s.
2734	132	Amines, liquid, corrosive, flammable, n.o.s.
2734	132	Polyalkylamines, n.o.s.
2734	132	Polyamines, liquid, corrosive, flammable, n.o.s.
2735	153	Amines, liquid, corrosive, n.o.s.
2735	153	Polyalkylamines, n.o.s.
2735	153	Polyamines, liquid, corrosive, n.o.s.
2738	153	N-Butylaniline
2739	156	Butyric anhydride
2740	155	n-Propyl chloroformate
2741	141	Barium hypochlorite, with more than 22% available Chlorine
2742	155	sec-Butyl chloroformate
2742	155	Chloroformates, poisonous, corrosive, flammable, n.o.s.
2742	155	Chloroformates, toxic, corrosive, flammable, n.o.s.
2742	155	Isobutyl chloroformate
2743	155	n-Butyl chloroformate
2744	155	Cyclobutyl chloroformate
2745	157	Chloromethyl chloroformate
2746	156	Phenyl chloroformate
2747	156	tert-Butylcyclohexyl chloroformate
2748	156	2-Ethylhexyl chloroformate
2749	130	Tetramethylsilane
2750	153	1,3-Dichloropropanol-2
2751	155	Diethylthiophosphoryl chloride
2752	127	1,2-Epoxy-3-ethoxypropane

UN No.	Guide No.	Name of Material
2753	153	N-Ethylbenzyltoluidines, liquid
2753	153	N-Ethylbenzyltoluidines, solid
2754	153	N-Ethyltoluidines
2757	151	Carbamate pesticide, solid, poisonous
2757	151	Carbamate pesticide, solid, toxic
2758	131	Carbamate pesticide, liquid, flammable, poisonous
2758	131	Carbamate pesticide, liquid, flammable, toxic
2759	151	Arsenical pesticide, solid, poisonous
2759	151	Arsenical pesticide, solid, toxic
2760	131	Arsenical pesticide, liquid, flammable, poisonous
2760	131	Arsenical pesticide, liquid, flammable, toxic
2761	151	Organochlorine pesticide, solid, poisonous
2761	151	Organochlorine pesticide, solid, toxic
2762	131	Organochlorine pesticide, liquid, flammable, poisonous
2762	131	Organochlorine pesticide, liquid, flammable, toxic
2763	151	Triazine pesticide, solid, poisonous
2763	151	Triazine pesticide, solid, toxic
2764	131	Triazine pesticide, liquid, flammable, poisonous
2764	131	Triazine pesticide, liquid, flammable, toxic
2771	151	Thiocarbamate pesticide, solid, poisonous
2771	151	Thiocarbamate pesticide, solid, toxic
2772	131	Thiocarbamate pesticide, liquid, flammable, poisonous

UN No.	Guide No.	Name of Material
2772	131	Thiocarbamate pesticide, liquid, flammable, toxic
2775	151	Copper based pesticide, solid, poisonous
2775	151	Copper based pesticide, solid, toxic
2776	131	Copper based pesticide, liquid, flammable, poisonous
2776	131	Copper based pesticide, liquid, flammable, toxic
2777	151	Mercury based pesticide, solid, poisonous
2777	151	Mercury based pesticide, solid, toxic
2778	131	Mercury based pesticide, liquid, flammable, poisonous
2778	131	Mercury based pesticide, liquid, flammable, toxic
2779	153	Substituted nitrophenol pesticide, solid, poisonous
2779	153	Substituted nitrophenol pesticide, solid, toxic
2780	131	Substituted nitrophenol pesticide, liquid, flammable, poisonous
2780	131	Substituted nitrophenol pesticide, liquid, flammable, toxic
2781	151	Bipyridilium pesticide, solid, poisonous
2781	151	Bipyridilium pesticide, solid, toxic
2782	131	Bipyridilium pesticide, liquid, flammable, poisonous
2782	131	Bipyridilium pesticide, liquid, flammable, toxic
2783	152	Organophosphorus pesticide, solid, poisonous
2783	152	Organophosphorus pesticide, solid, toxic

UN No.	Guide No.	Name of Material
2784	131	Organophosphorus pesticide, liquid, flammable, poisonous
2784	131	Organophosphorus pesticide, liquid, flammable, toxic
2785	152	4-Thiapentanal
2786	153	Organotin pesticide, solid, poisonous
2786	153	Organotin pesticide, solid, toxic
2787	131	Organotin pesticide, liquid, flammable, poisonous
2787	131	Organotin pesticide, liquid, flammable, toxic
2788	153	Organotin compound, liquid, n.o.s.
2789	132	Acetic acid, glacial
2789	132	Acetic acid, solution, more than 80% acid
2790	153	Acetic acid, solution, more than 10% but not more than 80% acid
2793	170	Ferrous metal borings, shavings, turnings or cuttings
2794	154	Batteries, wet, filled with acid
2795	154	Batteries, wet, filled with alkali
2796	157	Battery fluid, acid
2796	157	Sulfuric acid, with not more than 51% acid
2796	157	Sulphuric acid, with not more than 51% acid
2797	154	Battery fluid, alkali
2798	137	Benzene phosphorus dichloride
2798	137	Phenylphosphorus dichloride
2799	137	Benzene phosphorus thiodichloride
2799	137	Phenylphosphorus thiodichloride
2800	154	Batteries, wet, non-spillable
2801	154	Dye, liquid, corrosive, n.o.s.

UN No.	Guide No.	Name of Material
2801	154	Dye intermediate, liquid, corrosive, n.o.s.
2802	154	Copper chloride
2803	172	Gallium
2805	138	Lithium hydride, fused solid
2806	139	Lithium nitride
2807	171	Magnetized material
2809	172	Mercury
2809	172	Mercury metal
2810	153	Buzz
2810	153	BZ
2810	153	Compounds, tree or weed killing, liquid (toxic)
2810	153	CS
2810	153	DC
2810	153	GA
2810	153	GB
2810	153	GD
2810	153	GF
2810	153	H
2810	153	HD
2810	153	HL
2810	153	HN-1
2810	153	HN-2
2810	153	HN-3
2810	153	L (Lewisite)
2810	153	Lewisite
2810	153	Mustard
2810	153	Mustard Lewisite
2810	153	Poisonous liquid, organic, n.o.s.
2810	153	Sarin
2810	153	Soman

UN Guide No.	UN Guide No.	Name of Material
2810	153	Tabun
2810	153	Thickened GD
2810	153	Toxic liquid, organic, n.o.s.
2810	153	VX
2811	154	CX
2811	154	Poisonous solid, organic, n.o.s.
2811	154	Toxic solid, organic, n.o.s.
2812	154	Sodium aluminate, solid
2813	138	Water-reactive solid, n.o.s.
2814	158	Infectious substance, affecting humans
2815	153	N-Aminoethylpiperazine
2817	154	Ammonium bifluoride, solution
2817	154	Ammonium hydrogendifluoride, solution
2818	154	Ammonium polysulfide, solution
2818	154	Ammonium polysulphide, solution
2819	153	Amyl acid phosphate
2820	153	Butyric acid
2821	153	Phenol solution
2822	153	2-Chloropyridine
2823	153	Crotonic acid
2823	153	Crotonic acid, liquid
2823	153	Crotonic acid, solid
2826	155	Ethyl chlorothioformate
2829	153	Caproic acid
2829	153	Hexanoic acid
2830	139	Lithium ferrosilicon
2831	160	1,1,1-Trichloroethane
2834	154	Phosphorous acid
2835	138	Sodium aluminum hydride
2837	154	Bisulfates, aqueous solution

UN Guide No.	UN Guide No.	Name of Material
2837	154	Bisulphates, aqueous solution
2837	154	Sodium bisulfate, solution
2837	154	Sodium bisulphate, solution
2838	129P	Vinyl butyrate, stabilised
2839	153	Aldol
2840	129	Butyraldoxime
2841	131	Di-n-amylamine
2842	129	Nitroethane
2844	138	Calcium manganese silicon
2845	135	Ethyl phosphonous dichloride, anhydrous
2845	135	Methyl phosphonous dichloride
2845	135	Pyrophoric liquid, organic, n.o.s.
2846	135	Pyrophoric solid, organic, n.o.s.
2849	153	3-Chloropropanol-1
2850	128	Propylene tetramer
2851	157	Boron trifluoride, dihydrate
2852	113	Dipicryl sulfide, wetted with not less than 10% water
2852	113	Dipicryl sulphide, wetted with not less than 10% water
2853	151	Magnesium fluorosilicate
2853	151	Magnesium silicofluoride
2854	151	Ammonium fluorosilicate
2854	151	Ammonium silicofluoride
2855	151	Zinc fluorosilicate
2855	151	Zinc silicofluoride
2856	151	Fluorosilicates, n.o.s.
2856	151	Silicofluorides, n.o.s.
2857	126	Refrigerating machines, containing Ammonia solutions (UN2672)

UN No.	Guide No.	Name of Material
2857	126	Refrigerating machines, containing non-flammable, non-poisonous gases
2857	126	Refrigerating machines, containing non-flammable, non-toxic gases
2858	170	Zirconium, dry, coiled wire, finished metal sheets or strip
2859	154	Ammonium metavanadate
2861	151	Ammonium polyvanadate
2862	151	Vanadium pentoxide
2863	154	Sodium ammonium vanadate
2864	151	Potassium metavanadate
2865	154	Hydroxylamine sulphate
2865	154	Hydroxylamine sulphate
2869	157	Titanium trichloride mixture
2870	135	Aluminum borohydride
2870	135	Aluminum borohydride in devices
2871	170	Antimony powder
2872	159	Dibromochloropropanes
2873	153	Dibutylaminoethanol
2874	153	Furfuryl alcohol
2875	151	Hexachlorophene
2876	153	Resorcinol
2878	170	Titanium sponge granules
2878	170	Titanium sponge powders
2879	157	Selenium oxychloride
2880	140	Calcium hypochlorite, hydrated, with not less than 5.5% but not more than 16% water
2880	140	Calcium hypochlorite, hydrated mixture, with not less than 5.5% but not more than 16% water
2881	135	Metal catalyst, dry

UN No.	Guide No.	Name of Material
2881	135	Nickel catalyst, dry
2900	158	Infectious substance, affecting animals only
2901	124	Bromine chloride
2902	151	Pesticide, liquid, poisonous, n.o.s.
2902	151	Pesticide, liquid, toxic, n.o.s.
2903	131	Pesticide, liquid, poisonous, flammable, n.o.s.
2903	131	Pesticide, liquid, toxic, flammable, n.o.s.
2904	154	Chlorophenolates, liquid
2904	154	Phenolates, liquid
2905	154	Chlorophenolates, solid
2905	154	Phenolates, solid
2907	133	Isosorbide dinitrate mixture
2908	161	Radioactive material, excepted package, empty packaging
2909	161	Radioactive material, excepted package, articles manufactured from depleted Uranium
2909	161	Radioactive material, excepted package, articles manufactured from natural Thorium
2909	161	Radioactive material, excepted package, articles manufactured from natural Uranium
2910	161	Radioactive material, excepted package, limited quantity of material
2911	161	Radioactive material, excepted package, instruments or articles
2912	162	Radioactive material, low specific activity (LSA-I), non fissile or fissile-excepted

UN No.	Guide No.	Name of Material
2913	162	Radioactive material, surface contaminated objects (SCO-I), non fissile or fissile-excepted
2913	162	Radioactive material, surface contaminated objects (SCO-II), non fissile or fissile-excepted
2915	163	Radioactive material, Type A package, non-special form, non fissile or fissile-excepted
2916	163	Radioactive material, Type B(U) package, non fissile or fissile-excepted
2917	163	Radioactive material, Type B(M) package, non fissile or fissile-excepted
2919	163	Radioactive material, transported under special arrangement, non fissile or fissile-excepted
2920	132	Corrosive liquid, flammable, n.o.s.
2921	134	Corrosive solid, flammable, n.o.s.
2922	154	Corrosive liquid, poisonous, n.o.s.
2922	154	Corrosive liquid, toxic, n.o.s.
2923	154	Corrosive solid, poisonous, n.o.s.
2923	154	Corrosive solid, toxic, n.o.s.
2924	132	Flammable liquid, corrosive, n.o.s.
2925	134	Flammable solid, corrosive, organic, n.o.s.
2926	134	Flammable solid, poisonous, organic, n.o.s.
2926	134	Flammable solid, toxic, organic, n.o.s.
2927	154	Ethyl phosphonothioic dichloride, anhydrous

UN No.	Guide No.	Name of Material
2927	154	Ethyl phosphorodichloridate
2927	154	Poisonous liquid, corrosive, organic, n.o.s.
2927	154	Toxic liquid, corrosive, organic, n.o.s.
2928	154	Poisonous solid, corrosive, organic, n.o.s.
2928	154	Toxic solid, corrosive, organic, n.o.s.
2929	131	Poisonous liquid, flammable, organic, n.o.s.
2929	131	Toxic liquid, flammable, organic, n.o.s.
2930	134	Poisonous solid, flammable, organic, n.o.s.
2930	134	Toxic solid, flammable, organic, n.o.s.
2931	151	Vanadyl sulfate
2931	151	Vanadyl sulphate
2933	129	Methyl 2-chloropropionate
2934	129	Isopropyl 2-chloropropionate
2935	129	Ethyl 2-chloropropionate
2936	153	Thiolactic acid
2937	153	alpha-Methylbenzyl alcohol
2937	153	alpha-Methylbenzyl alcohol, liquid
2937	153	Methylbenzyl alcohol (alpha)
2940	135	Cyclooctadiene phosphines
2940	135	9-Phosphabicyclononanes
2941	153	Fluoroanilines
2942	153	2-Trifluoromethylaniline
2943	129	Tetrahydrofurfurylamine
2945	132	N-Methylbutylamine
2946	153	2-Amino-5-diethylaminopentane
2947	155	Isopropyl chloroacetate

UN No.	Guide No.	Name of Material
2948	153	3-Trifluoromethylaniline
2949	154	Sodium hydrosulfide, hydrated, with not less than 25% water of crystallization
2949	154	Sodium hydrosulfide, with not less than 25% water of crystallization
2949	154	Sodium hydrosulphide, hydrated, with not less than 25% water of crystallization
2949	154	Sodium hydrosulphide, with not less than 25% water of crystallization
2950	138	Magnesium granules, coated
2956	149	5-tert-Butyl-2,4,6-trinitro-m-xylene
2956	149	Musk xylene
2965	139	Boron trifluoride dimethyl etherate
2966	153	Thioglycol
2967	154	Sulfamic acid
2967	154	Sulphamic acid
2968	135	Maneb, stabilised
2968	135	Maneb preparation, stabilised
2969	171	Castor beans, meal, pomace or flake
2977	166	Radioactive material, Uranium hexafluoride, fissile
2977	166	Uranium hexafluoride, radioactive material, fissile
2978	166	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted
2978	166	Uranium hexafluoride, radioactive material, non fissile or fissile-excepted
2983	131P	Ethylene oxide and Propylene oxide mixture, with not more than 30% Ethylene oxide

UN No.	Guide No.	Name of Material
2983	131P	Propylene oxide and Ethylene oxide mixture, with not more than 30% Ethylene oxide
2984	140	Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide
2985	155	Chlorosilanes, flammable, corrosive, n.o.s.
2986	155	Chlorosilanes, corrosive, flammable, n.o.s.
2987	156	Chlorosilanes, corrosive, n.o.s.
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.
2989	133	Lead phosphite, dibasic
2990	171	Life-saving appliances, self-inflating
2991	131	Carbamate pesticide, liquid, poisonous, flammable
2991	131	Carbamate pesticide, liquid, toxic, flammable
2992	151	Carbamate pesticide, liquid, poisonous
2992	151	Carbamate pesticide, liquid, toxic
2993	131	Arsenical pesticide, liquid, poisonous, flammable
2993	131	Arsenical pesticide, liquid, toxic, flammable
2994	151	Arsenical pesticide, liquid, poisonous
2994	151	Arsenical pesticide, liquid, toxic
2995	131	Organochlorine pesticide, liquid, poisonous, flammable
2995	131	Organochlorine pesticide, liquid, toxic, flammable
2996	151	Organochlorine pesticide, liquid, poisonous
2996	151	Organochlorine pesticide, liquid, toxic

UN No.	Guide No.	Name of Material
2997	131	Triazine pesticide, liquid, poisonous, flammable
2997	131	Triazine pesticide, liquid, toxic, flammable
2998	151	Triazine pesticide, liquid, poisonous
2998	151	Triazine pesticide, liquid, toxic
3002	151	Phenyl urea pesticide, liquid, poisonous
3002	151	Phenyl urea pesticide, liquid, toxic
3005	131	Thiocarbamate pesticide, liquid, poisonous, flammable
3005	131	Thiocarbamate pesticide, liquid, toxic, flammable
3006	151	Thiocarbamate pesticide, liquid, poisonous
3006	151	Thiocarbamate pesticide, liquid, toxic
3009	131	Copper based pesticide, liquid, poisonous, flammable
3009	131	Copper based pesticide, liquid, toxic, flammable
3010	151	Copper based pesticide, liquid, poisonous
3010	151	Copper based pesticide, liquid, toxic
3011	131	Mercury based pesticide, liquid, poisonous, flammable
3011	131	Mercury based pesticide, liquid, toxic, flammable
3012	151	Mercury based pesticide, liquid, poisonous
3012	151	Mercury based pesticide, liquid, toxic
3013	131	Substituted nitrophenol pesticide, liquid, poisonous, flammable

UN No.	Guide No.	Name of Material
3013	131	Substituted nitrophenol pesticide, liquid, toxic, flammable
3014	153	Substituted nitrophenol pesticide, liquid, poisonous
3014	153	Substituted nitrophenol pesticide, liquid, toxic
3015	131	Bipyridilium pesticide, liquid, poisonous, flammable
3015	131	Bipyridilium pesticide, liquid, toxic, flammable
3016	151	Bipyridilium pesticide, liquid, poisonous
3016	151	Bipyridilium pesticide, liquid, toxic
3017	131	Organophosphorus pesticide, liquid, poisonous, flammable
3017	131	Organophosphorus pesticide, liquid, toxic, flammable
3018	152	Organophosphorus pesticide, liquid, poisonous
3018	152	Organophosphorus pesticide, liquid, toxic
3019	131	Organotin pesticide, liquid, poisonous, flammable
3019	131	Organotin pesticide, liquid, toxic, flammable
3020	153	Organotin pesticide, liquid, poisonous
3020	153	Organotin pesticide, liquid, toxic
3021	131	Pesticide, liquid, flammable, poisonous, n.o.s.
3021	131	Pesticide, liquid, flammable, toxic, n.o.s.
3022	127P	1,2-Butylene oxide, stabilised
3023	131	2-Methyl-2-heptanethiol
3024	131	Coumarin derivative pesticide, liquid, flammable, poisonous

UN No.	Guide No.	Name of Material
3024	131	Coumarin derivative pesticide, liquid, flammable, toxic
3025	131	Coumarin derivative pesticide, liquid, poisonous, flammable
3025	131	Coumarin derivative pesticide, liquid, toxic, flammable
3026	151	Coumarin derivative pesticide, liquid, poisonous
3026	151	Coumarin derivative pesticide, liquid, toxic
3027	151	Coumarin derivative pesticide, solid, poisonous
3027	151	Coumarin derivative pesticide, solid, toxic
3028	154	Batteries, dry, containing Potassium hydroxide solid
3048	157	Aluminum phosphide pesticide
3049	138	Metal alkyl halides, water-reactive, n.o.s.
3049	138	Metal aryl halides, water-reactive, n.o.s.
3050	138	Metal alkyl hydrides, water-reactive, n.o.s.
3050	138	Metal aryl hydrides, water-reactive, n.o.s.
3051	135	Aluminum alkyls
3052	135	Aluminum alkyl halides, liquid
3052	135	Aluminum alkyl halides, solid
3053	135	Magnesium alkyls
3054	129	Cyclohexanethiol
3054	129	Cyclohexyl mercaptan
3055	154	2-(2-Aminoethoxy)ethanol
3056	129	n-Heptaldehyde
3057	125	Trifluoroacetyl chloride
3064	127	Nitroglycerin, solution in alcohol, with more than 1% but not more than 5% Nitroglycerin

UN No.	Guide No.	Name of Material
3065	127	Alcoholic beverages
3066	153	Paint (corrosive)
3066	153	Paint related material (corrosive)
3070	126	Dichlorodifluoromethane and Ethylene oxide mixture, with not more than 12.5% Ethylene oxide
3070	126	Ethylene oxide and Dichlorodifluoromethane mixture, with not more than 12.5% Ethylene oxide
3071	131	Mercaptan mixture, liquid, poisonous, flammable, n.o.s.
3071	131	Mercaptan mixture, liquid, toxic, flammable, n.o.s.
3071	131	Mercaptans, liquid, poisonous, flammable, n.o.s.
3071	131	Mercaptans, liquid, toxic, flammable, n.o.s.
3072	171	Life-saving appliances, not self-inflating
3073	131P	Vinylpyridines, stabilised
3076	138	Aluminum alkyl hydrides
3077	171	Environmentally hazardous substance, solid, n.o.s.
3077	171	Hazardous waste, solid, n.o.s.
3077	171	Other regulated substances, solid, n.o.s.
3078	138	Cerium, turnings or gritty powder
3079	131P	Methacrylonitrile, stabilised
3080	155	Isocyanate solution, poisonous, flammable, n.o.s.
3080	155	Isocyanate solution, toxic, flammable, n.o.s.
3080	155	Isocyanates, poisonous, flammable, n.o.s.

UN No.	Guide No.	Name of Material
3080	155	Isocyanates, toxic, flammable, n.o.s.
3082	171	Environmentally hazardous substance, liquid, n.o.s.
3082	171	Hazardous waste, liquid, n.o.s.
3082	171	Other regulated substances, liquid, n.o.s.
3083	124	Perchloryl fluoride
3084	157	Corrosive solid, oxidising, n.o.s.
3085	140	Oxidising solid, corrosive, n.o.s.
3086	141	Poisonous solid, oxidising, n.o.s.
3086	141	Toxic solid, oxidising, n.o.s.
3087	141	Oxidising solid, poisonous, n.o.s.
3087	141	Oxidising solid, toxic, n.o.s.
3088	135	Self-heating solid, organic, n.o.s.
3089	170	Metal powder, flammable, n.o.s.
3090	138	Lithium batteries
3090	138	Lithium metal batteries (including lithium alloy batteries)
3091	138	Lithium batteries contained in equipment
3091	138	Lithium batteries packed with equipment
3091	138	Lithium metal batteries contained in equipment (including lithium alloy batteries)
3091	138	Lithium metal batteries packed with equipment (including lithium alloy batteries)
3092	129	1-Methoxy-2-propanol
3093	157	Corrosive liquid, oxidising, n.o.s.

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3094	138	Corrosive liquid, water-reactive, n.o.s.
3095	136	Corrosive solid, self-heating, n.o.s.
3096	138	Corrosive solid, water-reactive, n.o.s.
3097	140	Flammable solid, oxidising, n.o.s.
3098	140	Oxidising liquid, corrosive, n.o.s.
3099	142	Oxidising liquid, poisonous, n.o.s.
3099	142	Oxidising liquid, toxic, n.o.s.
3100	135	Oxidising solid, self-heating, n.o.s.
3101	146	Organic peroxide type B, liquid
3102	146	Organic peroxide type B, solid
3103	146	Organic peroxide type C, liquid
3104	146	Organic peroxide type C, solid
3105	145	Organic peroxide type D, liquid
3106	145	Organic peroxide type D, solid
3107	145	Organic peroxide type E, liquid
3108	145	Organic peroxide type E, solid
3109	145	Organic peroxide type F, liquid
3110	145	Organic peroxide type F, solid
3111	148	Organic peroxide type B, liquid, temperature controlled
3112	148	Organic peroxide type B, solid, temperature controlled
3113	148	Organic peroxide type C, liquid, temperature controlled
3114	148	Organic peroxide type C, solid, temperature controlled
3115	148	Organic peroxide type D, liquid, temperature controlled
3116	148	Organic peroxide type D, solid, temperature controlled

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3117 **148** Organic peroxide type E, liquid, temperature controlled

3118 **148** Organic peroxide type E, solid, temperature controlled

3119 **148** Organic peroxide type F, liquid, temperature controlled

3120 **148** Organic peroxide type F, solid, temperature controlled

3121 **144** Oxidising solid, water-reactive, n.o.s.

3122 **142** Poisonous liquid, oxidising, n.o.s.

3122 **142** Toxic liquid, oxidising, n.o.s.

3123 **139** Poisonous liquid, water-reactive, n.o.s.

3123 **139** Toxic liquid, water-reactive, n.o.s.

3124 **136** Poisonous solid, self-heating, n.o.s.

3124 **136** Toxic solid, self-heating, n.o.s.

3125 **139** Poisonous solid, water-reactive, n.o.s.

3125 **139** Toxic solid, water-reactive, n.o.s.

3126 **136** Self-heating solid, corrosive, organic, n.o.s.

3127 **135** Self-heating solid, oxidising, n.o.s.

3128 **136** Self-heating solid, poisonous, organic, n.o.s.

3128 **136** Self-heating solid, toxic, organic, n.o.s.

3129 **138** Water-reactive liquid, corrosive, n.o.s.

3130 **139** Water-reactive liquid, poisonous, n.o.s.

3130 **139** Water-reactive liquid, toxic, n.o.s.

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3131 **138** Water-reactive solid, corrosive, n.o.s.

3132 **138** Water-reactive solid, flammable, n.o.s.

3133 **138** Water-reactive solid, oxidising, n.o.s.

3134 **139** Water-reactive solid, poisonous, n.o.s.

3134 **139** Water-reactive solid, toxic, n.o.s.

3135 **138** Water-reactive solid, self-heating, n.o.s.

3136 **120** Trifluoromethane, refrigerated liquid

3137 **140** Oxidising solid, flammable, n.o.s.

3138 **115** Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene

3138 **115** Ethylene, Acetylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene

3138 **115** Propylene, Ethylene and Acetylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene

3139 **140** Oxidising liquid, n.o.s.

3140 **151** Alkaloids, liquid, n.o.s. (poisonous)

3140 **151** Alkaloid salts, liquid, n.o.s. (poisonous)

UN No.	Guide No.	Name of Material
3141	157	Antimony compound, inorganic, liquid, n.o.s.
3142	151	Disinfectant, liquid, poisonous, n.o.s.
3142	151	Disinfectant, liquid, toxic, n.o.s.
3143	151	Dye, solid, poisonous, n.o.s.
3143	151	Dye, solid, toxic, n.o.s.
3143	151	Dye intermediate, solid, poisonous, n.o.s.
3143	151	Dye intermediate, solid, toxic, n.o.s.
3144	151	Nicotine compound, liquid, n.o.s.
3144	151	Nicotine preparation, liquid, n.o.s.
3145	153	Alkylphenols, liquid, n.o.s. (including C2-C12 homologues)
3146	153	Organotin compound, solid, n.o.s.
3147	154	Dye, solid, corrosive, n.o.s.
3147	154	Dye intermediate, solid, corrosive, n.o.s.
3148	138	Water-reactive liquid, n.o.s.
3149	140	Hydrogen peroxide and Peroxyacetic acid mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilised
3149	140	Peroxyacetic acid and hydrogen peroxide mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilised
3150	115	Devices, small, hydrocarbon gas powered, with release device
3150	115	Hydrocarbon gas refills for small devices, with release device

UN No.	Guide No.	Name of Material
3151	171	Halogenated monomethyldiphenylmethanes, liquid
3151	171	Polyhalogenated biphenyls, liquid
3151	171	Polyhalogenated terphenyls, liquid
3152	171	Halogenated monomethyldiphenylmethanes, solid
3152	171	Polyhalogenated biphenyls, solid
3152	171	Polyhalogenated terphenyls, solid
3153	115	Perfluoro(methyl vinyl ether)
3154	115	Perfluoro(ethyl vinyl ether)
3155	154	Pentachlorophenol
3156	122	Compressed gas, oxidising, n.o.s.
3157	122	Liquefied gas, oxidising, n.o.s.
3158	120	Gas, refrigerated liquid, n.o.s.
3159	126	Refrigerant gas R-134a
3159	126	1,1,1,2-Tetrafluoroethane
3160	119	Liquefied gas, poisonous, flammable, n.o.s.
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
3160	119	Liquefied gas, toxic, flammable, n.o.s.

UN No.	Guide No.	Name of Material
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
3161	115	Liquefied gas, flammable, n.o.s.
3162	123	Liquefied gas, poisonous, n.o.s.
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)
3162	123	Liquefied gas, toxic, n.o.s.
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)
3163	126	Liquefied gas, n.o.s.
3164	126	Articles, pressurised, hydraulic (containing non-flammable gas)
3164	126	Articles, pressurised, pneumatic (containing non-flammable gas)
3165	131	Aircraft hydraulic power unit fuel tank

UN No.	Guide No.	Name of Material
3166	115	Engine, fuel cell, flammable gas powered
3166	128	Engine, fuel cell, flammable liquid powered
3166	128	Engine, internal combustion
3166	115	Engines, internal combustion, flammable gas powered
3166	128	Engines, internal combustion, flammable liquid powered
3166	115	Vehicle, flammable gas powered
3166	128	Vehicle, flammable liquid powered
3166	115	Vehicle, fuel cell, flammable gas powered
3166	128	Vehicle, fuel cell, flammable liquid powered
3167	115	Gas sample, non-pressurised, flammable, n.o.s., not refrigerated liquid
3168	119	Gas sample, non-pressurised, poisonous, flammable, n.o.s., not refrigerated liquid
3168	119	Gas sample, non-pressurised, toxic, flammable, n.o.s., not refrigerated liquid
3169	123	Gas sample, non-pressurised, poisonous, n.o.s., not refrigerated liquid
3169	123	Gas sample, non-pressurised, toxic, n.o.s., not refrigerated liquid
3170	138	Aluminum dross
3170	138	Aluminum remelting by-products
3170	138	Aluminum smelting by-products
3171	154	Battery-powered equipment (wet battery)
3171	147	Battery-powered equipment (with lithium ion batteries)

UN Guide No.	UN Guide No.	Name of Material	UN Guide No.	UN Guide No.	Name of Material
3171	138	Battery-powered equipment (with lithium metal batteries)	3184	136	Self-heating liquid, poisonous, organic, n.o.s.
3171	138	Battery-powered equipment (with sodium batteries)	3184	136	Self-heating liquid, toxic, organic, n.o.s.
3171	154	Battery-powered vehicle (wet battery)	3185	136	Self-heating liquid, corrosive, organic, n.o.s.
3171	147	Battery-powered vehicle (with lithium ion batteries)	3186	135	Self-heating liquid, inorganic, n.o.s.
3171	138	Battery-powered vehicle (with sodium batteries)	3187	136	Self-heating liquid, poisonous, inorganic, n.o.s.
3171	154	Wheelchair, electric, with batteries	3187	136	Self-heating liquid, toxic, inorganic, n.o.s.
3172	153	Toxins, extracted from living sources, liquid, n.o.s.	3188	136	Self-heating liquid, corrosive, inorganic, n.o.s.
3172	153	Toxins, extracted from living sources, solid, n.o.s.	3189	135	Metal powder, self-heating, n.o.s.
3174	135	Titanium disulfide	3190	135	Self-heating solid, inorganic, n.o.s.
3174	135	Titanium disulphide	3191	136	Self-heating solid, poisonous, inorganic, n.o.s.
3175	133	Solids containing flammable liquid, n.o.s.	3191	136	Self-heating solid, toxic, inorganic, n.o.s.
3176	133	Flammable solid, organic, molten, n.o.s.	3192	136	Self-heating solid, corrosive, inorganic, n.o.s.
3178	133	Flammable solid, inorganic, n.o.s.	3194	135	Pyrophoric liquid, inorganic, n.o.s.
3178	133	Smokeless powder for small arms	3200	135	Pyrophoric solid, inorganic, n.o.s.
3179	134	Flammable solid, poisonous, inorganic, n.o.s.	3203	135	Pyrophoric organometallic compound, water-reactive, n.o.s.
3179	134	Flammable solid, toxic, inorganic, n.o.s.	3205	135	Alkaline earth metal alcoholates, n.o.s.
3180	134	Flammable solid, corrosive, inorganic, n.o.s.	3206	136	Alkali metal alcoholates, self-heating, corrosive, n.o.s.
3181	133	Metal salts of organic compounds, flammable, n.o.s.	3207	138	Organometallic compound, water-reactive, flammable, n.o.s.
3182	170	Metal hydrides, flammable, n.o.s.	3207	138	Organometallic compound dispersion, water-reactive, flammable, n.o.s.
3183	135	Self-heating liquid, organic, n.o.s.			

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3207	138	Organometallic compound solution, water-reactive, flammable, n.o.s.
3208	138	Metallic substance, water-reactive, n.o.s.
3209	138	Metallic substance, water-reactive, self-heating, n.o.s.
3210	140	Chlorates, inorganic, aqueous solution, n.o.s.
3211	140	Perchlorates, inorganic, aqueous solution, n.o.s.
3212	140	Hypochlorites, inorganic, n.o.s.
3213	140	Bromates, inorganic, aqueous solution, n.o.s.
3214	140	Permanganates, inorganic, aqueous solution, n.o.s.
3215	140	Persulfates, inorganic, n.o.s.
3215	140	Persulphates, inorganic, n.o.s.
3216	140	Persulfates, inorganic, aqueous solution, n.o.s.
3216	140	Persulphates, inorganic, aqueous solution, n.o.s.
3218	140	Nitrates, inorganic, aqueous solution, n.o.s.
3219	140	Nitrites, inorganic, aqueous solution, n.o.s.
3220	126	Pentafluoroethane
3220	126	Refrigerant gas R-125
3221	149	Self-reactive liquid type B
3222	149	Self-reactive solid type B
3223	149	Self-reactive liquid type C
3224	149	Self-reactive solid type C
3225	149	Self-reactive liquid type D
3226	149	Self-reactive solid type D
3227	149	Self-reactive liquid type E
3228	149	Self-reactive solid type E
3229	149	Self-reactive liquid type F

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3230	149	Self-reactive solid type F
3231	150	Self-reactive liquid type B, temperature controlled
3232	150	Self-reactive solid type B, temperature controlled
3233	150	Self-reactive liquid type C, temperature controlled
3234	150	Self-reactive solid type C, temperature controlled
3235	150	Self-reactive liquid type D, temperature controlled
3236	150	Self-reactive solid type D, temperature controlled
3237	150	Self-reactive liquid type E, temperature controlled
3238	150	Self-reactive solid type E, temperature controlled
3239	150	Self-reactive liquid type F, temperature controlled
3240	150	Self-reactive solid type F, temperature controlled
3241	133	2-Bromo-2-nitropropane-1, 3-diol
3242	149	Azodicarbonamide
3243	151	Solids containing poisonous liquid, n.o.s.
3243	151	Solids containing toxic liquid, n.o.s.
3244	154	Solids containing corrosive liquid, n.o.s.
3245	171	Genetically modified micro-organisms
3245	171	Genetically modified organisms
3246	156	Methanesulfonyl chloride
3246	156	Methanesulphonyl chloride
3247	140	Sodium peroxoborate, anhydrous
3248	131	Medicine, liquid, flammable, poisonous, n.o.s.

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3248	131	Medicine, liquid, flammable, toxic, n.o.s.
3249	151	Medicine, solid, poisonous, n.o.s.
3249	151	Medicine, solid, toxic, n.o.s.
3250	153	Chloroacetic acid, molten
3251	133	Isosorbide-5-mononitrate
3252	115	Difluoromethane
3252	115	Refrigerant gas R-32
3253	154	Disodium trioxosilicate
3254	135	Tributylphosphane
3255	135	tert-Butyl hypochlorite
3256	128	Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8°C (100°F), at or above its flash point
3256	128	Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C (140°F), at or above its flash point
3257	171	Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point
3258	171	Elevated temperature solid, n.o.s., at or above 240°C (464°F)
3259	154	Amines, solid, corrosive, n.o.s.
3259	154	Polyamines, solid, corrosive, n.o.s.
3260	154	Corrosive solid, acidic, inorganic, n.o.s.
3261	154	Corrosive solid, acidic, organic, n.o.s.
3262	154	Corrosive solid, basic, inorganic, n.o.s.
3263	154	Corrosive solid, basic, organic, n.o.s.

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3264	154	Corrosive liquid, acidic, inorganic, n.o.s.
3265	153	Corrosive liquid, acidic, organic, n.o.s.
3266	154	Corrosive liquid, basic, inorganic, n.o.s.
3267	153	Corrosive liquid, basic, organic, n.o.s.
3268	171	Air bag inflators
3268	171	Air bag modules
3268	171	Safety devices
3268	171	Seat-belt pre-tensioners
3269	128	Polyester resin kit
3269	128	Polyester resin kit, liquid base material
3270	133	Nitrocellulose membrane filters
3271	127	Ethers, n.o.s.
3272	127	Esters, n.o.s.
3273	131	Nitriles, flammable, poisonous, n.o.s.
3273	131	Nitriles, flammable, toxic, n.o.s.
3274	132	Alcoholates solution, n.o.s., in alcohol
3275	131	Nitriles, poisonous, flammable, n.o.s.
3275	131	Nitriles, toxic, flammable, n.o.s.
3276	151	Nitriles, liquid, poisonous, n.o.s.
3276	151	Nitriles, liquid, toxic, n.o.s.
3276	151	Nitriles, poisonous, liquid, n.o.s.
3276	151	Nitriles, poisonous, n.o.s.
3276	151	Nitriles, toxic, liquid, n.o.s.
3276	151	Nitriles, toxic, n.o.s.
3277	154	Chloroformates, poisonous, corrosive, n.o.s.

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3277 **154** Chloroformates, toxic, corrosive, n.o.s.

3278 **151** Organophosphorus compound, liquid, poisonous, n.o.s.

3278 **151** Organophosphorus compound, liquid, toxic, n.o.s.

3278 **151** Organophosphorus compound, poisonous, liquid, n.o.s.

3278 **151** Organophosphorus compound, poisonous, n.o.s.

3278 **151** Organophosphorus compound, toxic, liquid, n.o.s.

3278 **151** Organophosphorus compound, toxic, n.o.s.

3279 **131** Organophosphorus compound, poisonous, flammable, n.o.s.

3279 **131** Organophosphorus compound, toxic, flammable, n.o.s.

3280 **151** Organoarsenic compound, liquid, n.o.s.

3280 **151** Organoarsenic compound, n.o.s.

3281 **151** Metal carbonyls, liquid, n.o.s.

3281 **151** Metal carbonyls, n.o.s.

3282 **151** Organometallic compound, liquid, poisonous, n.o.s.

3282 **151** Organometallic compound, liquid, toxic, n.o.s.

3282 **151** Organometallic compound, poisonous, liquid, n.o.s.

3282 **151** Organometallic compound, poisonous, n.o.s.

3282 **151** Organometallic compound, toxic, liquid, n.o.s.

3282 **151** Organometallic compound, toxic, n.o.s.

3283 **151** Selenium compound, n.o.s.

3283 **151** Selenium compound, solid, n.o.s.

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3284 **151** Tellurium compound, n.o.s.

3285 **151** Vanadium compound, n.o.s.

3286 **131** Flammable liquid, poisonous, corrosive, n.o.s.

3286 **131** Flammable liquid, toxic, corrosive, n.o.s.

3287 **151** Poisonous liquid, inorganic, n.o.s.

3287 **151** Toxic liquid, inorganic, n.o.s.

3288 **151** Poisonous solid, inorganic, n.o.s.

3288 **151** Toxic solid, inorganic, n.o.s.

3289 **154** Poisonous liquid, corrosive, inorganic, n.o.s.

3289 **154** Toxic liquid, corrosive, inorganic, n.o.s.

3290 **154** Poisonous solid, corrosive, inorganic, n.o.s.

3290 **154** Toxic solid, corrosive, inorganic, n.o.s.

3291 **158** (Bio)Medical waste, n.o.s.

3291 **158** Clinical waste, unspecified, n.o.s.

3291 **158** Medical waste, n.o.s.

3291 **158** Regulated medical waste, n.o.s.

3292 **138** Batteries, containing Sodium

3292 **138** Cells, containing Sodium

3292 **138** Sodium, batteries containing

3293 **152** Hydrazine, aqueous solution, with not more than 37% Hydrazine

3294 **131** Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide

3295 **128** Hydrocarbons, liquid, n.o.s.

3296 **126** Heptafluoropropane

3296 **126** Refrigerant gas R-227

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3297	126	Chlorotetrafluoroethane and Ethylene oxide mixture, with not more than 8.8% Ethylene oxide
3297	126	Ethylene oxide and Chlorotetrafluoroethane mixture, with not more than 8.8% Ethylene oxide
3298	126	Ethylene oxide and Pentafluoroethane mixture, with not more than 7.9% Ethylene oxide
3298	126	Pentafluoroethane and Ethylene oxide mixture, with not more than 7.9% Ethylene oxide
3299	126	Ethylene oxide and Tetrafluoroethane mixture, with not more than 5.6% Ethylene oxide
3299	126	Tetrafluoroethane and Ethylene oxide mixture, with not more than 5.6% Ethylene oxide
3300	119P	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide
3300	119P	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide
3301	136	Corrosive liquid, self-heating, n.o.s.
3302	152	2-Dimethylaminoethyl acrylate
3303	124	Compressed gas, poisonous, oxidising, n.o.s.
3303	124	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone A)
3303	124	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone B)
3303	124	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone C)

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3303	124	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone D)
3303	124	Compressed gas, toxic, oxidising, n.o.s.
3303	124	Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone A)
3303	124	Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone B)
3303	124	Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone C)
3303	124	Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone D)
3304	125	Compressed gas, poisonous, corrosive, n.o.s.
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)
3304	125	Compressed gas, toxic, corrosive, n.o.s.
3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)
3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)
3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)

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3304 125 Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)

3305 119 Compressed gas, poisonous, flammable, corrosive, n.o.s.

3305 119 Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)

3305 119 Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)

3305 119 Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)

3305 119 Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)

3305 119 Compressed gas, toxic, flammable, corrosive, n.o.s.

3305 119 Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)

3305 119 Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)

3305 119 Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)

3305 119 Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)

3306 124 Compressed gas, poisonous, oxidising, corrosive, n.o.s.

3306 124 Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)

3306 124 Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)

3306 124 Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)

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3306 124 Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)

3306 124 Compressed gas, toxic, oxidising, corrosive, n.o.s.

3306 124 Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)

3306 124 Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)

3306 124 Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)

3306 124 Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)

3307 124 Liquefied gas, poisonous, oxidising, n.o.s.

3307 124 Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone A)

3307 124 Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone B)

3307 124 Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone C)

3307 124 Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone D)

3307 124 Liquefied gas, toxic, oxidising, n.o.s.

3307 124 Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone A)

3307 124 Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone B)

3307 124 Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone C)

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3307	124	Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone D)
3308	125	Liquefied gas, poisonous, corrosive, n.o.s.
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)
3308	125	Liquefied gas, toxic, corrosive, n.o.s.
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s.
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)

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3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s.
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)
3310	124	Liquefied gas, poisonous, oxidising, corrosive, n.o.s.
3310	124	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)
3310	124	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)
3310	124	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)
3310	124	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)
3310	124	Liquefied gas, toxic, oxidising, corrosive, n.o.s.
3310	124	Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)
3310	124	Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)
3310	124	Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)

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3310	124	Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)
3311	122	Gas, refrigerated liquid, oxidising, n.o.s.
3312	115	Gas, refrigerated liquid, flammable, n.o.s.
3313	135	Organic pigments, self-heating
3314	171	Plastic molding compound
3314	171	Plastics moulding compound
3315	151	Chemical sample, poisonous
3315	151	Chemical sample, toxic
3316	171	Chemical kit
3316	171	First aid kit
3317	113	2-Amino-4,6-dinitrophenol, wetted with not less than 20% water
3318	125	Ammonia solution, with more than 50% Ammonia
3319	113	Nitroglycerin mixture, desensitised, solid, n.o.s., with more than 2% but not more than 10% Nitroglycerin
3320	157	Sodium borohydride and Sodium hydroxide solution, with not more than 12% Sodium borohydride and not more than 40% Sodium hydroxide
3321	162	Radioactive material, low specific activity (LSA-II), non fissile or fissile-excepted
3322	162	Radioactive material, low specific activity (LSA-III), non fissile or fissile-excepted
3323	163	Radioactive material, Type C package, non-fissile or fissile excepted
3324	165	Radioactive material, low specific activity (LSA-II), fissile

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3325	165	Radioactive material, low specific activity (LSA-III), fissile
3326	165	Radioactive material, surface contaminated objects (SCO-I), fissile
3326	165	Radioactive material, surface contaminated objects (SCO-II), fissile
3327	165	Radioactive material, Type A package, fissile, non-special form
3328	165	Radioactive material, Type B(U) package, fissile
3329	165	Radioactive material, Type B(M) package, fissile
3330	165	Radioactive material, Type C package, fissile
3331	165	Radioactive material, transported under special arrangement, fissile
3332	164	Radioactive material, Type A package, special form, non fissile or fissile-excepted
3333	165	Radioactive material, Type A package, special form, fissile
3334	171	Aviation regulated liquid, n.o.s.
3334	171	Self-defense spray, non-pressurised
3335	171	Aviation regulated solid, n.o.s.
3336	130	Mercaptan mixture, liquid, flammable, n.o.s.
3336	130	Mercaptans, liquid, flammable, n.o.s.
3337	126	Refrigerant gas R-404A
3338	126	Refrigerant gas R-407A
3339	126	Refrigerant gas R-407B
3340	126	Refrigerant gas R-407C
3341	135	Thiourea dioxide

UN No.	Guide No.	Name of Material
3342	135	Xanthates
3343	113	Nitroglycerin mixture, desensitised, liquid, flammable, n.o.s., with not more than 30% Nitroglycerin
3344	113	Pentaerythrite tetranitrate mixture, desensitised, solid, n.o.s., with more than 10% but not more than 20% PETN
3344	113	Pentaerythritol tetranitrate mixture, desensitised, solid, n.o.s., with more than 10% but not more than 20% PETN
3344	113	PETN mixture, desensitised, solid, n.o.s., with more than 10% but not more than 20% PETN
3345	153	Phenoxyacetic acid derivative pesticide, solid, poisonous
3345	153	Phenoxyacetic acid derivative pesticide, solid, toxic
3346	131	Phenoxyacetic acid derivative pesticide, liquid, flammable, poisonous
3346	131	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic
3347	131	Phenoxyacetic acid derivative pesticide, liquid, poisonous, flammable
3347	131	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable
3348	153	Phenoxyacetic acid derivative pesticide, liquid, poisonous
3348	153	Phenoxyacetic acid derivative pesticide, liquid, toxic
3349	151	Pyrethroid pesticide, solid, poisonous
3349	151	Pyrethroid pesticide, solid, toxic
3350	131	Pyrethroid pesticide, liquid, flammable, poisonous

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3350	131	Pyrethroid pesticide, liquid, flammable, toxic
3351	131	Pyrethroid pesticide, liquid, poisonous, flammable
3351	131	Pyrethroid pesticide, liquid, toxic, flammable
3352	151	Pyrethroid pesticide, liquid, poisonous
3352	151	Pyrethroid pesticide, liquid, toxic
3354	115	Insecticide gas, flammable, n.o.s.
3355	119	Insecticide gas, poisonous, flammable, n.o.s.
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
3355	119	Insecticide gas, toxic, flammable, n.o.s.
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
3356	140	Oxygen generator, chemical

UN No.	Guide No.	Name of Material
3356	140	Oxygen generator, chemical, spent
3357	113	Nitroglycerin mixture, desensitised, liquid, n.o.s., with not more than 30% Nitroglycerin
3358	115	Refrigerating machines, containing flammable, non-poisonous, liquefied gas
3358	115	Refrigerating machines, containing flammable, non-toxic, liquefied gas
3359	171	Fumigated cargo transport unit
3359	171	Fumigated unit
3360	133	Fibres, vegetable, dry
3360	133	Fibres, vegetable, dry
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.
3363	171	Dangerous goods in apparatus
3363	171	Dangerous goods in machinery
3364	113	Picric acid, wetted with not less than 10% water
3364	113	Trinitrophenol, wetted with not less than 10% water
3365	113	Picryl chloride, wetted with not less than 10% water
3365	113	Trinitrochlorobenzene, wetted with not less than 10% water
3366	113	TNT, wetted with not less than 10% water
3366	113	Trinitrotoluene, wetted with not less than 10% water

UN No.	Guide No.	Name of Material
3367	113	Trinitrobenzene, wetted with not less than 10% water
3368	113	Trinitrobenzoic acid, wetted with not less than 10% water
3369	113	Sodium dinitro-o-cresolate, wetted with not less than 10% water
3370	113	Urea nitrate, wetted with not less than 10% water
3371	129	2-Methylbutanal
3373	158	Biological substance, category B
3374	116	Acetylene, solvent free
3375	140	Ammonium nitrate emulsion
3375	140	Ammonium nitrate gel
3375	140	Ammonium nitrate suspension
3376	113	4-Nitrophenylhydrazine, with not less than 30% water
3377	140	Sodium perborate monohydrate
3378	140	Sodium carbonate peroxyhydrate
3379	113	Desensitised explosive, liquid, n.o.s.
3380	113	Desensitised explosive, solid, n.o.s.
3381	151	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)
3381	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)
3382	151	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)
3382	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)
3383	131	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)

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3383	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)
3384	131	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
3384	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
3385	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3385	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3386	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3386	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3387	142	Poisonous by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone A)
3387	142	Toxic by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone A)
3388	142	Poisonous by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone B)
3388	142	Toxic by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone B)
3389	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
3389	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
3390	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)

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3390	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
3391	135	Organometallic substance, solid, pyrophoric
3392	135	Organometallic substance, liquid, pyrophoric
3393	135	Organometallic substance, solid, pyrophoric, water-reactive
3394	135	Organometallic substance, liquid, pyrophoric, water-reactive
3395	135	Organometallic substance, solid, water-reactive
3396	138	Organometallic substance, solid, water-reactive, flammable
3397	138	Organometallic substance, solid, water-reactive, self-heating
3398	135	Organometallic substance, liquid, water-reactive
3399	138	Organometallic substance, liquid, water-reactive, flammable
3400	138	Organometallic substance, solid, self-heating
3401	138	Alkali metal amalgam, solid
3402	138	Alkaline earth metal amalgam, solid
3403	138	Potassium, metal alloys, solid
3404	138	Potassium sodium alloys, solid
3404	138	Sodium potassium alloys, solid
3405	141	Barium chlorate, solution
3406	141	Barium perchlorate, solution
3407	140	Chlorate and Magnesium chloride mixture, solution
3407	140	Magnesium chloride and Chlorate mixture, solution

UN No.	Guide No.	Name of Material
3408	141	Lead perchlorate, solution
3409	152	Chloronitrobenzenes, liquid
3410	153	4-Chloro-o-toluidine hydrochloride, solution
3411	153	beta-Naphthylamine, solution
3411	153	Naphthylamine (beta), solution
3412	153	Formic acid, with not less than 5% but less than 10% acid
3412	153	Formic acid, with not less than 10% but not more than 85% acid
3413	157	Potassium cyanide, solution
3414	157	Sodium cyanide, solution
3415	154	Sodium fluoride, solution
3416	153	Chloroacetophenone, liquid
3416	153	CN
3417	152	Xylyl bromide, solid
3418	151	2,4-Toluenediamine, solution
3418	151	2,4-Toluylenediamine, solution
3419	157	Boron trifluoride acetic acid complex, solid
3420	157	Boron trifluoride propionic acid complex, solid
3421	154	Potassium hydrogen difluoride, solution
3422	154	Potassium fluoride, solution
3423	153	Tetramethylammonium hydroxide, solid
3424	141	Ammonium dinitro-o-cresolate, solution
3425	156	Bromoacetic acid, solid
3426	153P	Acrylamide, solution
3427	153	Chlorobenzyl chlorides, solid
3428	156	3-Chloro-4-methylphenyl isocyanate, solid
3429	153	Chlorotoluidines, liquid

UN No.	Guide No.	Name of Material
3430	153	Xylenols, liquid
3431	152	Nitrobenzotrifluorides, solid
3432	171	Polychlorinated biphenyls, solid
3433	135	Lithium alkyls, solid
3434	153	Nitrocresols, liquid
3435	153	Hydroquinone, solution
3436	151	Hexafluoroacetone hydrate, solid
3437	152	Chlorocresols, solid
3438	153	alpha-Methylbenzyl alcohol, solid
3439	151	Nitriles, poisonous, solid, n.o.s.
3439	151	Nitriles, solid, poisonous, n.o.s.
3439	151	Nitriles, solid, toxic, n.o.s.
3439	151	Nitriles, toxic, solid, n.o.s.
3440	151	Selenium compound, liquid, n.o.s.
3441	153	Chlorodinitrobenzenes, solid
3442	153	Dichloroanilines, solid
3443	152	Dinitrobenzenes, solid
3444	151	Nicotine hydrochloride, solid
3445	151	Nicotine sulphate, solid
3445	151	Nicotine sulphate, solid
3446	152	Nitrotoluenes, solid
3447	152	Nitroxylens, solid
3448	159	Tear gas substance, solid, n.o.s.
3449	159	Bromobenzyl cyanides, solid
3450	151	Diphenylchloroarsine, solid
3451	153	Toluidines, solid
3452	153	Xylidines, solid
3453	154	Phosphoric acid, solid
3454	152	Dinitrotoluenes, solid
3455	153	Cresols, solid

UN No.	Guide No.	Name of Material	UN No.	Guide No.	Name of Material
3456	157	Nitrosylsulfuric acid, solid	3469	132	Paint, flammable, corrosive
3456	157	Nitrosylsulphuric acid, solid	3469	132	Paint related material, flammable, corrosive
3457	152	Chloronitrotoluenes, solid	3470	132	Paint, corrosive, flammable
3458	152	Nitroanisoles, solid	3470	132	Paint related material, corrosive, flammable
3459	152	Nitrobromobenzenes, solid	3471	154	Hydrogendifluorides, solution, n.o.s.
3460	153	N-Ethylbenzyltoluidines, solid	3472	153	Crotonic acid, liquid
3461	135	Aluminum alkyl halides, solid	3473	128	Fuel cell cartridges, contained in equipment, containing flammable liquids
3462	153	Toxins, extracted from living sources, solid, n.o.s.	3473	128	Fuel cell cartridges containing flammable liquids
3463	153	Propionic acid, with not less than 90% acid	3473	128	Fuel cell cartridges packed with equipment, containing flammable liquids
3464	151	Organophosphorus compound, poisonous, solid, n.o.s.	3474	113	1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20% water
3464	151	Organophosphorus compound, solid, poisonous, n.o.s.	3474	113	1-Hydroxybenzotriazole, monohydrate
3464	151	Organophosphorus compound, solid, toxic, n.o.s.	3475	127	Ethanol and gasoline mixture, with more than 10% ethanol
3464	151	Organophosphorus compound, toxic, solid, n.o.s.	3475	127	Ethanol and motor spirit mixture, with more than 10% ethanol
3465	151	Organoarsenic compound, solid, n.o.s.	3475	127	Ethanol and petrol mixture, with more than 10% ethanol
3466	151	Metal carbonyls, solid, n.o.s.	3475	127	Gasoline and ethanol mixture, with more than 10% ethanol
3467	151	Organometallic compound, poisonous, solid, n.o.s.	3475	127	Motor spirit and ethanol mixture, with more than 10% ethanol
3467	151	Organometallic compound, solid, poisonous, n.o.s.	3475	127	Petrol and ethanol mixture, with more than 10% ethanol
3467	151	Organometallic compound, solid, toxic, n.o.s.	3476	138	Fuel cell cartridges contained in equipment, containing water-reactive substances
3467	151	Organometallic compound, toxic, solid, n.o.s.			
3468	115	Hydrogen in a metal hydride storage system			
3468	115	Hydrogen in a metal hydride storage system contained in equipment			
3468	115	Hydrogen in a metal hydride storage system packed with equipment			

UN No.	Guide No.	Name of Material
3476	138	Fuel cell cartridges, containing water-reactive substances
3476	138	Fuel cell cartridges packed with equipment, containing water-reactive substances
3477	153	Fuel cell cartridges contained in equipment, containing corrosive substances
3477	153	Fuel cell cartridges, containing corrosive substances
3477	153	Fuel cell cartridges packed with equipment, containing corrosive substances
3478	115	Fuel cell cartridges contained in equipment, containing liquefied flammable gas
3478	115	Fuel cell cartridges, containing liquefied flammable gas
3478	115	Fuel cell cartridges packed with equipment, containing liquefied flammable gas
3479	115	Fuel cell cartridges contained in equipment, containing hydrogen in metal hydride
3479	115	Fuel cell cartridges, containing hydrogen in metal hydride
3479	115	Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride
3480	147	Lithium ion batteries (including lithium ion polymer batteries)
3481	147	Lithium ion batteries contained in equipment (including lithium ion polymer batteries)
3481	147	Lithium ion batteries packed with equipment (including lithium ion polymer batteries)
3482	138	Alkali metal dispersion, flammable
3482	138	Alkaline earth metal dispersion, flammable
3483	131	Motor fuel anti-knock mixture, flammable

UN No.	Guide No.	Name of Material
3484	132	Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass
3485	140	Calcium hypochlorite, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)
3485	140	Calcium hypochlorite mixture, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)
3486	140	Calcium hypochlorite mixture, dry, corrosive, with more than 10% but not more than 39% available chlorine
3487	140	Calcium hypochlorite, hydrated, corrosive, with not less than 5.5% but not more than 16% water
3487	140	Calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water
3488	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3488	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3489	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3489	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3490	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)
3490	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)
3491	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)

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3491	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)
3492	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)
3492	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)
3493	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)
3493	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)
3494	131	Petroleum sour crude oil, flammable, poisonous
3494	131	Petroleum sour crude oil, flammable, toxic
3495	154	Iodine
3496	171	Batteries, nickel-metal hydride
3497	133	Krill meal
3498	157	Iodine monochloride, liquid
3499	171	Capacitor, electric double layer
3500	126	Chemical under pressure, n.o.s.
3501	115	Chemical under pressure, flammable, n.o.s.
3502	123	Chemical under pressure, poisonous, n.o.s.
3502	123	Chemical under pressure, toxic, n.o.s.
3503	125	Chemical under pressure, corrosive, n.o.s.
3504	119	Chemical under pressure, flammable, poisonous, n.o.s.
3504	119	Chemical under pressure, flammable, toxic, n.o.s.
3505	118	Chemical under pressure, flammable, corrosive, n.o.s.

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3506	172	Mercury contained in manufactured articles
3507	166	Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted
3508	171	Capacitor, asymmetric
3509	171	Packaging discarded, empty, uncleaned
3510	174	Adsorbed gas, flammable, n.o.s.
3511	174	Adsorbed gas, n.o.s.
3512	173	Adsorbed gas, poisonous, n.o.s.
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone A)
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone B)
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone C)
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone D)
3512	173	Adsorbed gas, toxic, n.o.s.
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone A)
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone B)
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone C)
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone D)
3513	174	Adsorbed gas, oxidising, n.o.s.
3514	173	Adsorbed gas, poisonous, flammable, n.o.s.

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3514 173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone A)
3514 173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone B)
3514 173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone C)
3514 173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone D)
3514 173	Adsorbed gas, toxic, flammable, n.o.s.
3514 173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone A)
3514 173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone B)
3514 173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone C)
3514 173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone D)
3515 173	Adsorbed gas, poisonous, oxidising, n.o.s.
3515 173	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone A)
3515 173	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone B)
3515 173	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone C)
3515 173	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone D)
3515 173	Adsorbed gas, toxic, oxidising, n.o.s.

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3515 173	Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone A)
3515 173	Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone B)
3515 173	Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone C)
3515 173	Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone D)
3516 173	Adsorbed gas, poisonous, corrosive, n.o.s.
3516 173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone A)
3516 173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone B)
3516 173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone C)
3516 173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone D)
3516 173	Adsorbed gas, toxic, corrosive, n.o.s.
3516 173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone A)
3516 173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone B)
3516 173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone C)
3516 173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone D)
3517 173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s.

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3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone A)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone B)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone C)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone D)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s.
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone A)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone B)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone C)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone D)
3518	173	Adsorbed gas, poisonous, oxidising, corrosive, n.o.s.
3518	173	Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone A)
3518	173	Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone B)
3518	173	Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone C)
3518	173	Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone D)
3518	173	Adsorbed gas, toxic, oxidising, corrosive, n.o.s.

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3518	173	Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone A)
3518	173	Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone B)
3518	173	Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone C)
3518	173	Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone D)
3519	173	Boron trifluoride, adsorbed
3520	173	Chlorine, adsorbed
3521	173	Silicon tetrafluoride, adsorbed
3522	173	Arsine, adsorbed
3523	173	Germane, adsorbed
3524	173	Phosphorus pentafluoride, adsorbed
3525	173	Phosphine, adsorbed
3526	173	Hydrogen selenide, adsorbed
3527	128P	Polyester resin kit, solid base material
3528	128	Engine, fuel cell, flammable liquid powered
3528	128	Engine, internal combustion flammable liquid powered
3528	128	Machinery, fuel cell, flammable liquid powered
3528	128	Machinery, internal combustion, flammable liquid powered
3529	115	Engine, fuel cell, flammable gas powered
3529	115	Engine, internal combustion flammable gas powered
3529	115	Machinery, fuel cell, flammable gas powered
3529	115	Machinery, internal combustion, flammable gas powered

UN No.	Guide No.	Name of Material
3530	171	Engine, internal combustion
3530	171	Machinery, internal combustion
3531	149P	Polymerizing substance, solid, stabilised, n.o.s.
3532	149P	Polymerizing substance, liquid, stabilised, n.o.s.
3533	150P	Polymerizing substance, solid, temperature controlled, n.o.s.
3534	150P	Polymerizing substance, liquid, temperature controlled, n.o.s.
3535	134	Toxic solid, flammable, inorganic, n.o.s.
3536	147	Lithium batteries installed in cargo transport unit (lithium metal batteries)
3536	138	Lithium batteries installed in cargo transport unit (lithium ion batteries)
3537	115	Articles containing flammable gas, n.o.s.
3538	120	Articles containing non-flammable, non-toxic gas, n.o.s.
3539	123	Articles containing toxic gas, n.o.s.
3540	127	Articles containing flammable liquid, n.o.s.
3541	133	Articles containing flammable solid, n.o.s.
3542	135	Articles containing a substance liable to spontaneous combustion, n.o.s.
3543	138	Articles containing a substance which emits flammable gas in contact with water, n.o.s.
3544	140	Articles containing oxidizing substance, n.o.s.
3545	145	Articles containing organic peroxide, n.o.s.

UN No.	Guide No.	Name of Material
3546	151	Articles containing toxic substance, n.o.s.
3547	154	Articles containing corrosive substance, n.o.s.
3548	171	Articles containing miscellaneous dangerous goods, n.o.s.
3549	158	Medical waste, category A, affecting humans, solid
3549	158	Medical waste, category A, affecting animals only, solid
8000	171	Consumer commodity
9035	123	Gas identification set

NOTES

GREEN HIGHLIGHTED ENTRIES IN BLUE PAGES

For entries highlighted in green follow these steps:

- **IF THERE IS NO FIRE:**

- Go directly to Table 1 (green-bordered pages)
- Look up the UN number and name of material
- Identify initial isolation and protective action distances

- **IF A FIRE IS INVOLVED:**

- Use the appropriate Orange Guide for EVACUATION distances
- Also protect in downwind direction according to Table 1 for residual material release

Note 1: If the name in **Table 1** is shown with “(when spilled in water)”, these materials produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2 do NOT** apply and safety distances will be found within the appropriate orange guide.

Note 2: **Explosives** are not individually listed by their name because in an emergency situation, the response will be based only on the division of the explosive, not on the individual explosive.

For divisions 1.1, 1.2, 1.3 and 1.5, refer to GUIDE 112.

For divisions 1.4 and 1.6, refer to GUIDE 114.

Note 3: Chemical warfare agents do not have an assigned UN number because they are not commercially transported. In an emergency situation, the assigned orange guide will provide guidance for the initial response.

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
AC	117	1051	Acrylamide	153P	2074
Acetal	127	1088	Acrylamide, solid	153P	2074
Acetaldehyde	129P	1089	Acrylamide, solution	153P	3426
Acetaldehyde ammonia	171	1841	Acrylic acid, stabilised	132P	2218
Acetaldehyde oxime	129	2332	Acrylonitrile, stabilised	131P	1093
Acetic acid, glacial	132	2789	Adamsite	154	1698
Acetic acid, solution, more than 10% but not more than 80% acid	153	2790	Adhesives (flammable)	128	1133
Acetic acid, solution, more than 80% acid	132	2789	Adiponitrile	153	2205
Acetic anhydride	137	1715	Adsorbed gas, flammable, n.o.s.	174	3510
Acetone	127	1090	Adsorbed gas, n.o.s.	174	3511
Acetone cyanohydrin, stabilised	155	1541	Adsorbed gas, oxidising, n.o.s.	174	3513
Acetone oils	127	1091	Adsorbed gas, poisonous, corrosive, n.o.s.	173	3516
Acetonitrile	127	1648	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone A)	173	3516
Acetyl bromide	156	1716	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone B)	173	3516
Acetyl chloride	155	1717	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone C)	173	3516
Acetylene, dissolved	116	1001	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone D)	173	3516
Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138	Adsorbed gas, poisonous, flammable, corrosive, n.o.s.	173	3517
Acetylene, solvent free	116	3374	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	173	3517
Acetylene tetrabromide	159	2504	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone B)	173	3517
Acetyl iodide	156	1898	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	173	3517
Acetyl methyl carbinol	127	2621	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone D)	173	3517
Acid, sludge	153	1906	Acrolein, stabilised	131P	1092
Acid butyl phosphate	153	1718	Acrolein dimer, stabilised	129P	2607
Acridine	153	2713			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Adsorbed gas, poisonous, flammable, n.o.s.	173	3514	Adsorbed gas, poisonous, oxidising, n.o.s.	173	3515
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone A)	173	3514	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone A)	173	3515
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone B)	173	3514	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone B)	173	3515
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone C)	173	3514	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone C)	173	3515
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone D)	173	3514	Adsorbed gas, poisonous, oxidising, n.o.s. (Inhalation hazard zone D)	173	3515
Adsorbed gas, poisonous, n.o.s.	173	3512	Adsorbed gas, toxic, corrosive, n.o.s.	173	3516
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone A)	173	3512	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone A)	173	3516
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone B)	173	3512	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone B)	173	3516
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone C)	173	3512	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone C)	173	3516
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone D)	173	3512	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone D)	173	3516
Adsorbed gas, poisonous, oxidising, corrosive, n.o.s.	173	3518	Adsorbed gas, toxic, flammable, corrosive, n.o.s.	173	3517
Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone A)	173	3518	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	173	3517
Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone B)	173	3518	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone B)	173	3517
Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone C)	173	3518	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	173	3517
Adsorbed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation hazard zone D)	173	3518	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone D)	173	3517

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Adsorbed gas, toxic, flammable, n.o.s.	173	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone A)	173	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone B)	173	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone C)	173	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone D)	173	3514
Adsorbed gas, toxic, n.o.s.	173	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone A)	173	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone B)	173	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone C)	173	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone D)	173	3512
Adsorbed gas, toxic, oxidising, corrosive, n.o.s.	173	3518
Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone A)	173	3518
Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone B)	173	3518
Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone C)	173	3518
Adsorbed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation hazard zone D)	173	3518
Adsorbed gas, toxic, oxidising, n.o.s.	173	3515
Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone A)	173	3515

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Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone B)	173	3515
Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone C)	173	3515
Adsorbed gas, toxic, oxidising, n.o.s. (Inhalation hazard zone D)	173	3515
Aerosols	126	1950
Air, compressed	122	1002
Air, refrigerated liquid (cryogenic liquid)	122	1003
Air, refrigerated liquid (cryogenic liquid), non-pressurised	122	1003
Air bag inflators	171	3268
Air bag modules	171	3268
Aircraft hydraulic power unit fuel tank	131	3165
Alcoholates solution, n.o.s., in alcohol	132	3274
Alcoholic beverages	127	3065
Alcohols, flammable, poisonous, n.o.s.	131	1986
Alcohols, flammable, toxic, n.o.s.	131	1986
Alcohols, n.o.s.	127	1987
Aldehydes, flammable, poisonous, n.o.s.	131P	1988
Aldehydes, flammable, toxic, n.o.s.	131P	1988
Aldehydes, n.o.s.	129P	1989
Aldol	153	2839
Alkali metal alcoholates, self-heating, corrosive, n.o.s.	136	3206
Alkali metal alloy, liquid, n.o.s.	138	1421
Alkali metal amalgam	138	1389
Alkali metal amalgam, liquid	138	1389

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Alkali metal amalgam, solid	138	3401	Alkyl sulfonic acids, solid, with not more than 5% free Sulfuric acid	153	2585
Alkali metal amides	139	1390	Alkyl sulfuric acids	156	2571
Alkali metal dispersion	138	1391	Alkyl sulphonic acids, liquid, with more than 5% free Sulphuric acid	153	2584
Alkali metal dispersion, flammable	138	3482	Alkyl sulphonic acids, liquid, with not more than 5% free Sulphuric acid	153	2586
Alkaline earth metal alcoholates, n.o.s.	135	3205	Alkyl sulphonic acids, solid, with more than 5% free Sulphuric acid	153	2583
Alkaline earth metal alloy, n.o.s.	138	1393	Alkyl sulphonic acids, solid, with not more than 5% free Sulphuric acid	153	2585
Alkaline earth metal amalgam	138	1392	Alkyl sulphuric acids	156	2571
Alkaline earth metal amalgam, liquid	138	1392	Allyl acetate	131	2333
Alkaline earth metal amalgam, solid	138	3402	Allyl alcohol	131	1098
Alkaline earth metal dispersion	138	1391	Allylamine	131	2334
Alkaline earth metal dispersion, flammable	138	3482	Allyl bromide	131P	1099
Alkaloids, liquid, n.o.s. (poisonous)	151	3140	Allyl chloride	131P	1100
Alkaloids, solid, n.o.s. (poisonous)	151	1544	Allyl chlorocarbonate	155	1722
Alkaloid salts, liquid, n.o.s. (poisonous)	151	3140	Allyl chloroformate	155	1722
Alkaloid salts, solid, n.o.s. (poisonous)	151	1544	Allyl ethyl ether	131	2335
Alkylphenols, liquid, n.o.s. (including C2-C12 homologues)	153	3145	Allyl formate	131	2336
Alkylphenols, solid, n.o.s. (including C2-C12 homologues)	153	2430	Allyl glycidyl ether	129	2219
Alkyl sulfonic acids, liquid, with more than 5% free Sulfuric acid	153	2584	Allyl iodide	132	1723
Alkyl sulfonic acids, liquid, with not more than 5% free Sulfuric acid	153	2586	Allyl isothiocyanate, stabilised	155	1545
Alkyl sulfonic acids, solid, with more than 5% free Sulfuric acid	153	2583	Allyltrichlorosilane, stabilised	155	1724
			Aluminum, molten	169	9260
			Aluminum alkyl halides, liquid	135	3052
			Aluminum alkyl halides, solid	135	3052
			Aluminum alkyl halides, solid	135	3461
			Aluminum alkyl hydrides	138	3076
			Aluminum alkyls	135	3051

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Aluminum borohydride	135	2870	N-Aminoethylpiperazine	153	2815
Aluminum borohydride in devices	135	2870	Aminophenols	152	2512
Aluminum bromide, anhydrous	137	1725	Aminopyridines	153	2671
Aluminum bromide, solution	154	2580	Ammonia, anhydrous	125	1005
Aluminum carbide	138	1394	Ammonia, solution, with more than 10% but not more than 35% Ammonia	154	2672
Aluminum chloride, anhydrous	137	1726	Ammonia, solution, with more than 35% but not more than 50% Ammonia	125	2073
Aluminum chloride, solution	154	2581	Ammonia solution, with more than 50% Ammonia	125	3318
Aluminum dross	138	3170	Ammonium arsenate	151	1546
Aluminum ferrosilicon powder	139	1395	Ammonium bifluoride, solid	154	1727
Aluminum hydride	138	2463	Ammonium bifluoride, solution	154	2817
Aluminum nitrate	140	1438	Ammonium dichromate	141	1439
Aluminum phosphide	139	1397	Ammonium dinitro-o-cresolate	141	1843
Aluminum phosphide pesticide	157	3048	Ammonium dinitro-o-cresolate, solid	141	1843
Aluminum powder, coated	170	1309	Ammonium dinitro-o-cresolate, solution	141	3424
Aluminum powder, pyrophoric	135	1383	Ammonium fluoride	154	2505
Aluminum powder, uncoated	138	1396	Ammonium fluorosilicate	151	2854
Aluminum remelting by-products	138	3170	Ammonium hydrogendifluoride, solid	154	1727
Aluminum resinate	133	2715	Ammonium hydrogendifluoride, solution	154	2817
Aluminum silicon powder, uncoated	138	1398	Ammonium hydrogen sulfate	154	2506
Amines, flammable, corrosive, n.o.s.	132	2733	Ammonium hydrogen sulphate	154	2506
Amines, liquid, corrosive, flammable, n.o.s.	132	2734	Ammonium hydroxide	154	2672
Amines, liquid, corrosive, n.o.s.	153	2735	Ammonium hydroxide, with more than 10% but not more than 35% Ammonia	154	2672
Amines, solid, corrosive, n.o.s.	154	3259	Ammonium metavanadate	154	2859
2-Amino-4-chlorophenol	151	2673	Ammonium nitrate, liquid (hot concentrated solution)	140	2426
2-Amino-5-diethylaminopentane	153	2946			
2-Amino-4,6-dinitrophenol, wetted with not less than 20% water	113	3317			
2-(2-Aminoethoxy)ethanol	154	3055			

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Ammonium nitrate, with not more than 0.2% combustible substances	140	1942	Ammunition, toxic, non-explosive	151	2016
Ammonium nitrate based fertilizer	140	2067	Amyl acetates	129	1104
Ammonium nitrate based fertilizer	140	2071	Amyl acid phosphate	153	2819
Ammonium nitrate emulsion	140	3375	Amylamine	132	1106
Ammonium nitrate fertilizer, n.o.s.	140	2072	Amyl butyrates	130	2620
Ammonium nitrate fertilizers, with Ammonium sulphate	140	2069	Amyl chloride	129	1107
Ammonium nitrate fertilizers, with Ammonium sulphate	140	2069	n-Amylene	128	1108
Ammonium nitrate fertilizers, with Calcium carbonate	140	2068	Amyl formates	129	1109
Ammonium nitrate fertilizers, with Phosphate or Potash	143	2070	Amyl mercaptan	130	1111
Ammonium nitrate-fuel oil mixtures	112	—	n-Amyl methyl ketone	127	1110
Ammonium nitrate gel	140	3375	Amyl nitrate	128	1112
Ammonium nitrate suspension	140	3375	Amyl nitrite	129	1113
Ammonium perchlorate	143	1442	Amyltrichlorosilane	155	1728
Ammonium persulfate	140	1444	Anhydrous ammonia	125	1005
Ammonium persulphate	140	1444	Aniline	153	1547
Ammonium picrate, wetted with not less than 10% water	113	1310	Aniline hydrochloride	153	1548
Ammonium polysulfide, solution	154	2818	Anisidines	153	2431
Ammonium polysulphide, solution	154	2818	Anisidines, liquid	153	2431
Ammonium polyvanadate	151	2861	Anisidines, solid	153	2431
Ammonium silicofluoride	151	2854	Anisole	128	2222
Ammonium sulfide, solution	132	2683	Anisoyl chloride	156	1729
Ammonium sulphide, solution	132	2683	Antimony compound, inorganic, liquid, n.o.s.	157	3141
Ammunition, poisonous, non-explosive	151	2016	Antimony compound, inorganic, solid, n.o.s.	157	1549
Ammunition, tear-producing, non-explosive	159	2017	Antimony lactate	151	1550
			Antimony pentachloride, liquid	157	1730
			Antimony pentachloride, solution	157	1731
			Antimony pentafluoride	157	1732
			Antimony potassium tartrate	151	1551
			Antimony powder	170	2871
			Antimony trichloride	157	1733

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Antimony trichloride, liquid	157	1733	Articles containing flammable liquid, n.o.s.	127	3540
Antimony trichloride, solid	157	1733	Articles containing flammable solid, n.o.s.	133	3541
Aqua regia	157	1798	Articles containing	171	3548
Argon	120	1006	miscellaneous dangerous goods, n.o.s.	120	3538
Argon, compressed	120	1006	Articles containing non-flammable, non-toxic gas, n.o.s.	140	3544
Argon, refrigerated liquid (cryogenic liquid)	120	1951	Articles containing oxidizing substance, n.o.s.	145	3545
Arsenic	152	1558	Articles containing	171	2315
Arsenic acid, liquid	154	1553	Polychlorinated biphenyls (PCB)	123	3539
Arsenic acid, solid	154	1554	Articles containing toxic gas, n.o.s.	151	3546
Arsenical dust	152	1562	Articles containing toxic substance, n.o.s.	126	3164
Arsenical pesticide, liquid, flammable, poisonous	131	2760	Articles, pressurised, hydraulic (containing non-flammable gas)	126	3164
Arsenical pesticide, liquid, flammable, toxic	131	2760	Articles, pressurised, pneumatic (containing non-flammable gas)	126	3164
Arsenical pesticide, liquid, poisonous	151	2994	Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid	153	2584
Arsenical pesticide, liquid, poisonous, flammable	131	2993	Aryl sulfonic acids, liquid, with not more than 5% free Sulfuric acid	153	2586
Arsenical pesticide, liquid, toxic	151	2994	Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid	153	2583
Arsenical pesticide, liquid, toxic, flammable	131	2993	Aryl sulfonic acids, solid, with not more than 5% free Sulfuric acid	153	2585
Arsenical pesticide, solid, poisonous	151	2759	Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid	153	2584
Arsenical pesticide, solid, toxic	151	2759	Aryl sulphonic acids, liquid, with not more than 5% free Sulphuric acid	153	2586
Arsenic bromide	151	1555	Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid	153	2583
Arsenic chloride	157	1560	Articles containing flammable gas, n.o.s.	115	3537
Arsenic compound, liquid, n.o.s.	152	1556	Articles containing a substance liable to spontaneous combustion, n.o.s.	135	3542
Arsenic compound, solid, n.o.s.	152	1557	Articles containing a substance which emits flammable gas in contact with water, n.o.s.	138	3543
Arsenic pentoxide	151	1559	Articles containing corrosive substance, n.o.s.	154	3547
Arsenic trichloride	157	1560	Articles containing flammable gas, n.o.s.	115	3537
Arsenic trioxide	151	1561			
Arsine	119	2188			
Arsine, adsorbed	173	3522			

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Aryl sulphonic acids, solid, with not more than 5% free Sulphuric acid	153	2585	Battery fluid, alkali	154	2797
Asbestos	171	2212	Battery-powered equipment (wet battery)	154	3171
Asbestos, amphibole	171	2212	Battery-powered equipment (with lithium ion batteries)	147	3171
Asbestos, blue	171	2212	Battery-powered equipment (with lithium metal batteries)	138	3171
Asbestos, brown	171	2212	Battery-powered equipment (with sodium batteries)	138	3171
Asbestos, chrysotile	171	2590	Battery-powered vehicle (wet battery)	154	3171
Asbestos, white	171	2590	Battery-powered vehicle (with lithium ion batteries)	147	3171
Asphalt	130	1999	Battery-powered vehicle (with sodium batteries)	138	3171
Asphalt, cut back	130	1999	Benzaldehyde	171	1990
Aviation regulated liquid, n.o.s.	171	3334	Benzene	130	1114
Aviation regulated solid, n.o.s.	171	3335	Benzene phosphorus dichloride	137	2798
Azodicarbonamide	149	3242	Benzene phosphorus thiodichloride	137	2799
Barium	138	1400	Benzenesulfonyl chloride	156	2225
Barium alloys, pyrophoric	135	1854	Benzenesulphonyl chloride	156	2225
Barium azide, wetted with not less than 50% water	113	1571	Benzidine	153	1885
Barium bromate	141	2719	Benzonitrile	152	2224
Barium chlorate	141	1445	Benzoquinone	153	2587
Barium chlorate, solid	141	1445	Benzotrichloride	156	2226
Barium chlorate, solution	141	3405	Benzotrifluoride	127	2338
Barium compound, n.o.s.	154	1564	Benzoyl chloride	137	1736
Barium cyanide	157	1565	Benzyl bromide	156	1737
Barium hypochlorite, with more than 22% available Chlorine	141	2741	Benzyl chloride	156	1738
Barium nitrate	141	1446	Benzyl chloroformate	137	1739
Barium oxide	157	1884	Benzyl dimethylamine	132	2619
Barium perchlorate	141	1447	Benzylidene chloride	156	1886
Barium perchlorate, solid	141	1447	Benzyl iodide	156	2653
Barium perchlorate, solution	141	3406	Beryllium compound, n.o.s.	154	1566
Barium permanganate	141	1448	Beryllium nitrate	141	2464
Barium peroxide	141	1449			
Batteries, containing Sodium	138	3292			
Batteries, dry, containing Potassium hydroxide solid	154	3028			
Batteries, nickel-metal hydride	171	3496			
Batteries, wet, filled with acid	154	2794			
Batteries, wet, filled with alkali	154	2795			
Batteries, wet, non-spillable	154	2800			
Battery fluid, acid	157	2796			

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Beryllium powder	134	1567	Borneol	133	1312
Bhusa, wet, damp or contaminated with oil	133	1327	Boron tribromide	157	2692
Bicyclo[2.2.1]hepta-2,5-diene, stabilised	128P	2251	Boron trichloride	125	1741
Biological agents	158	—	Boron trifluoride	125	1008
Biological substance, category B	158	3373	Boron trifluoride, adsorbed	173	3519
(Bio)Medical waste, n.o.s.	158	3291	Boron trifluoride, compressed	125	1008
Bipyridilium pesticide, liquid, flammable, poisonous	131	2782	Boron trifluoride, dihydrate	157	2851
Bipyridilium pesticide, liquid, flammable, toxic	131	2782	Boron trifluoride acetic acid complex	157	1742
Bipyridilium pesticide, liquid, poisonous	151	3016	Boron trifluoride acetic acid complex, liquid	157	1742
Bipyridilium pesticide, liquid, poisonous, flammable	131	3015	Boron trifluoride acetic acid complex, solid	157	3419
Bipyridilium pesticide, liquid, toxic	151	3016	Boron trifluoride diethyl etherate	132	2604
Bipyridilium pesticide, liquid, toxic, flammable	131	3015	Boron trifluoride dimethyl etherate	139	2965
Bipyridilium pesticide, solid, poisonous	151	2781	Boron trifluoride propionic acid complex	157	1743
Bipyridilium pesticide, solid, toxic	151	2781	Boron trifluoride propionic acid complex, liquid	157	1743
Bisulfates, aqueous solution	154	2837	Boron trifluoride propionic acid complex, solid	157	3420
Bisulfites, aqueous solution, n.o.s.	154	2693	Bromates, inorganic, aqueous solution, n.o.s.	140	3213
Bisulphates, aqueous solution	154	2837	Bromates, inorganic, n.o.s.	140	1450
Bisulphites, aqueous solution, n.o.s.	154	2693	Bromine	154	1744
Blasting agent, n.o.s.	112	—	Bromine, solution	154	1744
Bleaching powder	140	2208	Bromine, solution (Inhalation Hazard Zone A)	154	1744
Blue asbestos	171	2212	Bromine, solution (Inhalation Hazard Zone B)	154	1744
Bombs, smoke, non-explosive, with corrosive liquid, without initiating device	153	2028	Bromine chloride	124	2901
Borate and Chlorate mixture	140	1458	Bromine pentafluoride	144	1745
			Bromine trifluoride	144	1746
			Bromoacetic acid	156	1938
			Bromoacetic acid, solid	156	3425

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Bromoacetic acid, solution	156	1938	n-Butylamine	132	1125
Bromoacetone	131	1569	N-Butylaniline	153	2738
Bromoacetyl bromide	156	2513	Butylbenzenes	128	2709
Bromobenzene	130	2514	n-Butyl bromide	130	1126
Bromobenzyl cyanides, liquid	159	1694	n-Butyl chloride	130	1127
Bromobenzyl cyanides, solid	159	1694	n-Butyl chloroformate	155	2743
Bromobenzyl cyanides, solid	159	3449	sec-Butyl chloroformate	155	2742
1-Bromobutane	130	1126	tert-Butylcyclohexyl chloroformate	156	2747
2-Bromobutane	130	2339	Butylene	115	1012
Bromochloromethane	160	1887	Butylene	115	1075
1-Bromo-3-chloropropane	159	2688	1,2-Butylene oxide, stabilised	127P	3022
2-Bromoethyl ethyl ether	130	2340	Butyl ethers	128	1149
Bromoform	159	2515	n-Butyl formate	129	1128
1-Bromo-3-methylbutane	130	2341	tert-Butyl hypochlorite	135	3255
Bromomethylpropanes	130	2342	N,n-Butylimidazole	152	2690
2-Bromo-2-nitropropane-1,3-diol	133	3241	n-Butyl isocyanate	155P	2485
2-Bromopentane	130	2343	tert-Butyl isocyanate	155	2484
Bromopropanes	129	2344	Butyl mercaptan	130	2347
3-Bromopropyne	130	2345	n-Butyl methacrylate, stabilised	130P	2227
Bromotrifluoroethylene	116	2419	Butyl methyl ether	127	2350
Bromotrifluoromethane	126	1009	Butyl nitrites	129	2351
Brown asbestos	171	2212	Butyl propionates	130	1914
Brucine	152	1570	Butyltoluenes	152	2667
Butadienes, stabilised	116P	1010	Butyltrichlorosilane	155	1747
Butadienes and hydrocarbon mixture, stabilised	116P	1010	5-tert-Butyl-2,4,6-trinitro-m-xylene	149	2956
Butane	115	1011	Butyl vinyl ether, stabilised	127P	2352
Butane	115	1075	1,4-Butynediol	153	2716
Butanedione	127	2346	Butyraldehyde	129P	1129
Butanols	129	1120	Butyraldoxime	129	2840
Butyl acetates	129	1123	Butyric acid	153	2820
Butyl acid phosphate	153	1718			
Butyl acrylates, stabilised	129P	2348			

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Butyric anhydride	156	2739	Calcium hypochlorite, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)	140	3485
Butyronitrile	131	2411	Calcium hypochlorite, hydrated, corrosive, with not less than 5.5% but not more than 16% water	140	3487
Butyryl chloride	132	2353	Calcium hypochlorite, hydrated, with not less than 5.5% but not more than 16% water	140	2880
Buzz	153	2810	Calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water	140	3487
BZ	153	2810	Calcium hypochlorite, hydrated mixture, with not less than 5.5% but not more than 16% water	140	2880
CA	159	1694	Calcium hypochlorite mixture, dry, corrosive, with more than 10% but not more than 39% available chlorine	140	3486
Cacodylic acid	151	1572	Calcium hypochlorite mixture, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)	140	3485
Cadmium compound	154	2570	Calcium hypochlorite mixture, dry, with more than 10% but not more than 39% available Chlorine	140	2208
Caesium	138	1407	Calcium hypochlorite mixture, dry, with more than 39% available Chlorine (8.8% available Oxygen)	140	1748
Caesium hydroxide	157	2682	Calcium manganese silicon	138	2844
Caesium hydroxide, solution	154	2681	Calcium nitrate	140	1454
Caesium nitrate	140	1451	Calcium oxide	157	1910
Calcium	138	1401	Calcium perchlorate	140	1455
Calcium, pyrophoric	135	1855	Calcium permanganate	140	1456
Calcium alloys, pyrophoric	135	1855	Calcium peroxide	140	1457
Calcium arsenate	151	1573	Calcium phosphide	139	1360
Calcium arsenate and Calcium arsenite mixture, solid	151	1574	Calcium resinate	133	1313
Calcium arsenite and Calcium arsenate mixture, solid	151	1574			
Calcium carbide	138	1402			
Calcium chlorate	140	1452			
Calcium chlorate, aqueous solution	140	2429			
Calcium chlorite	140	1453			
Calcium cyanamide, with more than 0.1% Calcium carbide	138	1403			
Calcium cyanide	157	1575			
Calcium dithionite	135	1923			
Calcium hydride	138	1404			
Calcium hydrosulfite	135	1923			
Calcium hydrosulphite	135	1923			
Calcium hypochlorite, dry	140	1748			

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Calcium resinate, fused	133	1314	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide	119P	3300
Calcium silicide	138	1405	Carbon dioxide and Ethylene oxide mixtures, with not more than 9% Ethylene oxide	126	1952
Camphor	133	2717	Carbon dioxide and Nitrous oxide mixture	126	1015
Camphor, synthetic	133	2717	Carbon dioxide and Oxygen mixture, compressed	122	1014
Camphor oil	128	1130	Carbon disulfide	131	1131
Capacitor, asymmetric	171	3508	Carbon disulphide	131	1131
Capacitor, electric double layer	171	3499	Carbon monoxide	119	1016
Caproic acid	153	2829	Carbon monoxide, compressed	119	1016
Carbamate pesticide, liquid, flammable, poisonous	131	2758	Carbon monoxide, refrigerated liquid (cryogenic liquid)	168	9202
Carbamate pesticide, liquid, flammable, toxic	131	2758	Carbon monoxide and Hydrogen mixture, compressed	119	2600
Carbamate pesticide, liquid, poisonous	151	2992	Carbon tetrabromide	151	2516
Carbamate pesticide, liquid, poisonous, flammable	131	2991	Carbon tetrachloride	151	1846
Carbamate pesticide, liquid, toxic	151	2992	Carbonyl fluoride	125	2417
Carbamate pesticide, solid, poisonous	131	2757	Carbonyl fluoride, compressed	125	2417
Carbamate pesticide, solid, toxic	151	2757	Carbonyl sulfide	119	2204
Carbon, activated	133	1362	Carbonyl sulphide	119	2204
Carbon, animal or vegetable origin	133	1361	Castor beans, meal, pomace or flake	171	2969
Carbon bisulfide	131	1131	Caustic alkali liquid, n.o.s.	154	1719
Carbon bisulphide	131	1131	Caustic potash, solid	154	1813
Carbon dioxide	120	1013	Caustic potash, solution	154	1814
Carbon dioxide, compressed	120	1013	Caustic soda, solid	154	1823
Carbon dioxide, refrigerated liquid	120	2187	Caustic soda, solution	154	1824
Carbon dioxide, solid	120	1845	Cells, containing Sodium	138	3292
Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide	115	1041	Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap	133	2000
			Celluloid, scrap	135	2002

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Cerium, slabs, ingots or rods	170	1333	Chlorates, inorganic, aqueous solution, n.o.s.	140	3210
Cerium, turnings or gritty powder	138	3078	Chlorates, inorganic, n.o.s.	140	1461
Cesium	138	1407	Chloric acid, aqueous solution, with not more than 10% Chloric acid	140	2626
Cesium hydroxide	157	2682	Chlorine	124	1017
Cesium hydroxide, solution	154	2681	Chlorine, adsorbed	173	3520
Cesium nitrate	140	1451	Chlorine dioxide, hydrate, frozen	143	9191
CG	125	1076	Chlorine pentafluoride	124	2548
Charcoal	133	1361	Chlorine trifluoride	124	1749
Chemical kit	154	1760	Chlorite solution	154	1908
Chemical kit	171	3316	Chlorites, inorganic, n.o.s.	143	1462
Chemical sample, poisonous	151	3315	Chloroacetaldehyde	153	2232
Chemical sample, toxic	151	3315	Chloroacetic acid, molten	153	3250
Chemical under pressure, corrosive, n.o.s.	125	3503	Chloroacetic acid, solid	153	1751
Chemical under pressure, flammable, corrosive, n.o.s.	118	3505	Chloroacetic acid, solution	153	1750
Chemical under pressure, flammable, n.o.s.	115	3501	Chloroacetone, stabilised	131	1695
Chemical under pressure, flammable, poisonous, n.o.s.	119	3504	Chloroacetonitrile	131	2668
Chemical under pressure, flammable, toxic, n.o.s.	119	3504	Chloroacetophenone	153	1697
Chemical under pressure, n.o.s.	126	3500	Chloroacetophenone, liquid	153	3416
Chemical under pressure, poisonous, n.o.s.	123	3502	Chloroacetophenone, solid	153	1697
Chemical under pressure, toxic, n.o.s.	123	3502	Chloroacetyl chloride	156	1752
Chloral, anhydrous, stabilised	153	2075	Chloroanilines, liquid	152	2019
Chlorate and Borate mixture	140	1458	Chloroanilines, solid	152	2018
Chlorate and Magnesium chloride mixture	140	1459	Chloroanisidines	152	2233
Chlorate and Magnesium chloride mixture, solid	140	1459	Chlorobenzene	130	1134
Chlorate and Magnesium chloride mixture, solution	140	3407	Chlorobenzotrifluorides	130	2234
			Chlorobenzyl chlorides	153	2235
			Chlorobenzyl chlorides, liquid	153	2235
			Chlorobenzyl chlorides, solid	153	3427
			Chlorobutanes	130	1127
			Chlorocresols	152	2669

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Chlorocresols, solid	152	3437	Chloronitrotoluenes, solid	152	3457
Chlorocresols, solution	152	2669	Chloropentafluoroethane	126	1020
Chlorodifluorobromomethane	126	1974	Chloropentafluoroethane and Chlorodifluoromethane mixture	126	1973
1-Chloro-1,1-difluoroethane	115	2517	Chlorophenolates, liquid	154	2904
Chlorodifluoromethane	126	1018	Chlorophenolates, solid	154	2905
Chlorodifluoromethane and Chloropentafluoroethane mixture	126	1973	Chlorophenols, liquid	153	2021
Chlorodinitrobenzenes, liquid	153	1577	Chlorophenols, solid	153	2020
Chlorodinitrobenzenes, solid	153	1577	Chlorophenyltrichlorosilane	156	1753
Chlorodinitrobenzenes, solid	153	3441	Chloropicrin	154	1580
1-Chloro-2,3-epoxypropane	131P	2023	Chloropicrin and Methyl bromide mixture	123	1581
2-Chloroethanal	153	2232	Chloropicrin and Methyl chloride mixture	119	1582
Chloroform	151	1888	Chloropicrin mixture, n.o.s.	154	1583
Chloroformates, poisonous, corrosive, flammable, n.o.s.	155	2742	Chloropivaloyl chloride	156	9263
Chloroformates, poisonous, corrosive, n.o.s.	154	3277	Chloroplatinic acid, solid	154	2507
Chloroformates, toxic, corrosive, flammable, n.o.s.	155	2742	Chloroprene, stabilised	131P	1991
Chloroformates, toxic, corrosive, n.o.s.	154	3277	1-Chloropropane	129	1278
Chloromethyl chloroformate	157	2745	2-Chloropropane	129	2356
Chloromethyl ethyl ether	131	2354	3-Chloropropanol-1	153	2849
3-Chloro-4-methylphenyl isocyanate	156	2236	2-Chloropropene	130P	2456
3-Chloro-4-methylphenyl isocyanate, liquid	156	2236	2-Chloropropionic acid	153	2511
3-Chloro-4-methylphenyl isocyanate, solid	156	3428	2-Chloropropionic acid, solid	153	2511
Chloronitroanilines	153	2237	2-Chloropropionic acid, solution	153	2511
Chloronitrobenzenes	152	1578	2-Chloropyridine	153	2822
Chloronitrobenzenes, liquid	152	3409	Chlorosilanes, corrosive, flammable, n.o.s.	155	2986
Chloronitrobenzenes, solid	152	1578	Chlorosilanes, corrosive, n.o.s.	156	2987
Chloronitrotoluenes, liquid	152	2433	Chlorosilanes, flammable, corrosive, n.o.s.	155	2985
Chloronitrotoluenes, solid	152	2433	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	155	3362

Name of Material	Guide No.	UN No.
Chlorosilanes, poisonous, corrosive, n.o.s.	156	3361
Chlorosilanes, toxic, corrosive, flammable, n.o.s.	155	3362
Chlorosilanes, toxic, corrosive, n.o.s.	156	3361
Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	139	2988
Chlorosulfonic acid (with or without sulfur trioxide mixture)	137	1754
Chlorosulphonic acid (with or without sulphur trioxide mixture)	137	1754
1-Chloro-1,2,2,2-tetrafluoroethane	126	1021
Chlorotetrafluoroethane and Ethylene oxide mixture, with not more than 8.8% Ethylene oxide	126	3297
Chlorotoluenes	129	2238
4-Chloro-o-toluidine hydrochloride	153	1579
4-Chloro-o-toluidine hydrochloride, solid	153	1579
4-Chloro-o-toluidine hydrochloride, solution	153	3410
Chlorotoluidines	153	2239
Chlorotoluidines, liquid	153	3429
Chlorotoluidines, solid	153	2239
1-Chloro-2,2,2-trifluoroethane	126	1983
Chlorotrifluoromethane	126	1022
Chlorotrifluoromethane and Trifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane	126	2599
Chromic acid, solution	154	1755
Chromic fluoride, solid	154	1756
Chromic fluoride, solution	154	1757
Chromium nitrate	141	2720

Name of Material	Guide No.	UN No.
Chromium oxychloride	137	1758
Chromium trioxide, anhydrous	141	1463
Chromosulfuric acid	154	2240
Chromosulphuric acid	154	2240
CK	125	1589
Clinical waste, unspecified, n.o.s.	158	3291
CN	153	1697
CN	153	3416
Coal gas	119	1023
Coal gas, compressed	119	1023
Coal tar distillates, flammable	128	1136
Coating solution	127	1139
Cobalt naphthenates, powder	133	2001
Cobalt resinate, precipitated	133	1318
Combustible liquid, n.o.s.	128	1993
Compounds, cleaning liquid (corrosive)	154	1760
Compounds, cleaning liquid (flammable)	128	1993
Compounds, tree or weed killing, liquid (corrosive)	154	1760
Compounds, tree or weed killing, liquid (flammable)	128	1993
Compounds, tree or weed killing, liquid (toxic)	153	2810
Compressed gas, flammable, n.o.s.	115	1954
Compressed gas, n.o.s.	126	1956
Compressed gas, oxidising, n.o.s.	122	3156
Compressed gas, poisonous, corrosive, n.o.s.	125	3304
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	125	3304

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	125	3304	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	123	1955
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	125	3304	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	123	1955
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	125	3304	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	123	1955
Compressed gas, poisonous, flammable, corrosive, n.o.s.	119	3305	Compressed gas, poisonous, oxidising, corrosive, n.o.s.	124	3306
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3305	Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3306
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3305	Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3306
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3305	Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3306
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3305	Compressed gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3306
Compressed gas, poisonous, flammable, n.o.s.	119	1953	Compressed gas, poisonous, oxidising, n.o.s.	124	3303
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	119	1953	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone A)	124	3303
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	119	1953	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone B)	124	3303
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	119	1953	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone C)	124	3303
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	119	1953	Compressed gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone D)	124	3303
Compressed gas, poisonous, n.o.s.	123	1955	Compressed gas, toxic, corrosive, n.o.s.	125	3304
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	123	1955	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	125	3304

Name of Material	Guide No.	UN No.
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	125	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	125	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	125	3304
Compressed gas, toxic, flammable, corrosive, n.o.s.	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3305
Compressed gas, toxic, flammable, n.o.s.	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	1953
Compressed gas, toxic, n.o.s.	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	123	1955

Name of Material	Guide No.	UN No.
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	123	1955
Compressed gas, toxic, oxidising, corrosive, n.o.s.	124	3306
Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3306
Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3306
Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3306
Compressed gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3306
Compressed gas, toxic, oxidising, n.o.s.	124	3303
Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone A)	124	3303
Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone B)	124	3303
Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone C)	124	3303
Compressed gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone D)	124	3303
Compressed gas and hexaethyl tetraphosphate mixture	123	1612
Consumer commodity	171	8000
Copper acetoarsenite	151	1585
Copper arsenite	151	1586
Copper based pesticide, liquid, flammable, poisonous	131	2776
Copper based pesticide, liquid, flammable, toxic	131	2776

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Copper based pesticide, liquid, poisonous	151	3010	Corrosive solid, acidic, organic, n.o.s.	154	3261
Copper based pesticide, liquid, poisonous, flammable	131	3009	Corrosive solid, basic, inorganic, n.o.s.	154	3262
Copper based pesticide, liquid, toxic	151	3010	Corrosive solid, basic, organic, n.o.s.	154	3263
Copper based pesticide, liquid, toxic, flammable	131	3009	Corrosive solid, flammable, n.o.s.	134	2921
Copper based pesticide, solid, poisonous	151	2775	Corrosive solid, n.o.s.	154	1759
Copper based pesticide, solid, toxic	151	2775	Corrosive solid, oxidising, n.o.s.	157	3084
Copper chlorate	140	2721	Corrosive solid, poisonous, n.o.s.	154	2923
Copper chloride	154	2802	Corrosive solid, self-heating, n.o.s.	136	3095
Copper cyanide	151	1587	Corrosive solid, toxic, n.o.s.	154	2923
Copra	135	1363	Corrosive solid, water-reactive, n.o.s.	138	3096
Corrosive liquid, acidic, inorganic, n.o.s.	154	3264	Cotton	133	1365
Corrosive liquid, acidic, organic, n.o.s.	153	3265	Cotton, wet	133	1365
Corrosive liquid, basic, inorganic, n.o.s.	154	3266	Cotton waste, oily	133	1364
Corrosive liquid, basic, organic, n.o.s.	153	3267	Coumarin derivative pesticide, liquid, flammable, poisonous	131	3024
Corrosive liquid, flammable, n.o.s.	132	2920	Coumarin derivative pesticide, liquid, flammable, toxic	131	3024
Corrosive liquid, n.o.s.	154	1760	Coumarin derivative pesticide, liquid, poisonous	151	3026
Corrosive liquid, oxidising, n.o.s.	157	3093	Coumarin derivative pesticide, liquid, poisonous, flammable	131	3025
Corrosive liquid, poisonous, n.o.s.	154	2922	Coumarin derivative pesticide, liquid, toxic	151	3026
Corrosive liquid, self-heating, n.o.s.	136	3301	Coumarin derivative pesticide, liquid, toxic, flammable	131	3025
Corrosive liquid, toxic, n.o.s.	154	2922	Coumarin derivative pesticide, solid, poisonous	151	3027
Corrosive liquid, water-reactive, n.o.s.	138	3094	Coumarin derivative pesticide, solid, toxic	151	3027
Corrosive solid, acidic, inorganic, n.o.s.	154	3260	Cresols, liquid	153	2076
			Cresols, solid	153	2076

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Cresols, solid	153	3455	Cyclohexyl isocyanate	155	2488
Cresylic acid	153	2022	Cyclohexyl mercaptan	129	3054
Crotonaldehyde	131P	1143	Cyclohexyltrichlorosilane	156	1763
Crotonaldehyde, stabilised	131P	1143	Cyclooctadiene phosphines	135	2940
Crotonic acid	153	2823	Cyclooctadienes	130P	2520
Crotonic acid, liquid	153	2823	Cyclooctatetraene	128P	2358
Crotonic acid, liquid	153	3472	Cyclopentane	128	1146
Crotonic acid, solid	153	2823	Cyclopentanol	129	2244
Crotonylene	128	1144	Cyclopentanone	128	2245
CS	153	2810	Cyclopentene	128	2246
Cumene	130	1918	Cyclopropane	115	1027
Cupriethylenediamine, solution	154	1761	Cymenes	130	2046
CX	154	2811	DA	151	1699
Cyanide solution, n.o.s.	157	1935	Dangerous goods in apparatus	171	3363
Cyanides, inorganic, solid, n.o.s.	157	1588	Dangerous goods in machinery	171	3363
Cyanogen	119	1026	DC	153	2810
Cyanogen bromide	157	1889	Decaborane	134	1868
Cyanogen chloride, stabilised	125	1589	Decahydronaphthalene	130	1147
Cyanuric chloride	157	2670	n-Decane	128	2247
Cyclobutane	115	2601	Denatured alcohol	127	1987
Cyclobutyl chloroformate	155	2744	Desensitised explosive, liquid, n.o.s.	113	3379
1,5,9-Cyclododecatriene	153	2518	Desensitised explosive, solid, n.o.s.	113	3380
Cycloheptane	128	2241	Deuterium	115	1957
Cycloheptatriene	131	2603	Deuterium, compressed	115	1957
Cycloheptene	128	2242	Devices, small, hydrocarbon gas powered, with release device	115	3150
Cyclohexane	128	1145	Diacetone alcohol	129	1148
Cyclohexanethiol	129	3054	Diacetyl	127	2346
Cyclohexanone	127	1915	Diallylamine	132	2359
Cyclohexene	130	2256	Diallyl ether	131P	2360
Cyclohexenyltrichlorosilane	156	1762	4,4'-Diaminodiphenylmethane	153	2651
Cyclohexyl acetate	130	2243			
Cyclohexylamine	132	2357			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Di-n-amylamine	131	2841	Dichloroisocyanuric acid, dry	140	2465
Dibenzylidichlorosilane	156	2434	Dichloroisocyanuric acid salts	140	2465
Diborane	119	1911	Dichloroisopropyl ether	153	2490
Diborane, compressed	119	1911	Dichloromethane	160	1593
Diborane mixtures	119	1911	1,1-Dichloro-1-nitroethane	153	2650
1,2-Dibromobutan-3-one	154	2648	Dichloropentanes	130	1152
Dibromochloropropanes	159	2872	Dichlorophenyl isocyanates	156	2250
Dibromodifluoromethane	171	1941	Dichlorophenyltrichlorosilane	156	1766
Dibromomethane	160	2664	1,2-Dichloropropane	130	1279
Di-n-butylamine	132	2248	1,3-Dichloropropanol-2	153	2750
Dibutylaminoethanol	153	2873	Dichloropropenes	129	2047
Dibutyl ethers	128	1149	Dichlorosilane	119	2189
Dichloroacetic acid	153	1764	1,2-Dichloro-1,1,2,2-tetrafluoroethane	126	1958
1,3-Dichloroacetone	153	2649	3,5-Dichloro-2,4,6-trifluoropyridine	151	9264
Dichloroacetyl chloride	156	1765	Dicyclohexylamine	153	2565
Dichloroanilines, liquid	153	1590	Dicyclohexylammonium nitrite	133	2687
Dichloroanilines, solid	153	1590	Dicyclopentadiene	130P	2048
Dichloroanilines, solid	153	3442	1,2-Di-(dimethylamino)ethane	129	2372
o-Dichlorobenzene	152	1591	Didymium nitrate	140	1465
2,2'-Dichlorodiethyl ether	152	1916	Diesel fuel	128	1202
Dichlorodifluoromethane	126	1028	Diesel fuel	128	1993
Dichlorodifluoromethane and Difluoroethane azeotropic mixture with approximately 74% Dichlorodifluoromethane	126	2602	Diethoxymethane	127	2373
Dichlorodifluoromethane and Ethylene oxide mixture, with not more than 12.5% Ethylene oxide	126	3070	3,3-Diethoxypropene	127	2374
Dichlorodimethyl ether, symmetrical	131	2249	Diethylamine	132	1154
1,1-Dichloroethane	130	2362	2-Diethylaminoethanol	132	2686
1,2-Dichloroethylene	130P	1150	3-Diethylaminopropylamine	132	2684
Dichloroethyl ether	152	1916	Diethylaminopropylamine	132	2684
Dichlorofluoromethane	126	1029	N,N-Diethylaniline	153	2432
			Diethylbenzene	130	2049
			Diethyl carbonate	128	2366
			Diethyldichlorosilane	155	1767

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Diethylenetriamine	154	2079	Dimethylamine, solution	132	1160
Diethyl ether	127	1155	2-Dimethylaminoacetonitrile	131	2378
N,N-Diethylethylenediamine	132	2685	2-Dimethylaminoethanol	132	2051
Diethyl ketone	127	1156	2-Dimethylaminoethyl acrylate	152	3302
Diethyl sulfate	152	1594	2-Dimethylaminoethyl methacrylate	153P	2522
Diethyl sulfide	129	2375	N,N-Dimethylaniline	153	2253
Diethyl sulphate	152	1594	2,3-Dimethylbutane	128	2457
Diethyl sulphide	129	2375	1,3-Dimethylbutylamine	132	2379
Diethylthiophosphoryl chloride	155	2751	Dimethylcarbamoyl chloride	156	2262
Diethylzinc	135	1366	Dimethyl carbonate	129	1161
Difluorochloroethanes	115	2517	Dimethylcyclohexanes	128	2263
1,1-Difluoroethane	115	1030	N,N-Dimethylcyclohexylamine	132	2264
Difluoroethane and Dichlorodifluoromethane azeotropic mixture with approximately 74% Dichlorodifluoromethane	126	2602	Dimethylcyclohexylamine	132	2264
1,1-Difluoroethylene	116P	1959	Dimethyldichlorosilane	155	1162
Difluoromethane	115	3252	Dimethyldiethoxysilane	127	2380
Difluorophosphoric acid, anhydrous	154	1768	Dimethyldioxanes	127	2707
2,3-Dihydropyran	127	2376	Dimethyl disulfide	131	2381
Diisobutylamine	132	2361	Dimethyl disulphide	131	2381
Diisobutylene, isomeric compounds	128	2050	Dimethyl ether	115	1033
Diisobutyl ketone	128	1157	N,N-Dimethylformamide	129	2265
Diisooctyl acid phosphate	153	1902	1,1-Dimethylhydrazine	131	1163
Diisopropylamine	132	1158	Dimethylhydrazine, symmetrical	131	2382
Diisopropyl ether	127	1159	Dimethylhydrazine, unsymmetrical	131	1163
Diketene, stabilised	131P	2521	2,2-Dimethylpropane	115	2044
1,1-Dimethoxyethane	127	2377	Dimethyl-N-propylamine	132	2266
1,2-Dimethoxyethane	127	2252	Dimethyl sulfate	156	1595
Dimethylamine, anhydrous	118	1032	Dimethyl sulfide	130	1164
Dimethylamine, aqueous solution	132	1160	Dimethyl sulphate	156	1595
			Dimethyl sulphide	130	1164
			Dimethyl thiophosphoryl chloride	156	2267

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Dimethylzinc	135	1370	Dipropylamine	132	2383
Dinitroanilines	153	1596	Di-n-propyl ether	127	2384
Dinitrobenzenes, liquid	152	1597	Dipropyl ketone	128	2710
Dinitrobenzenes, solid	152	1597	Disinfectant, liquid, corrosive, n.o.s.	153	1903
Dinitrobenzenes, solid	152	3443	Disinfectant, liquid, poisonous, n.o.s.	151	3142
Dinitrochlorobenzenes	153	1577	Disinfectant, liquid, toxic, n.o.s.	151	3142
Dinitro-o-cresol	153	1598	Disinfectant, solid, poisonous, n.o.s.	151	1601
Dinitrogen tetroxide	124	1067	Disinfectant, solid, toxic, n.o.s.	151	1601
Dinitrogen tetroxide and Nitric oxide mixture	124	1975	Disodium trioxosilicate	154	3253
Dinitrophenol, solution	153	1599	Dispersant gas, n.o.s.	126	1078
Dinitrophenol, wetted with not less than 15% water	113	1320	Dispersant gases, n.o.s. (flammable)	115	1954
Dinitrophenolates, wetted with not less than 15% water	113	1321	Divinyl ether, stabilised	128P	1167
Dinitroresorcinol, wetted with not less than 15% water	113	1322	DM	154	1698
Dinitrotoluenes	152	2038	Dodecyltrichlorosilane	156	1771
Dinitrotoluenes, liquid	152	2038	DP	125	1076
Dinitrotoluenes, molten	152	1600	Dry ice	120	1845
Dinitrotoluenes, solid	152	2038	Dye, liquid, corrosive, n.o.s.	154	2801
Dinitrotoluenes, solid	152	3454	Dye, liquid, poisonous, n.o.s.	151	1602
Dioxane	127	1165	Dye, liquid, toxic, n.o.s.	151	1602
Dioxolane	127	1166	Dye, solid, corrosive, n.o.s.	154	3147
Dipentene	128	2052	Dye, solid, poisonous, n.o.s.	151	3143
Diphenylamine chloroarsine	154	1698	Dye, solid, toxic, n.o.s.	151	3143
Diphenylchloroarsine, liquid	151	1699	Dye intermediate, liquid, corrosive, n.o.s.	154	2801
Diphenylchloroarsine, solid	151	1699	Dye intermediate, liquid, poisonous, n.o.s.	151	1602
Diphenylchloroarsine, solid	151	3450	Dye intermediate, liquid, toxic, n.o.s.	151	1602
Diphenyldichlorosilane	156	1769	Dye intermediate, solid, corrosive, n.o.s.	154	3147
Diphenylmethyl bromide	153	1770			
Dipicryl sulfide, wetted with not less than 10% water	113	2852			
Dipicryl sulphide, wetted with not less than 10% water	113	2852			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Dye intermediate, solid, poisonous, n.o.s.	151	3143	Environmentally hazardous substance, solid, n.o.s.	171	3077
Dye intermediate, solid, toxic, n.o.s.	151	3143	Epibromohydrin	131	2558
ED	151	1892	Epichlorohydrin	131P	2023
Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8°C (100°F), at or above its flash point	128	3256	1,2-Epoxy-3-ethoxypropane	127	2752
Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C (140°F), at or above its flash point	128	3256	Esters, n.o.s.	127	3272
Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point	171	3257	Ethane	115	1035
Elevated temperature solid, n.o.s., at or above 240°C (464°F)	171	3258	Ethane, compressed	115	1035
Engine, fuel cell, flammable gas powered	115	3166	Ethane, refrigerated liquid	115	1961
Engine, fuel cell, flammable gas powered	115	3529	Ethane-Propane mixture, refrigerated liquid	115	1961
Engine, fuel cell, flammable liquid powered	128	3166	Ethanol	127	1170
Engine, fuel cell, flammable liquid powered	128	3528	Ethanol and gasoline mixture, with more than 10% ethanol	127	3475
Engine, internal combustion	128	3166	Ethanol and motor spirit mixture, with more than 10% ethanol	127	3475
Engine, internal combustion	171	3530	Ethanol and petrol mixture, with more than 10% ethanol	127	3475
Engine, internal combustion flammable gas powered	115	3529	Ethanol, solution	127	1170
Engine, internal combustion flammable liquid powered	128	3528	Ethanolamine	153	2491
Engines, internal combustion, flammable gas powered	115	3166	Ethanolamine, solution	153	2491
Engines, internal combustion, flammable liquid powered	128	3166	Ethers, n.o.s.	127	3271
Environmentally hazardous substance, liquid, n.o.s.	171	3082	Ethyl acetate	129	1173
			Ethylacetylene, stabilised	116P	2452
			Ethyl acrylate, stabilised	129P	1917
			Ethyl alcohol	127	1170
			Ethyl alcohol, solution	127	1170
			Ethylamine	118	1036
			Ethylamine, aqueous solution, with not less than 50% but not more than 70% Ethylamine	132	2270
			Ethyl amyl ketone	128	2271
			2-Ethylaniline	153	2273
			N-Ethylaniline	153	2272

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Ethylbenzene	130	1175	Ethylene dibromide	154	1605
N-Ethyl-N-benzylaniline	153	2274	Ethylene dibromide and Methyl bromide mixture, liquid	151	1647
N-Ethylbenzyltoluidines, liquid	153	2753	Ethylene dichloride	131	1184
N-Ethylbenzyltoluidines, solid	153	2753	Ethylene glycol diethyl ether	127	1153
N-Ethylbenzyltoluidines, solid	153	3460	Ethylene glycol monoethyl ether	127	1171
Ethyl borate	129	1176	Ethylene glycol monoethyl ether acetate	129	1172
Ethyl bromide	131	1891	Ethylene glycol monomethyl ether	127	1188
Ethyl bromoacetate	155	1603	Ethylene glycol monomethyl ether acetate	129	1189
2-Ethylbutanol	129	2275	Ethyleneimine, stabilised	131P	1185
2-Ethylbutyl acetate	130	1177	Ethylene oxide	119P	1040
Ethylbutyl acetate	130	1177	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide	115	1041
Ethyl butyl ether	127	1179	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide	119P	3300
2-Ethylbutyraldehyde	130	1178	Ethylene oxide and Carbon dioxide mixtures, with not more than 9% Ethylene oxide	126	1952
Ethyl butyrate	130	1180	Ethylene oxide and Chlorotetrafluoroethane mixture, with not more than 8.8% Ethylene oxide	126	3297
Ethyl chloride	115	1037	Ethylene oxide and Dichlorodifluoromethane mixture, with not more than 12.5% Ethylene oxide	126	3070
Ethyl chloroacetate	155	1181	Ethylene oxide and Pentafluoroethane mixture, with not more than 7.9% Ethylene oxide	126	3298
Ethyl chloroformate	155	1182	Ethylene oxide and Propylene oxide mixture, with not more than 30% Ethylene oxide	131P	2983
Ethyl 2-chloropropionate	129	2935	Ethylene	116P	1962
Ethyl chlorothioformate	155	2826	Ethylene, Acetylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138
Ethyl crotonate	130	1862	Ethylene, compressed	116P	1962
Ethyldichloroarsine	151	1892	Ethylene, refrigerated liquid (cryogenic liquid)	115	1038
Ethyldichlorosilane	139	1183	Ethylene chlorohydrin	131	1135
Ethylene	116P	1962	Ethylenediamine	132	1604

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Ethylene oxide and Tetrafluoroethane mixture, with not more than 5.6% Ethylene oxide	126	3299	Explosives, division 1.1, 1.2, 1.3 or 1.5	112	—
Ethylene oxide with Nitrogen	119P	1040	Explosives, division 1.4 or 1.6	114	—
Ethyl ether	127	1155	Extracts, aromatic, liquid	127	1169
Ethyl fluoride	115	2453	Extracts, flavoring, liquid	127	1197
Ethyl formate	129	1190	Extracts, flavouring, liquid	127	1197
Ethylhexaldehydes	129	1191	Fabrics, animal or vegetable or synthetic, n.o.s. with oil	133	1373
2-Ethylhexylamine	132	2276	Fabrics impregnated with weakly nitrated Nitrocellulose, n.o.s.	133	1353
2-Ethylhexyl chloroformate	156	2748	Ferric arsenate	151	1606
Ethyl isobutyrate	129	2385	Ferric arsenite	151	1607
Ethyl isocyanate	155	2481	Ferric chloride, anhydrous	157	1773
Ethyl lactate	129	1192	Ferric chloride, solution	154	2582
Ethyl mercaptan	129	2363	Ferric nitrate	140	1466
Ethyl methacrylate	130P	2277	Ferrocium	170	1323
Ethyl methacrylate, stabilised	130P	2277	Ferrosilicon	139	1408
Ethyl methyl ether	115	1039	Ferrous arsenate	151	1608
Ethyl methyl ketone	127	1193	Ferrous chloride, solid	154	1759
Ethyl nitrite, solution	131	1194	Ferrous chloride, solution	154	1760
Ethyl orthoformate	129	2524	Ferrous metal borings, shavings, turnings or cuttings	170	2793
Ethyl oxalate	156	2525	Fertilizer, ammoniating solution, with free Ammonia	125	1043
Ethylphenyldichlorosilane	156	2435	Fibres, animal or vegetable, burnt, wet or damp	133	1372
Ethyl phosphonothioic dichloride, anhydrous	154	2927	Fibres, animal or vegetable or synthetic, n.o.s. with oil	133	1373
Ethyl phosphonous dichloride, anhydrous	135	2845	Fibres, vegetable, dry	133	3360
Ethyl phosphorodichloridate	154	2927	Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.	133	1353
1-Ethylpiperidine	132	2386	Fibres, animal or vegetable, burnt, wet or damp	133	1372
Ethyl propionate	129	1195	Fibres, animal or vegetable or synthetic, n.o.s. with oil	133	1373
Ethyl propyl ether	127	2615			
Ethyl silicate	129	1292			
N-Ethyltoluidines	153	2754			
Ethyltrichlorosilane	155	1196			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Fibres, vegetable, dry	133	3360	Flammable solid, oxidising, n.o.s.	140	3097
Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.	133	1353	Flammable solid, poisonous, inorganic, n.o.s.	134	3179
Films, nitrocellulose base	133	1324	Flammable solid, poisonous, organic, n.o.s.	134	2926
Fire extinguisher charges, corrosive liquid	154	1774	Flammable solid, toxic, inorganic, n.o.s.	134	3179
Fire extinguishers with compressed gas	126	1044	Flammable solid, toxic, organic, n.o.s.	134	2926
Fire extinguishers with liquefied gas	126	1044	Fluorine	124	1045
Firelighters, solid, with flammable liquid	133	2623	Fluorine, compressed	124	1045
First aid kit	171	3316	Fluoroacetic acid	154	2642
Fish meal, stabilised	171	2216	Fluoroanilines	153	2941
Fish meal, unstabilised	133	1374	Fluorobenzene	130	2387
Fish scrap, stabilised	171	2216	Fluoroboric acid	154	1775
Fish scrap, unstabilised	133	1374	Fluorophosphoric acid, anhydrous	154	1776
Flammable liquid, corrosive, n.o.s.	132	2924	Fluorosilicates, n.o.s.	151	2856
Flammable liquid, n.o.s.	128	1993	Fluorosilicic acid	154	1778
Flammable liquid, poisonous, corrosive, n.o.s.	131	3286	Fluorosulfonic acid	137	1777
Flammable liquid, poisonous, n.o.s.	131	1992	Fluorosulphonic acid	137	1777
Flammable liquid, toxic, corrosive, n.o.s.	131	3286	Fluorotoluenes	130	2388
Flammable liquid, toxic, n.o.s.	131	1992	Formaldehyde, solution (corrosive)	153	2209
Flammable solid, corrosive, inorganic, n.o.s.	134	3180	Formaldehyde, solution, flammable	132	1198
Flammable solid, corrosive, organic, n.o.s.	134	2925	Formalin (corrosive)	153	2209
Flammable solid, inorganic, n.o.s.	133	3178	Formalin (flammable)	132	1198
Flammable solid, organic, molten, n.o.s.	133	3176	Formic acid	153	1779
Flammable solid, organic, n.o.s.	133	1325	Formic acid, with more than 85% acid	153	1779
			Formic acid, with not less than 5% but less than 10% acid	153	3412
			Formic acid, with not less than 10% but not more than 85% acid	153	3412

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Fuel, aviation, turbine engine	128	1863	Fuel oil	128	1993
Fuel cell cartridges contained in equipment, containing corrosive substances	153	3477	Fumaryl chloride	156	1780
Fuel cell cartridges contained in equipment, containing flammable liquids	128	3473	Fumigated cargo transport unit	171	3359
Fuel cell cartridges contained in equipment, containing hydrogen in metal hydride	115	3479	Fumigated unit	171	3359
Fuel cell cartridges contained in equipment, containing liquefied flammable gas	115	3478	Furaldehydes	153P	1199
Fuel cell cartridges contained in equipment, containing water-reactive substances	138	3476	Furan	128	2389
Fuel cell cartridges, containing corrosive substances	153	3477	Furfural	153P	1199
Fuel cell cartridges, containing flammable liquids	128	3473	Furfuraldehydes	153P	1199
Fuel cell cartridges, containing hydrogen in metal hydride	115	3479	Furfuryl alcohol	153	2874
Fuel cell cartridges, containing liquefied flammable gas	115	3478	Furfurylamine	132	2526
Fuel cell cartridges, containing water-reactive substances	138	3476	Fusee (rail or highway)	133	1325
Fuel cell cartridges packed with equipment, containing corrosive substances	153	3477	Fusel oil	127	1201
Fuel cell cartridges packed with equipment, containing flammable liquids	128	3473	GA	153	2810
Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride	115	3479	Gallium	172	2803
Fuel cell cartridges packed with equipment, containing liquefied flammable gas	115	3478	Gas, refrigerated liquid, flammable, n.o.s.	115	3312
Fuel cell cartridges packed with equipment, containing water-reactive substances	138	3476	Gas, refrigerated liquid, n.o.s.	120	3158
Fuel oil	128	1202	Gas, refrigerated liquid, oxidising, n.o.s.	122	3311
			Gas cartridges	115	2037
			Gas identification set	123	9035
			Gasohol	128	1203
			Gas oil	128	1202
			Gasoline	128	1203
			Gasoline and ethanol mixture, with more than 10% ethanol	127	3475
			Gas sample, non-pressurised, flammable, n.o.s., not refrigerated liquid	115	3167
			Gas sample, non-pressurised, poisonous, flammable, n.o.s., not refrigerated liquid	119	3168
			Gas sample, non-pressurised, poisonous, n.o.s., not refrigerated liquid	123	3169

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Gas sample, non-pressurised, toxic, flammable, n.o.s., not refrigerated liquid	119	3168	Heptafluoropropane	126	3296
Gas sample, non-pressurised, toxic, n.o.s., not refrigerated liquid	123	3169	n-Heptaldehyde	129	3056
GB	153	2810	Heptanes	128	1206
GD	153	2810	n-Heptene	128	2278
Genetically modified micro-organisms	171	3245	Hexachloroacetone	153	2661
Genetically modified organisms	171	3245	Hexachlorobenzene	152	2729
Germane	119	2192	Hexachlorobutadiene	151	2279
Germane, adsorbed	173	3523	Hexachlorocyclopentadiene	151	2646
GF	153	2810	Hexachlorophene	151	2875
Glycerol alpha-monochlorohydrin	153	2689	Hexadecyltrichlorosilane	156	1781
Glycidaldehyde	131P	2622	Hexadiene	130	2458
Guanidine nitrate	143	1467	Hexaethyl tetraphosphate	151	1611
H	153	2810	Hexaethyl tetraphosphate and compressed gas mixture	123	1612
Hafnium powder, dry	135	2545	Hexafluoroacetone	125	2420
Hafnium powder, wetted with not less than 25% water	170	1326	Hexafluoroacetone hydrate	151	2552
Halogenated monomethyldiphenylmethanes, liquid	171	3151	Hexafluoroacetone hydrate, liquid	151	2552
Halogenated monomethyldiphenylmethanes, solid	171	3152	Hexafluoroacetone hydrate, solid	151	3436
Hay, wet, damp or contaminated with oil	133	1327	Hexafluoroethane	126	2193
Hazardous waste, liquid, n.o.s.	171	3082	Hexafluoroethane, compressed	126	2193
Hazardous waste, solid, n.o.s.	171	3077	Hexafluorophosphoric acid	154	1782
HD	153	2810	Hexafluoropropylene	126	1858
Heating oil, light	128	1202	Hexafluoropropylene, compressed	126	1858
Helium	120	1046	Hexaldehyde	130	1207
Helium, compressed	120	1046	Hexamethylenediamine, solid	153	2280
Helium, refrigerated liquid (cryogenic liquid)	120	1963	Hexamethylenediamine, solution	153	1783
			Hexamethylene diisocyanate	156	2281
			Hexamethyleneimine	132	2493
			Hexamethylenetetramine	133	1328
			Hexanes	128	1208
			Hexanoic acid	153	2829

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Hexanols	129	2282	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide	154	1613
1-Hexene	128	2370	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	117P	1051
Hexyltrichlorosilane	156	1784	Hydrofluoric acid	157	1790
HL	153	2810	Hydrofluoric acid and Sulfuric acid mixture	157	1786
HN-1	153	2810	Hydrofluoric acid and Sulphuric acid mixture	157	1786
HN-2	153	2810	Hydrofluorosilicic acid	154	1778
HN-3	153	2810	Hydrogen	115	1049
Hydrazine, anhydrous	132	2029	Hydrogen absorbed in metal hydride	115	9279
Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass	132	3484	Hydrogen, compressed	115	1049
Hydrazine, aqueous solution, with more than 37% Hydrazine	153	2030	Hydrogen in a metal hydride storage system	115	3468
Hydrazine, aqueous solution, with not less than 37% but not more than 64% Hydrazine	153	2030	Hydrogen in a metal hydride storage system contained in equipment	115	3468
Hydrazine, aqueous solution, with not more than 37% Hydrazine	152	3293	Hydrogen in a metal hydride storage system packed with equipment	115	3468
Hydrazine hydrate	153	2030	Hydrogen, refrigerated liquid (cryogenic liquid)	115	1966
Hydriodic acid	154	1787	Hydrogen and Carbon monoxide mixture, compressed	119	2600
Hydrobromic acid	154	1788	Hydrogen and Methane mixture, compressed	115	2034
Hydrocarbon and butadienes mixture, stabilised	116P	1010	Hydrogen bromide, anhydrous	125	1048
Hydrocarbon gas mixture, compressed, n.o.s.	115	1964	Hydrogen chloride, anhydrous	125	1050
Hydrocarbon gas mixture, liquefied, n.o.s.	115	1965	Hydrogen chloride, refrigerated liquid	125	2186
Hydrocarbon gas refills for small devices, with release device	115	3150	Hydrogen cyanide, anhydrous, stabilised	117	1051
Hydrocarbons, liquid, n.o.s.	128	3295	Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide	154	1613
Hydrochloric acid	157	1789			
Hydrocyanic acid, aqueous solution, with less than 5% Hydrogen cyanide	154	1613			

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Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	131	3294
Hydrogen cyanide, stabilised	117P	1051
Hydrogen cyanide, stabilised (absorbed)	152	1614
Hydrogendifluorides, n.o.s.	154	1740
Hydrogendifluorides, solid, n.o.s.	154	1740
Hydrogendifluorides, solution, n.o.s.	154	3471
Hydrogen fluoride, anhydrous	125	1052
Hydrogen iodide, anhydrous	125	2197
Hydrogen peroxide, aqueous solution, stabilised, with more than 60% Hydrogen peroxide	143	2015
Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide	140	2984
Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilised as necessary)	140	2014
Hydrogen peroxide, stabilised	143	2015
Hydrogen peroxide and Peroxyacetic acid mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilised	140	3149
Hydrogen selenide, adsorbed	173	3526
Hydrogen selenide, anhydrous	117	2202
Hydrogen sulfide	117	1053
Hydrogen sulphide	117	1053
Hydroquinone	153	2662
Hydroquinone, solution	153	3435
1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20% water	113	3474

Name of Material	Guide No.	UN No.
1-Hydroxybenzotriazole, monohydrate	113	3474
Hydroxylamine sulphate	154	2865
Hydroxylamine sulphate	154	2865
Hypochlorite solution	154	1791
Hypochlorites, inorganic, n.o.s.	140	3212
3,3'-Iminodipropylamine	153	2269
Infectious substance, affecting animals only	158	2900
Infectious substance, affecting humans	158	2814
Ink, printer's, flammable	129	1210
Insecticide gas, flammable, n.o.s.	115	3354
Insecticide gas, n.o.s.	126	1968
Insecticide gas, poisonous, flammable, n.o.s.	119	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3355
Insecticide gas, poisonous, n.o.s.	123	1967
Insecticide gas, toxic, flammable, n.o.s.	119	3355
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3355
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3355

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3355	Isobutyraldehyde	130	2045
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3355	Isobutyric acid	132	2529
Insecticide gas, toxic, n.o.s.	123	1967	Isobutyronitrile	131	2284
Iodine	154	3495	Isobutryl chloride	132	2395
Iodine monochloride, liquid	157	3498	Isocyanate solution, flammable, poisonous, n.o.s.	155	2478
Iodine monochloride, solid	157	1792	Isocyanate solution, flammable, toxic, n.o.s.	155	2478
Iodine pentafluoride	144	2495	Isocyanate solution, poisonous, flammable, n.o.s.	155	3080
2-Iodobutane	129	2390	Isocyanate solution, poisonous, n.o.s.	155	2206
Iodomethylpropanes	129	2391	Isocyanate solution, toxic, flammable, n.o.s.	155	3080
Iodopropanes	129	2392	Isocyanate solution, toxic, n.o.s.	155	2206
IPDI	156	2290	Isocyanates, flammable, poisonous, n.o.s.	155	2478
Iron oxide, spent	135	1376	Isocyanates, flammable, toxic, n.o.s.	155	2478
Iron pentacarbonyl	136	1994	Isocyanates, poisonous, flammable, n.o.s.	155	3080
Iron sponge, spent	135	1376	Isocyanates, poisonous, n.o.s.	155	2206
Isobutane	115	1075	Isocyanates, toxic, flammable, n.o.s.	155	3080
Isobutane	115	1969	Isocyanates, toxic, n.o.s.	155	2206
Isobutanol	129	1212	Isocyanatobenzotrifluorides	156	2285
Isobutyl acetate	129	1213	Isoheptenes	128	2287
Isobutyl acrylate, stabilised	129P	2527	Isohexenes	128	2288
Isobutyl alcohol	129	1212	Isooctane	128	1262
Isobutyl aldehyde	130	2045	Isooctenes	128	1216
Isobutylamine	132	1214	Isopentane	128	1265
Isobutyl chloroformate	155	2742	Isopentenes	128	2371
Isobutylene	115	1055	Isophoronediamine	153	2289
Isobutylene	115	1075	Isophorone diisocyanate	156	2290
Isobutyl formate	129	2393	Isoprene, stabilised	130P	1218
Isobutyl isobutyrate	130	2528			
Isobutyl isocyanate	155P	2486			
Isobutyl methacrylate, stabilised	130P	2283			
Isobutyl propionate	129	2394			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Isopropanol	129	1219	Lead perchlorate	141	1470
Isopropenyl acetate	129P	2403	Lead perchlorate, solid	141	1470
Isopropenylbenzene	128	2303	Lead perchlorate, solution	141	3408
Isopropyl acetate	129	1220	Lead phosphite, dibasic	133	2989
Isopropyl acid phosphate	153	1793	Lead sulfate, with more than 3% free acid	154	1794
Isopropyl alcohol	129	1219	Lead sulphate, with more than 3% free acid	154	1794
Isopropylamine	132	1221	Lewisite	153	2810
Isopropylbenzene	130	1918	Life-saving appliances, not self-inflating	171	3072
Isopropyl butyrate	129	2405	Life-saving appliances, self-inflating	171	2990
Isopropyl chloroacetate	155	2947	Lighter refills (cigarettes) (flammable gas)	115	1057
Isopropyl chloroformate	155	2407	Lighters (cigarettes) (flammable gas)	115	1057
Isopropyl 2-chloropropionate	129	2934	Lighters, non-pressurised, containing flammable liquid	128	1057
Isopropyl isobutyrate	127	2406	Liquefied gas, flammable, n.o.s.	115	3161
Isopropyl isocyanate	155P	2483	Liquefied gas, n.o.s.	126	3163
Isopropyl nitrate	130	1222	Liquefied gas, oxidising, n.o.s.	122	3157
Isopropyl propionate	129	2409	Liquefied gas, poisonous, corrosive, n.o.s.	125	3308
Isosorbide dinitrate mixture	133	2907	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	125	3308
Isosorbide-5-mononitrate	133	3251	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	125	3308
Kerosene	128	1223	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	125	3308
Ketones, liquid, n.o.s.	127	1224	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	125	3308
Krill meal	133	3497	Liquefied gas, poisonous, flammable, corrosive, n.o.s.	119	3309
Krypton	120	1056			
Krypton, compressed	120	1056			
Krypton, refrigerated liquid (cryogenic liquid)	120	1970			
L (Lewisite)	153	2810			
Lead acetate	151	1616			
Lead arsenates	151	1617			
Lead arsenites	151	1618			
Lead compound, soluble, n.o.s.	151	2291			
Lead cyanide	151	1620			
Lead dioxide	140	1872			
Lead nitrate	141	1469			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3309	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3310
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3309	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3310
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3309	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3310
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3309	Liquefied gas, poisonous, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3310
Liquefied gas, poisonous, flammable, n.o.s.	119	3160	Liquefied gas, poisonous, oxidising, n.o.s.	124	3307
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3160	Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone A)	124	3307
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3160	Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone B)	124	3307
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3160	Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone C)	124	3307
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3160	Liquefied gas, poisonous, oxidising, n.o.s. (Inhalation Hazard Zone D)	124	3307
Liquefied gas, poisonous, n.o.s.	123	3162	Liquefied gas, toxic, corrosive, n.o.s.	125	3308
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	123	3162	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	125	3308
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	123	3162	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	125	3308
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	123	3162	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	125	3308
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	123	3162	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	125	3308
Liquefied gas, poisonous, oxidising, corrosive, n.o.s.	124	3310	Liquefied gas, toxic, flammable, corrosive, n.o.s.	119	3309

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3309	Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3310
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3309	Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3310
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3309	Liquefied gas, toxic, oxidising, n.o.s.	124	3307
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3309	Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone A)	124	3307
Liquefied gas, toxic, flammable, n.o.s.	119	3160	Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone B)	124	3307
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3160	Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone C)	124	3307
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3160	Liquefied gas, toxic, oxidising, n.o.s. (Inhalation Hazard Zone D)	124	3307
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3160	Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air	120	1058
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3160	Liquefied natural gas (cryogenic liquid)	115	1972
Liquefied gas, toxic, n.o.s.	123	3162	Liquefied petroleum gas	115	1075
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	123	3162	Lithium	138	1415
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	123	3162	Lithium alkyls	135	2445
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	123	3162	Lithium alkyls, liquid	135	2445
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)	123	3162	Lithium alkyls, solid	135	3433
Liquefied gas, toxic, oxidising, corrosive, n.o.s.	124	3310	Lithium aluminum hydride	138	1410
Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3310	Lithium aluminum hydride, ethereal	138	1411
Liquefied gas, toxic, oxidising, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3310	Lithium batteries	138	3090
			Lithium batteries contained in equipment	138	3091
			Lithium batteries packed with equipment	138	3091
			Lithium batteries installed in cargo transport unit (lithium ion batteries)	147	3536
			Lithium batteries installed in cargo transport unit (lithium metal batteries)	138	3536
			Lithium borohydride	138	1413

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Lithium ferrosilicon	139	2830	Machinery, fuel cell, flammable liquid powered	128	3528
Lithium hydride	138	1414	Machinery, internal combustion	171	3530
Lithium hydride, fused solid	138	2805	Machinery, internal combustion, flammable gas powered	115	3529
Lithium hydroxide	154	2680	Machinery, internal combustion, flammable liquid powered	128	3528
Lithium hydroxide, monohydrate	154	2680	Magnesium	138	1869
Lithium hydroxide, solution	154	2679	Magnesium, in pellets, turnings or ribbons	138	1869
Lithium hypochlorite, dry	140	1471	Magnesium alkyls	135	3053
Lithium hypochlorite mixture	140	1471	Magnesium alloys, with more than 50% Magnesium, in pellets, turnings or ribbons	138	1869
Lithium hypochlorite mixtures, dry	140	1471	Magnesium alloys powder	138	1418
Lithium ion batteries (including lithium ion polymer batteries)	147	3480	Magnesium aluminum phosphide	139	1419
Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	147	3481	Magnesium arsenate	151	1622
Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	147	3481	Magnesium bromate	140	1473
Lithium metal batteries (including lithium alloy batteries)	138	3090	Magnesium chlorate	140	2723
Lithium metal batteries contained in equipment (including lithium alloy batteries)	138	3091	Magnesium chloride and Chlorate mixture	140	1459
Lithium metal batteries packed with equipment (including lithium alloy batteries)	138	3091	Magnesium chloride and Chlorate mixture, solid	140	1459
Lithium nitrate	140	2722	Magnesium chloride and Chlorate mixture, solution	140	3407
Lithium nitride	139	2806	Magnesium diamide	135	2004
Lithium peroxide	143	1472	Magnesium diphenyl	135	2005
Lithium silicon	138	1417	Magnesium fluorosilicate	151	2853
LNG (cryogenic liquid)	115	1972	Magnesium granules, coated	138	2950
London purple	151	1621	Magnesium hydride	138	2010
LPG	115	1075	Magnesium nitrate	140	1474
Machinery, fuel cell, flammable gas powered	115	3529	Magnesium perchlorate	140	1475
			Magnesium peroxide	140	1476
			Magnesium phosphide	139	2011

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Magnesium powder	138	1418	Mercaptan mixture, liquid, flammable, toxic, n.o.s.	131	1228
Magnesium silicide	138	2624	Mercaptan mixture, liquid, poisonous, flammable, n.o.s.	131	3071
Magnesium silicofluoride	151	2853	Mercaptan mixture, liquid, toxic, flammable, n.o.s.	131	3071
Magnetized material	171	2807	Mercaptans, liquid, flammable, n.o.s.	130	3336
Maleic anhydride	156	2215	Mercaptans, liquid, flammable, poisonous, n.o.s.	131	1228
Maleic anhydride, molten	156	2215	Mercaptans, liquid, flammable, toxic, n.o.s.	131	1228
Malononitrile	153	2647	Mercaptans, liquid, poisonous, flammable, n.o.s.	131	3071
Maneb	135	2210	Mercaptans, liquid, toxic, flammable, n.o.s.	131	3071
Maneb, stabilised	135	2968	Mercuric arsenate	151	1623
Maneb preparation, stabilised	135	2968	Mercuric bromide	154	1634
Maneb preparation, with not less than 60% Maneb	135	2210	Mercuric chloride	154	1624
Manganese nitrate	140	2724	Mercuric cyanide	154	1636
Manganese resinate	133	1330	Mercuric nitrate	141	1625
Matches, fusee	133	2254	Mercuric oxycyanide	151	1642
Matches, safety	133	1944	Mercuric potassium cyanide	157	1626
Matches, "strike anywhere"	133	1331	Mercuric sulfate	151	1645
Matches, wax "vesta"	133	1945	Mercuric sulphate	151	1645
MD	152	1556	Mercurous bromide	154	1634
Medical waste, category A, affecting animals only, solid	158	3549	Mercurous nitrate	141	1627
Medical waste, category A, affecting humans, solid	158	3549	Mercury	172	2809
Medical waste, n.o.s.	158	3291	Mercury acetate	151	1629
Medicine, liquid, flammable, poisonous, n.o.s.	131	3248	Mercury ammonium chloride	151	1630
Medicine, liquid, flammable, toxic, n.o.s.	131	3248	Mercury based pesticide, liquid, flammable, poisonous	131	2778
Medicine, liquid, poisonous, n.o.s.	151	1851	Mercury based pesticide, liquid, flammable, toxic	131	2778
Medicine, liquid, toxic, n.o.s.	151	1851	Mercury based pesticide, liquid, poisonous	151	3012
Medicine, solid, poisonous, n.o.s.	151	3249			
Medicine, solid, toxic, n.o.s.	151	3249			
Mercaptan mixture, liquid, flammable, n.o.s.	130	3336			
Mercaptan mixture, liquid, flammable, poisonous, n.o.s.	131	1228			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Mercury based pesticide, liquid, poisonous, flammable	131	3011	Metal alkyls, water-reactive, n.o.s.	135	2003
Mercury based pesticide, liquid, toxic	151	3012	Metal aryl halides, water-reactive, n.o.s.	138	3049
Mercury based pesticide, liquid, toxic, flammable	131	3011	Metal aryl hydrides, water-reactive, n.o.s.	138	3050
Mercury based pesticide, solid, poisonous	151	2777	Metal aryls, water-reactive, n.o.s.	135	2003
Mercury based pesticide, solid, toxic	151	2777	Metal carbonyls, liquid, n.o.s.	151	3281
Mercury benzoate	154	1631	Metal carbonyls, n.o.s.	151	3281
Mercury bromides	154	1634	Metal carbonyls, solid, n.o.s.	151	3466
Mercury compound, liquid, n.o.s.	151	2024	Metal catalyst, dry	135	2881
Mercury compound, solid, n.o.s.	151	2025	Metal catalyst, wetted	170	1378
Mercury contained in manufactured articles	172	3506	Metaldehyde	133	1332
Mercury cyanide	154	1636	Metal hydrides, flammable, n.o.s.	170	3182
Mercury gluconate	151	1637	Metal hydrides, water-reactive, n.o.s.	138	1409
Mercury iodide	151	1638	Metallic substance, water-reactive, n.o.s.	138	3208
Mercury metal	172	2809	Metallic substance, water-reactive, self-heating, n.o.s.	138	3209
Mercury nucleate	151	1639	Metal powder, flammable, n.o.s.	170	3089
Mercury oleate	151	1640	Metal powder, self-heating, n.o.s.	135	3189
Mercury oxide	151	1641	Metal salts of organic compounds, flammable, n.o.s.	133	3181
Mercury oxycyanide, desensitised	151	1642	Methacrylaldehyde, stabilised	131P	2396
Mercury potassium iodide	151	1643	Methacrylic acid, stabilised	153P	2531
Mercury salicylate	151	1644	Methacrylonitrile, stabilised	131P	3079
Mercury sulfate	151	1645	Methallyl alcohol	129	2614
Mercury sulphate	151	1645	Methane	115	1971
Mercury thiocyanate	151	1646	Methane, compressed	115	1971
Mesityl oxide	129	1229	Methane, refrigerated liquid (cryogenic liquid)	115	1972
Metal alkyl halides, water-reactive, n.o.s.	138	3049			
Metal alkyl hydrides, water-reactive, n.o.s.	138	3050			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Methane and Hydrogen mixture, compressed	115	2034	3-Methylbutan-2-one	127	2397
Methanesulfonyl chloride	156	3246	2-Methyl-1-butene	128	2459
Methanesulphonyl chloride	156	3246	2-Methyl-2-butene	128	2460
Methanol	131	1230	3-Methyl-1-butene	128	2561
Methoxymethyl isocyanate	155	2605	N-Methylbutylamine	132	2945
4-Methoxy-4-methylpentan-2-one	128	2293	Methyl tert-butyl ether	127	2398
1-Methoxy-2-propanol	129	3092	Methyl butyrate	129	1237
Methyl acetate	129	1231	Methyl chloride	115	1063
Methylacetylene and Propadiene mixture, stabilised	116P	1060	Methyl chloride and Chloropicrin mixture	119	1582
Methyl acrylate, stabilised	129P	1919	Methyl chloride and Methylene chloride mixture	115	1912
Methylal	127	1234	Methyl chloroacetate	155	2295
Methyl alcohol	131	1230	Methyl chloroformate	155	1238
Methylallyl chloride	130P	2554	Methyl chloromethyl ether	131	1239
Methylamine, anhydrous	118	1061	Methyl 2-chloropropionate	129	2933
Methylamine, aqueous solution	132	1235	Methylchlorosilane	119	2534
Methylamyl acetate	130	1233	Methylcyclohexane	128	2296
Methylamyl alcohol	129	2053	Methylcyclohexanols	129	2617
Methyl amyl ketone	127	1110	Methylcyclohexanone	128	2297
N-Methylaniline	153	2294	Methylcyclopentane	128	2298
alpha-Methylbenzyl alcohol	153	2937	Methyl dichloroacetate	155	2299
alpha-Methylbenzyl alcohol, liquid	153	2937	Methyldichloroarsine	152	1556
alpha-Methylbenzyl alcohol, solid	153	3438	Methyldichlorosilane	139	1242
Methylbenzyl alcohol (alpha)	153	2937	Methylene chloride	160	1593
Methyl bromide	123	1062	Methylene chloride and Methyl chloride mixture	115	1912
Methyl bromide and Chloropicrin mixture	123	1581	Methyl ethyl ether	115	1039
Methyl bromide and Ethylene dibromide mixture, liquid	151	1647	Methyl ethyl ketone	127	1193
Methyl bromoacetate	155	2643	2-Methyl-5-ethylpyridine	153	2300
2-Methylbutanal	129	3371	Methyl fluoride	115	2454
			Methyl formate	129	1243
			2-Methylfuran	128	2301
			2-Methyl-2-heptanethiol	131	3023

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
5-Methylhexan-2-one	127	2302	M.I.B.C.	129	2053
Methylhydrazine	131	1244	Molten sulfur	133	2448
Methyl iodide	151	2644	Molten sulphur	133	2448
Methyl isobutyl carbinol	129	2053	Molybdenum pentachloride	156	2508
Methyl isobutyl ketone	127	1245	Monoethanolamine	153	2491
Methyl isocyanate	155P	2480	Mononitrotoluidines	153	2660
Methyl isopropenyl ketone, stabilised	127P	1246	Morpholine	132	2054
Methyl isothiocyanate	131	2477	Motor fuel anti-knock mixture	152	1649
Methyl isovalerate	130	2400	Motor fuel anti-knock mixture, flammable	131	3483
Methyl magnesium bromide in Ethyl ether	138	1928	Motor spirit	128	1203
Methyl mercaptan	117	1064	Motor spirit and ethanol mixture, with more than 10% ethanol	127	3475
Methyl methacrylate monomer, stabilised	129P	1247	Muriatic acid	157	1789
4-Methylmorpholine	132	2535	Musk xylene	149	2956
N-Methylmorpholine	132	2535	Mustard	153	2810
Methyl nitrite	116	2455	Mustard Lewisite	153	2810
Methyl orthosilicate	155	2606	Naphthalene, crude	133	1334
Methylpentadiene	128	2461	Naphthalene, molten	133	2304
2-Methylpentan-2-ol	129	2560	Naphthalene, refined	133	1334
Methylphenyldichlorosilane	156	2437	alpha-Naphthylamine	153	2077
Methyl phosphonic dichloride	137	9206	beta-Naphthylamine	153	1650
Methyl phosphonous dichloride	135	2845	beta-Naphthylamine, solid	153	1650
1-Methylpiperidine	132	2399	beta-Naphthylamine, solution	153	3411
Methyl propionate	129	1248	Naphthylamine (alpha)	153	2077
Methyl propyl ether	127	2612	Naphthylamine (beta)	153	1650
Methyl propyl ketone	127	1249	Naphthylamine (beta), solid	153	1650
Methyltetrahydrofuran	127	2536	Naphthylamine (beta), solution	153	3411
Methyl trichloroacetate	156	2533	Naphthylthiourea	153	1651
Methyltrichlorosilane	155	1250	Naphthylurea	153	1652
alpha-Methylvaleraldehyde	130	2367	Natural gas, compressed	115	1971
Methyl valeraldehyde (alpha)	130	2367	Natural gas, refrigerated liquid (cryogenic liquid)	115	1972
Methyl vinyl ketone, stabilised	131P	1251			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Neohexane	128	1208	Nitrating acid mixture with more than 50% nitric acid	157	1796
Neon	120	1065	Nitrating acid mixture with not more than 50% nitric acid	157	1796
Neon, compressed	120	1065	Nitrating acid mixture, spent, with more than 50% nitric acid	157	1826
Neon, refrigerated liquid (cryogenic liquid)	120	1913	Nitrating acid mixture, spent, with not more than 50% nitric acid	157	1826
Nickel carbonyl	131	1259	Nitric acid, other than red fuming, with more than 70% nitric acid	157	2031
Nickel catalyst, dry	135	2881	Nitric acid, other than red fuming, with not more than 70% nitric acid	157	2031
Nickel cyanide	151	1653	Nitric acid, red fuming	157	2032
Nickel nitrate	140	2725	Nitric oxide	124	1660
Nickel nitrite	140	2726	Nitric oxide, compressed	124	1660
Nicotine	151	1654	Nitric oxide and Dinitrogen tetroxide mixture	124	1975
Nicotine compound, liquid, n.o.s.	151	3144	Nitric oxide and Nitrogen dioxide mixture	124	1975
Nicotine compound, solid, n.o.s.	151	1655	Nitric oxide and Nitrogen tetroxide mixture	124	1975
Nicotine hydrochloride	151	1656	Nitriles, flammable, poisonous, n.o.s.	131	3273
Nicotine hydrochloride, liquid	151	1656	Nitriles, flammable, toxic, n.o.s.	131	3273
Nicotine hydrochloride, solid	151	3444	Nitriles, liquid, poisonous, n.o.s.	151	3276
Nicotine hydrochloride, solution	151	1656	Nitriles, liquid, toxic, n.o.s.	151	3276
Nicotine preparation, liquid, n.o.s.	151	3144	Nitriles, poisonous, flammable, n.o.s.	131	3275
Nicotine preparation, solid, n.o.s.	151	1655	Nitriles, poisonous, liquid, n.o.s.	151	3276
Nicotine salicylate	151	1657	Nitriles, poisonous, n.o.s.	151	3276
Nicotine sulfate, solid	151	1658	Nitriles, poisonous, solid, n.o.s.	151	3439
Nicotine sulfate, solid	151	3445	Nitriles, solid, poisonous, n.o.s.	151	3439
Nicotine sulfate, solution	151	1658	Nitriles, solid, toxic, n.o.s.	151	3439
Nicotine sulphate, solid	151	1658			
Nicotine sulphate, solid	151	3445			
Nicotine sulphate, solution	151	1658			
Nicotine tartrate	151	1659			
Nitrates, inorganic, aqueous solution, n.o.s.	140	3218			
Nitrates, inorganic, n.o.s.	140	1477			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Nitriles, toxic, flammable, n.o.s.	131	3275	Nitrocellulose with water, not less than 25% water	113	2555
Nitriles, toxic, liquid, n.o.s.	151	3276	3-Nitro-4-chlorobenzotrifluoride	152	2307
Nitriles, toxic, n.o.s.	151	3276	Nitrocresols	153	2446
Nitriles, toxic, solid, n.o.s.	151	3439	Nitrocresols, liquid	153	3434
Nitrites, inorganic, aqueous solution, n.o.s.	140	3219	Nitrocresols, solid	153	2446
Nitrites, inorganic, n.o.s.	140	2627	Nitroethane	129	2842
Nitroanilines	153	1661	Nitrogen	120	1066
Nitroanisoles, liquid	152	2730	Nitrogen, compressed	120	1066
Nitroanisoles, solid	152	2730	Nitrogen, refrigerated liquid (cryogenic liquid)	120	1977
Nitroanisoles, solid	152	3458	Nitrogen and Rare gases mixture, compressed	120	1981
Nitrobenzene	152	1662	Nitrogen dioxide	124	1067
Nitrobenzenesulfonic acid	153	2305	Nitrogen dioxide and Nitric oxide mixture	124	1975
Nitrobenzenesulphonic acid	153	2305	Nitrogen tetroxide and Nitric oxide mixture	124	1975
Nitrobenzotrifluorides	152	2306	Nitrogen trifluoride	122	2451
Nitrobenzotrifluorides, liquid	152	2306	Nitrogen trifluoride, compressed	122	2451
Nitrobenzotrifluorides, solid	152	3431	Nitrogen trioxide	124	2421
Nitrobromobenzenes, liquid	152	2732	Nitroglycerin, solution in alcohol, with more than 1% but not more than 5% Nitroglycerin	127	3064
Nitrobromobenzenes, solid	152	2732	Nitroglycerin, solution in alcohol, with not more than 1% Nitroglycerin	127	1204
Nitrobromobenzenes, solid	152	3459	Nitroglycerin mixture, desensitised, liquid, flammable, n.o.s., with not more than 30% Nitroglycerin	113	3343
Nitrocellulose membrane filters	133	3270	Nitroglycerin mixture, desensitised, liquid, n.o.s., with not more than 30% Nitroglycerin	113	3357
Nitrocellulose mixture, without pigment	133	2557			
Nitrocellulose mixture, without plasticizer	133	2557			
Nitrocellulose mixture, with pigment	133	2557			
Nitrocellulose mixture, with plasticizer	133	2557			
Nitrocellulose, solution, flammable	127	2059			
Nitrocellulose with alcohol	113	2556			
Nitrocellulose with not less than 25% alcohol	113	2556			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Nitroglycerin mixture, desensitised, solid, n.o.s., with more than 2% but not more than 10% Nitroglycerin	113	3319	Nonanes	128	1920
Nitroguanidine, wetted with not less than 20% water	113	1336	Nonyltrichlorosilane	156	1799
Nitrohydrochloric acid	157	1798	2,5-Norbornadiene, stabilised	128P	2251
Nitromethane	129	1261	Octadecyltrichlorosilane	156	1800
Nitronaphthalene	133	2538	Octadiene	128P	2309
Nitrophenols	153	1663	Octafluorobut-2-ene	126	2422
4-Nitrophenylhydrazine, with not less than 30% water	113	3376	Octafluorocyclobutane	126	1976
Nitropropanes	129	2608	Octafluoropropane	126	2424
p-Nitrosodimethylaniline	135	1369	Octanes	128	1262
Nitrostarch, wetted with not less than 20% water	113	1337	Octyl aldehydes	129	1191
Nitrosyl chloride	125	1069	Octyltrichlorosilane	156	1801
Nitrosylsulfuric acid, liquid	157	2308	Oil, petroleum	128	1270
Nitrosylsulfuric acid, solid	157	2308	Oil gas	119	1071
Nitrosylsulphuric acid, solid	157	3456	Oil gas, compressed	119	1071
Nitrosylsulphuric acid, liquid	157	2308	Organic peroxide type B, liquid	146	3101
Nitrosylsulfuric acid, solid	157	2308	Organic peroxide type B, liquid, temperature controlled	148	3111
Nitrosylsulphuric acid, solid	157	3456	Organic peroxide type B, solid	146	3102
Nitrotoluenes, liquid	152	1664	Organic peroxide type B, solid, temperature controlled	148	3112
Nitrotoluenes, solid	152	1664	Organic peroxide type C, liquid	146	3103
Nitrotoluenes, solid	152	3446	Organic peroxide type C, liquid, temperature controlled	148	3113
Nitrotoluidines (mono)	153	2660	Organic peroxide type C, solid	146	3104
Nitrous oxide	122	1070	Organic peroxide type C, solid, temperature controlled	148	3114
Nitrous oxide, compressed	122	1070	Organic peroxide type D, liquid	145	3105
Nitrous oxide, refrigerated liquid	122	2201	Organic peroxide type D, liquid, temperature controlled	148	3115
Nitrous oxide and Carbon dioxide mixture	126	1015	Organic peroxide type D, solid	145	3106
Nitroxylenes, liquid	152	1665	Organic peroxide type D, solid, temperature controlled	148	3116
Nitroxylenes, solid	152	1665	Organic peroxide type E, liquid	145	3107
Nitroxylenes, solid	152	3447			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Organic peroxide type E, liquid, temperature controlled	148	3117	Organochlorine pesticide, solid, toxic	151	2761
Organic peroxide type E, solid	145	3108	Organometallic compound, liquid, poisonous, n.o.s.	151	3282
Organic peroxide type E, solid, temperature controlled	148	3118	Organometallic compound, liquid, toxic, n.o.s.	151	3282
Organic peroxide type F, liquid	145	3109	Organometallic compound, poisonous, liquid, n.o.s.	151	3282
Organic peroxide type F, liquid, temperature controlled	148	3119	Organometallic compound, poisonous, n.o.s.	151	3282
Organic peroxide type F, solid	145	3110	Organometallic compound, poisonous, solid, n.o.s.	151	3467
Organic peroxide type F, solid, temperature controlled	148	3120	Organometallic compound, solid, poisonous, n.o.s.	151	3467
Organic phosphate compound mixed with compressed gas	123	1955	Organometallic compound, solid, toxic, n.o.s.	151	3467
Organic phosphate mixed with compressed gas	123	1955	Organometallic compound, toxic, liquid, n.o.s.	151	3282
Organic phosphorus compound mixed with compressed gas	123	1955	Organometallic compound, toxic, n.o.s.	151	3282
Organic pigments, self-heating	135	3313	Organometallic compound, toxic, solid, n.o.s.	151	3467
Organoarsenic compound, liquid, n.o.s.	151	3280	Organometallic compound, water-reactive, flammable, n.o.s.	138	3207
Organoarsenic compound, n.o.s.	151	3280	Organometallic compound dispersion, water-reactive, flammable, n.o.s.	138	3207
Organoarsenic compound, solid, n.o.s.	151	3465	Organometallic compound solution, water-reactive, flammable, n.o.s.	138	3207
Organochlorine pesticide, liquid, flammable, poisonous	131	2762	Organometallic substance, liquid, pyrophoric	135	3392
Organochlorine pesticide, liquid, flammable, toxic	131	2762	Organometallic substance, liquid, pyrophoric, water-reactive	135	3394
Organochlorine pesticide, liquid, poisonous	151	2996	Organometallic substance, liquid, water-reactive	135	3398
Organochlorine pesticide, liquid, poisonous, flammable	131	2995	Organometallic substance, liquid, water-reactive, flammable	138	3399
Organochlorine pesticide, liquid, toxic	151	2996			
Organochlorine pesticide, liquid, toxic, flammable	131	2995			
Organochlorine pesticide, solid, poisonous	151	2761			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Organometallic substance, solid, pyrophoric	135	3391	Organophosphorus pesticide, liquid, flammable, toxic	131	2784
Organometallic substance, solid, pyrophoric, water-reactive	135	3393	Organophosphorus pesticide, liquid, poisonous	152	3018
Organometallic substance, solid, self-heating	138	3400	Organophosphorus pesticide, liquid, poisonous, flammable	131	3017
Organometallic substance, solid, water-reactive	135	3395	Organophosphorus pesticide, liquid, toxic	152	3018
Organometallic substance, solid, water-reactive, flammable	138	3396	Organophosphorus pesticide, liquid, toxic, flammable	131	3017
Organometallic substance, solid, water-reactive, self-heating	138	3397	Organophosphorus pesticide, solid, poisonous	152	2783
Organophosphorus compound, liquid, poisonous, n.o.s.	151	3278	Organophosphorus pesticide, solid, toxic	152	2783
Organophosphorus compound, liquid, toxic, n.o.s.	151	3278	Organotin compound, liquid, n.o.s.	153	2788
Organophosphorus compound, poisonous, flammable, n.o.s.	131	3279	Organotin compound, solid, n.o.s.	153	3146
Organophosphorus compound, poisonous, liquid, n.o.s.	151	3278	Organotin pesticide, liquid, flammable, poisonous	131	2787
Organophosphorus compound, poisonous, n.o.s.	151	3278	Organotin pesticide, liquid, flammable, toxic	131	2787
Organophosphorus compound, poisonous, solid, n.o.s.	151	3464	Organotin pesticide, liquid, poisonous	153	3020
Organophosphorus compound, solid, poisonous, n.o.s.	151	3464	Organotin pesticide, liquid, poisonous, flammable	131	3019
Organophosphorus compound, solid, toxic, n.o.s.	151	3464	Organotin pesticide, liquid, toxic	153	3020
Organophosphorus compound, toxic, flammable, n.o.s.	131	3279	Organotin pesticide, liquid, toxic, flammable	131	3019
Organophosphorus compound, toxic, liquid, n.o.s.	151	3278	Organotin pesticide, solid, poisonous	153	2786
Organophosphorus compound, toxic, n.o.s.	151	3278	Organotin pesticide, solid, toxic	153	2786
Organophosphorus compound, toxic, solid, n.o.s.	151	3464	Osmium tetroxide	154	2471
Organophosphorus pesticide, liquid, flammable, poisonous	131	2784	Other regulated substances, liquid, n.o.s.	171	3082
			Other regulated substances, solid, n.o.s.	171	3077
			Oxidising liquid, corrosive, n.o.s.	140	3098

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Oxidising liquid, n.o.s.	140	3139	Paint related material, corrosive, flammable	132	3470
Oxidising liquid, poisonous, n.o.s.	142	3099	Paint related material (flammable)	128	1263
Oxidising liquid, toxic, n.o.s.	142	3099	Paint related material, flammable, corrosive	132	3469
Oxidising solid, corrosive, n.o.s.	140	3085	Paper, unsaturated oil treated	133	1379
Oxidising solid, flammable, n.o.s.	140	3137	Paraformaldehyde	133	2213
Oxidising solid, n.o.s.	140	1479	Paraldehyde	129	1264
Oxidising solid, poisonous, n.o.s.	141	3087	Parathion and compressed gas mixture	123	1967
Oxidising solid, self-heating, n.o.s.	135	3100	PCB	171	2315
Oxidising solid, toxic, n.o.s.	141	3087	PD	152	1556
Oxidising solid, water-reactive, n.o.s.	144	3121	Pentaborane	135	1380
Oxygen	122	1072	Pentachloroethane	151	1669
Oxygen, compressed	122	1072	Pentachlorophenol	154	3155
Oxygen, refrigerated liquid (cryogenic liquid)	122	1073	Pentaerythrite tetranitrate mixture, desensitised, solid, n.o.s., with more than 10% but not more than 20% PETN	113	3344
Oxygen and Carbon dioxide mixture, compressed	122	1014	Pentaerythritol tetranitrate mixture, desensitised, solid, n.o.s., with more than 10% but not more than 20% PETN	113	3344
Oxygen and Rare gases mixture, compressed	120	1980	Pentafluoroethane	126	3220
Oxygen difluoride	124	2190	Pentafluoroethane and Ethylene oxide mixture, with not more than 7.9% Ethylene oxide	126	3298
Oxygen difluoride, compressed	124	2190	Pentamethylheptane	128	2286
Oxygen generator, chemical	140	3356	Pentane-2,4-dione	131	2310
Oxygen generator, chemical, spent	140	3356	Pentanes	128	1265
Packaging discarded, empty, uncleaned	171	3509	Pentanol	129	1105
Paint (corrosive)	153	3066	1-Pentene	128	1108
Paint, corrosive, flammable	132	3470	1-Pentol	153P	2705
Paint (flammable)	128	1263	Perchlorates, inorganic, aqueous solution, n.o.s.	140	3211
Paint, flammable, corrosive	132	3469	Perchlorates, inorganic, n.o.s.	140	1481
Paint related material (corrosive)	153	3066			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Perchloric acid, with more than 50% but not more than 72% acid	143	1873	Pesticide, solid, poisonous, n.o.s.	151	2588
Perchloric acid, with not more than 50% acid	157	1802	Pesticide, solid, toxic, n.o.s.	151	2588
Perchloroethylene	160	1897	PETN mixture, desensitised, solid, n.o.s., with more than 10% but not more than 20% PETN	113	3344
Perchloromethyl mercaptan	157	1670	Petrol	128	1203
Perchloryl fluoride	124	3083	Petrol and ethanol mixture, with more than 10% ethanol	127	3475
Perfluoro(ethyl vinyl ether)	115	3154	Petroleum crude oil	128	1267
Perfluoro(methyl vinyl ether)	115	3153	Petroleum distillates, n.o.s.	128	1268
Perfumery products, with flammable solvents	127	1266	Petroleum gases, liquefied	115	1075
Permanganates, inorganic, aqueous solution, n.o.s.	140	3214	Petroleum oil	128	1270
Permanganates, inorganic, n.o.s.	140	1482	Petroleum products, n.o.s.	128	1268
Peroxides, inorganic, n.o.s.	140	1483	Petroleum sour crude oil, flammable, poisonous	131	3494
Peroxyacetic acid and hydrogen peroxide mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilised	140	3149	Petroleum sour crude oil, flammable, toxic	131	3494
Persulfates, inorganic, aqueous solution, n.o.s.	140	3216	Phenacyl bromide	153	2645
Persulfates, inorganic, n.o.s.	140	3215	Phenetidines	153	2311
Persulphates, inorganic, aqueous solution, n.o.s.	140	3216	Phenol, molten	153	2312
Persulphates, inorganic, n.o.s.	140	3215	Phenol, solid	153	1671
Pesticide, liquid, flammable, poisonous, n.o.s.	131	3021	Phenol solution	153	2821
Pesticide, liquid, flammable, toxic, n.o.s.	131	3021	Phenolates, liquid	154	2904
Pesticide, liquid, poisonous, flammable, n.o.s.	131	2903	Phenolates, solid	154	2905
Pesticide, liquid, poisonous, n.o.s.	151	2902	Phenolsulfonic acid, liquid	153	1803
Pesticide, liquid, toxic, flammable, n.o.s.	131	2903	Phenolsulphonic acid, liquid	153	1803
Pesticide, liquid, toxic, n.o.s.	151	2902	Phenoxyacetic acid derivative pesticide, liquid, flammable, poisonous	131	3346
Pesticide, liquid, toxic, flammable, n.o.s.	131	2903	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic	131	3346
Pesticide, liquid, toxic, n.o.s.	151	2902	Phenoxyacetic acid derivative pesticide, liquid, poisonous	153	3348

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Phenoxyacetic acid derivative pesticide, liquid, poisonous, flammable	131	3347	Phosphoric acid, liquid	154	1805
Phenoxyacetic acid derivative pesticide, liquid, toxic	153	3348	Phosphoric acid, solid	154	1805
Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable	131	3347	Phosphoric acid, solid	154	3453
Phenoxyacetic acid derivative pesticide, solid, poisonous	153	3345	Phosphoric acid, solution	154	1805
Phenoxyacetic acid derivative pesticide, solid, toxic	153	3345	Phosphorous acid	154	2834
Phenylacetone nitrile, liquid	152	2470	Phosphorus, amorphous	133	1338
Phenylacetyl chloride	156	2577	Phosphorus, white, dry or under water or in solution	136	1381
Phenylcarbylamine chloride	151	1672	Phosphorus, white, molten	136	2447
Phenyl chloroformate	156	2746	Phosphorus, yellow, dry or under water or in solution	136	1381
Phenylenediamines	153	1673	Phosphorus heptasulfide, free from yellow and white Phosphorus	139	1339
Phenylhydrazine	153	2572	Phosphorus heptasulphide, free from yellow and white Phosphorus	139	1339
Phenyl isocyanate	155	2487	Phosphorus oxybromide	137	1939
Phenyl mercaptan	131	2337	Phosphorus oxybromide, molten	137	2576
Phenylmercuric acetate	151	1674	Phosphorus oxybromide, solid	137	1939
Phenylmercuric compound, n.o.s.	151	2026	Phosphorus oxychloride	137	1810
Phenylmercuric hydroxide	151	1894	Phosphorus pentabromide	137	2691
Phenylmercuric nitrate	151	1895	Phosphorus pentachloride	137	1806
Phenylphosphorus dichloride	137	2798	Phosphorus pentafluoride	125	2198
Phenylphosphorus thiodichloride	137	2799	Phosphorus pentafluoride, adsorbed	173	3524
Phenyltrichlorosilane	156	1804	Phosphorus pentafluoride, compressed	125	2198
Phenyl urea pesticide, liquid, poisonous	151	3002	Phosphorus pentasulfide, free from yellow and white Phosphorus	139	1340
Phenyl urea pesticide, liquid, toxic	151	3002	Phosphorus pentasulphide, free from yellow and white Phosphorus	139	1340
Phosgene	125	1076	Phosphorus pentoxide	137	1807
9-Phosphabicyclononanes	135	2940			
Phosphine	119	2199			
Phosphine, adsorbed	173	3525			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Phosphorus sesquisulfide, free from yellow and white Phosphorus	139	1341	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	154	3389
Phosphorus sesquisulphide, free from yellow and white Phosphorus	139	1341	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	154	3390
Phosphorus tribromide	137	1808	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	131	3488
Phosphorus trichloride	137	1809	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	131	3489
Phosphorus trioxide	157	2578	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3383
Phosphorus trisulfide, free from yellow and white Phosphorus	139	1343	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3384
Phosphorus trisulphide, free from yellow and white Phosphorus	139	1343	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	151	3381
Phthalic anhydride	156	2214	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	151	3382
Picolines	129	2313	Poisonous by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone A)	142	3387
Picric acid, wetted with not less than 10% water	113	3364	Poisonous by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone B)	142	3388
Picric acid, wetted with not less than 30% water	113	1344	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	155	3490
Picrite, wetted with not less than 20% water	113	1336	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	155	3491
Picryl chloride, wetted with not less than 10% water	113	3365	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	139	3385
alpha-Pinene	128	2368	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	139	3386
Pinene (alpha)	128	2368			
Pine oil	129	1272			
Piperazine	153	2579			
Piperidine	132	2401			
Plastic molding compound	171	3314			
Plastics moulding compound	171	3314			
Plastics, nitrocellulose-based, self-heating, n.o.s.	135	2006			
Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3492			
Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3493			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Poisonous liquid, corrosive, inorganic, n.o.s.	154	3289	Polychlorinated biphenyls	171	2315
Poisonous liquid, corrosive, organic, n.o.s.	154	2927	Polychlorinated biphenyls, liquid	171	2315
Poisonous liquid, flammable, organic, n.o.s.	131	2929	Polychlorinated biphenyls, solid	171	3432
Poisonous liquid, inorganic, n.o.s.	151	3287	Polyester resin kit	128	3269
Poisonous liquid, organic, n.o.s.	153	2810	Polyester resin kit, liquid base material	128	3269
Poisonous liquid, oxidising, n.o.s.	142	3122	Polyester resin kit, solid base material	128P	3527
Poisonous liquid, water-reactive, n.o.s.	139	3123	Polyhalogenated biphenyls, liquid	171	3151
Poisonous solid, corrosive, inorganic, n.o.s.	154	3290	Polyhalogenated biphenyls, solid	171	3152
Poisonous solid, corrosive, organic, n.o.s.	154	2928	Polyhalogenated terphenyls, liquid	171	3151
Poisonous solid, flammable, organic, n.o.s.	134	2930	Polyhalogenated terphenyls, solid	171	3152
Poisonous solid, inorganic, n.o.s.	151	3288	Polymeric beads, expandable	171	2211
Poisonous solid, organic, n.o.s.	154	2811	Polymerizing substance, liquid, stabilised, n.o.s.	149P	3532
Poisonous solid, oxidising, n.o.s.	141	3086	Polymerizing substance, liquid, temperature controlled, n.o.s.	150P	3534
Poisonous solid, self-heating, n.o.s.	136	3124	Polymerizing substance, solid, stabilised, n.o.s.	149P	3531
Poisonous solid, water-reactive, n.o.s.	139	3125	Polymerizing substance, solid, temperature controlled, n.o.s.	150P	3533
Polyalkylamines, n.o.s.	132	2733	Polystyrene beads, expandable	171	2211
Polyalkylamines, n.o.s.	132	2734	Potassium	138	2257
Polyalkylamines, n.o.s.	153	2735	Potassium, metal	138	2257
Polyamines, flammable, corrosive, n.o.s.	132	2733	Potassium, metal alloys	138	1420
Polyamines, liquid, corrosive, flammable, n.o.s.	132	2734	Potassium, metal alloys, liquid	138	1420
Polyamines, liquid, corrosive, n.o.s.	153	2735	Potassium, metal alloys, solid	138	3403
Polyamines, solid, corrosive, n.o.s.	154	3259	Potassium arsenate	151	1677
			Potassium arsenite	154	1678
			Potassium borohydride	138	1870

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Potassium bromate	140	1484	Potassium peroxide	144	1491
Potassium chlorate	140	1485	Potassium persulphate	140	1492
Potassium chlorate, aqueous solution	140	2427	Potassium persulphate	140	1492
Potassium cuprocyanide	157	1679	Potassium phosphide	139	2012
Potassium cyanide	157	1680	Potassium silicofluoride	151	2655
Potassium cyanide, solid	157	1680	Potassium sodium alloys	138	1422
Potassium cyanide, solution	157	3413	Potassium sodium alloys, liquid	138	1422
Potassium dithionite	135	1929	Potassium sodium alloys, solid	138	3404
Potassium fluoride	154	1812	Potassium sulfide, anhydrous	135	1382
Potassium fluoride, solid	154	1812	Potassium sulfide, hydrated, with not less than 30% water of crystallization	153	1847
Potassium fluoride, solution	154	3422	Potassium sulfide, with less than 30% water of crystallization	135	1382
Potassium fluoroacetate	151	2628	Potassium sulphide, anhydrous	135	1382
Potassium fluorosilicate	151	2655	Potassium sulphide, hydrated, with not less than 30% water of crystallization	153	1847
Potassium hydrogendifluoride	154	1811	Potassium sulphide, with less than 30% water of crystallization	135	1382
Potassium hydrogen difluoride, solid	154	1811	Potassium superoxide	143	2466
Potassium hydrogen difluoride, solution	154	3421	Printing ink, flammable	129	1210
Potassium hydrogen sulfate	154	2509	Printing ink related material	129	1210
Potassium hydrogen sulphate	154	2509	Propadiene, stabilised	116P	2200
Potassium hydrosulfite	135	1929	Propadiene and Methylacetylene mixture, stabilised	116P	1060
Potassium hydrosulphite	135	1929	Propane	115	1075
Potassium hydroxide, solid	154	1813	Propane	115	1978
Potassium hydroxide, solution	154	1814	Propane-Ethane mixture, refrigerated liquid	115	1961
Potassium metavanadate	151	2864	Propanethiols	130	2402
Potassium monoxide	154	2033	n-Propanol	129	1274
Potassium nitrate	140	1486	Propionaldehyde	129P	1275
Potassium nitrate and Sodium nitrate mixture	140	1499	Propionic acid	153	1848
Potassium nitrate and Sodium nitrite mixture	140	1487			
Potassium nitrite	140	1488			
Potassium perchlorate	140	1489			
Potassium permanganate	140	1490			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Propionic acid, with not less than 10% and less than 90% acid	153	1848	Pyrethroid pesticide, liquid, flammable, toxic	131	3350
Propionic acid, with not less than 90% acid	153	3463	Pyrethroid pesticide, liquid, poisonous	151	3352
Propionic anhydride	156	2496	Pyrethroid pesticide, liquid, poisonous, flammable	131	3351
Propionitrile	131	2404	Pyrethroid pesticide, liquid, toxic	151	3352
Propionyl chloride	132	1815	Pyrethroid pesticide, liquid, toxic, flammable	131	3351
n-Propyl acetate	129	1276	Pyrethroid pesticide, solid, poisonous	151	3349
Propyl alcohol, normal	129	1274	Pyrethroid pesticide, solid, toxic	151	3349
Propylamine	132	1277	Pyridine	129	1282
n-Propyl benzene	128	2364	Pyrophoric alloy, n.o.s.	135	1383
Propyl chloride	129	1278	Pyrophoric liquid, inorganic, n.o.s.	135	3194
n-Propyl chloroformate	155	2740	Pyrophoric liquid, organic, n.o.s.	135	2845
Propylene	115	1075	Pyrophoric metal, n.o.s.	135	1383
Propylene	115	1077	Pyrophoric organometallic compound, water-reactive, n.o.s.	135	3203
Propylene, Ethylene and Acetylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138	Pyrophoric solid, inorganic, n.o.s.	135	3200
Propylene chlorohydrin	131	2611	Pyrophoric solid, organic, n.o.s.	135	2846
1,2-Propylenediamine	132	2258	Pyrosulfuryl chloride	137	1817
Propyleneimine, stabilised	131P	1921	Pyrosulphuryl chloride	137	1817
Propylene oxide	127P	1280	Pyrrolidine	132	1922
Propylene oxide and Ethylene oxide mixture, with not more than 30% Ethylene oxide	131P	2983	Quinoline	154	2656
Propylene tetramer	128	2850	Radioactive material, excepted package, articles manufactured from depleted Uranium	161	2909
Propyl formates	129	1281	Radioactive material, excepted package, articles manufactured from natural Thorium	161	2909
n-Propyl isocyanate	155P	2482			
n-Propyl nitrate	128	1865			
Propyltrichlorosilane	155	1816			
Pyrethroid pesticide, liquid, flammable, poisonous	131	3350			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Radioactive material, excepted package, articles manufactured from natural Uranium	161	2909	Radioactive material, transported under special arrangement, non fissile or fissile-excepted	163	2919
Radioactive material, excepted package, empty packaging	161	2908	Radioactive material, Type A package, fissile, non-special form	165	3327
Radioactive material, excepted package, instruments or articles	161	2911	Radioactive material, Type A package, non-special form, non fissile or fissile-excepted	163	2915
Radioactive material, excepted package, limited quantity of material	161	2910	Radioactive material, Type A package, special form, fissile	165	3333
Radioactive material, low specific activity (LSA-I), non fissile or fissile-excepted	162	2912	Radioactive material, Type A package, special form, non fissile or fissile-excepted	164	3332
Radioactive material, low specific activity (LSA-II), fissile	165	3324	Radioactive material, Type B(M) package, fissile	165	3329
Radioactive material, low specific activity (LSA-II), non fissile or fissile-excepted	162	3321	Radioactive material, Type B(M) package, non fissile or fissile-excepted	163	2917
Radioactive material, low specific activity (LSA-III), fissile	165	3325	Radioactive material, Type B(U) package, fissile	165	3328
Radioactive material, low specific activity (LSA-III), non fissile or fissile-excepted	162	3322	Radioactive material, Type B(U) package, non fissile or fissile-excepted	163	2916
Radioactive material, surface contaminated objects (SCO-I), fissile	165	3326	Radioactive material, Type C package, fissile	165	3330
Radioactive material, surface contaminated objects (SCO-I), non fissile or fissile-excepted	162	2913	Radioactive material, Type C package, non fissile or fissile excepted	163	3323
Radioactive material, surface contaminated objects (SCO-II), fissile	165	3326	Radioactive material, Uranium hexafluoride, fissile	166	2977
Radioactive material, surface contaminated objects (SCO-II), non fissile or fissile-excepted	162	2913	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted	166	2978
Radioactive material, transported under special arrangement, fissile	165	3331	Rags, oily	133	1856
			Rare gases and Nitrogen mixture, compressed	120	1981
			Rare gases and Oxygen mixture, compressed	120	1980
			Rare gases mixture, compressed	120	1979

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Receptacles, small, containing gas	115	2037	Refrigerant gas R-227	126	3296
Red phosphorus	133	1338	Refrigerant gas R-404A	126	3337
Refrigerant gas, n.o.s.	126	1078	Refrigerant gas R-407A	126	3338
Refrigerant gases, n.o.s. (flammable)	115	1954	Refrigerant gas R-407B	126	3339
Refrigerant gas R-12	126	1028	Refrigerant gas R-407C	126	3340
Refrigerant gas R-12B1	126	1974	Refrigerant gas R-500	126	2602
Refrigerant gas R-12B2	171	1941	Refrigerant gas R-502	126	1973
Refrigerant gas R-13	126	1022	Refrigerant gas R-503	126	2599
Refrigerant gas R-13B1	126	1009	Refrigerant gas R-1113	119P	1082
Refrigerant gas R-14	126	1982	Refrigerant gas R-1132a	116P	1959
Refrigerant gas R-14, compressed	126	1982	Refrigerant gas R-1216	126	1858
Refrigerant gas R-21	126	1029	Refrigerant gas R-1318	126	2422
Refrigerant gas R-22	126	1018	Refrigerant gas RC-318	126	1976
Refrigerant gas R-23	126	1984	Refrigerating machines, containing Ammonia solutions (UN2672)	126	2857
Refrigerant gas R-32	115	3252	Refrigerating machines, containing flammable, non-poisonous, liquefied gas	115	3358
Refrigerant gas R-40	115	1063	Refrigerating machines, containing flammable, non-toxic, liquefied gas	115	3358
Refrigerant gas R-41	115	2454	Refrigerating machines, containing non-flammable, non-poisonous gases	126	2857
Refrigerant gas R-114	126	1958	Refrigerating machines, containing non-flammable, non-toxic gases	126	2857
Refrigerant gas R-115	126	1020	Regulated medical waste, n.o.s.	158	3291
Refrigerant gas R-116	126	2193	Resin solution	127	1866
Refrigerant gas R-116, compressed	126	2193	Resorcinol	153	2876
Refrigerant gas R-124	126	1021	Rosin oil	127	1286
Refrigerant gas R-125	126	3220	Rubber scrap, powdered or granulated	133	1345
Refrigerant gas R-133a	126	1983	Rubber shoddy, powdered or granulated	133	1345
Refrigerant gas R-134a	126	3159	Rubber solution	127	1287
Refrigerant gas R-142b	115	2517			
Refrigerant gas R-143a	115	2035			
Refrigerant gas R-152a	115	1030			
Refrigerant gas R-161	115	2453			
Refrigerant gas R-218	126	2424			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Rubidium	138	1423	Self-heating liquid, poisonous, inorganic, n.o.s.	136	3187
Rubidium hydroxide	154	2678	Self-heating liquid, poisonous, organic, n.o.s.	136	3184
Rubidium hydroxide, solid	154	2678	Self-heating liquid, toxic, inorganic, n.o.s.	136	3187
Rubidium hydroxide, solution	154	2677	Self-heating liquid, toxic, organic, n.o.s.	136	3184
Rubidium metal	138	1423	Self-heating solid, corrosive, inorganic, n.o.s.	136	3192
SA	119	2188	Self-heating solid, corrosive, organic, n.o.s.	136	3126
Safety devices	171	3268	Self-heating solid, inorganic, n.o.s.	135	3190
Sarin	153	2810	Self-heating solid, organic, n.o.s.	135	3088
Seat-belt pre-tensioners	171	3268	Self-heating solid, oxidising, n.o.s.	135	3127
Seed cake, with more than 1.5% oil and not more than 11% moisture	135	1386	Self-heating solid, poisonous, inorganic, n.o.s.	136	3191
Seed cake, with not more than 1.5% oil and not more than 11% moisture	135	2217	Self-heating solid, poisonous, organic, n.o.s.	136	3128
Selenates	151	2630	Self-heating solid, toxic, inorganic, n.o.s.	136	3191
Selenic acid	154	1905	Self-heating solid, toxic, organic, n.o.s.	136	3128
Selenites	151	2630	Self-heating solid, toxic, organic, n.o.s.	136	3128
Selenium compound, liquid, n.o.s.	151	3440	Self-reactive liquid type B	149	3221
Selenium compound, n.o.s.	151	3283	Self-reactive liquid type B, temperature controlled	150	3231
Selenium compound, solid, n.o.s.	151	3283	Self-reactive liquid type C	149	3223
Selenium disulfide	153	2657	Self-reactive liquid type C, temperature controlled	150	3233
Selenium disulphide	153	2657	Self-reactive liquid type D	149	3225
Selenium hexafluoride	125	2194	Self-reactive liquid type D, temperature controlled	150	3235
Selenium oxychloride	157	2879	Self-reactive liquid type E	149	3227
Self-defense spray, non-pressurised	171	3334	Self-reactive liquid type E, temperature controlled	150	3237
Self-heating liquid, corrosive, inorganic, n.o.s.	136	3188	Self-reactive liquid type F	149	3229
Self-heating liquid, corrosive, organic, n.o.s.	136	3185			
Self-heating liquid, inorganic, n.o.s.	135	3186			
Self-heating liquid, organic, n.o.s.	135	3183			

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Self-reactive liquid type F, temperature controlled	150	3239	Soda lime, with more than 4% Sodium hydroxide	154	1907
Self-reactive solid type B	149	3222	Sodium	138	1428
Self-reactive solid type B, temperature controlled	150	3232	Sodium aluminate, solid	154	2812
Self-reactive solid type C	149	3224	Sodium aluminate, solution	154	1819
Self-reactive solid type C, temperature controlled	150	3234	Sodium aluminum hydride	138	2835
Self-reactive solid type D	149	3226	Sodium ammonium vanadate	154	2863
Self-reactive solid type D, temperature controlled	150	3236	Sodium arsanilate	154	2473
Self-reactive solid type E	149	3228	Sodium arsenate	151	1685
Self-reactive solid type E, temperature controlled	150	3238	Sodium arsenite, aqueous solution	154	1686
Self-reactive solid type F	149	3230	Sodium arsenite, solid	151	2027
Self-reactive solid type F, temperature controlled	150	3240	Sodium azide	153	1687
Shale oil	128	1288	Sodium, batteries containing	138	3292
Silane	116	2203	Sodium bisulfate, solution	154	2837
Silane, compressed	116	2203	Sodium bisulphate, solution	154	2837
Silicofluorides, n.o.s.	151	2856	Sodium borohydride	138	1426
Silicon powder, amorphous	170	1346	Sodium borohydride and Sodium hydroxide solution, with not more than 12% Sodium borohydride and not more than 40% Sodium hydroxide	157	3320
Silicon tetrachloride	157	1818	Sodium bromate	140	1494
Silicon tetrafluoride	125	1859	Sodium cacodylate	152	1688
Silicon tetrafluoride, adsorbed	173	3521	Sodium carbonate peroxyhydrate	140	3378
Silicon tetrafluoride, compressed	125	1859	Sodium chlorate	140	1495
Silver arsenite	151	1683	Sodium chlorate, aqueous solution	140	2428
Silver cyanide	151	1684	Sodium chlorite	143	1496
Silver nitrate	140	1493	Sodium chloroacetate	151	2659
Silver picrate, wetted with not less than 30% water	113	1347	Sodium cuprocyanide, solid	157	2316
Sludge acid	153	1906	Sodium cuprocyanide, solution	157	2317
Smokeless powder for small arms	133	3178	Sodium cyanide	157	1689
			Sodium cyanide, solid	157	1689

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Sodium cyanide, solution	157	3414	Sodium hydroxide, solution	154	1824
Sodium dichloroisocyanurate	140	2465	Sodium hypochlorite	154	1791
Sodium dichloro-s-triazinetrione	140	2465	Sodium methylate	138	1431
Sodium dinitro-o-cresolate, wetted with not less than 10% water	113	3369	Sodium methylate, dry	138	1431
Sodium dinitro-o-cresolate, wetted with not less than 15% water	113	1348	Sodium methylate, solution in alcohol	132	1289
Sodium dithionite	135	1384	Sodium monoxide	157	1825
Sodium fluoride	154	1690	Sodium nitrate	140	1498
Sodium fluoride, solid	154	1690	Sodium nitrate and Potassium nitrate mixture	140	1499
Sodium fluoride, solution	154	3415	Sodium nitrite	141	1500
Sodium fluoroacetate	151	2629	Sodium nitrite and Potassium nitrate mixture	140	1487
Sodium fluorosilicate	154	2674	Sodium pentachlorophenate	154	2567
Sodium hydride	138	1427	Sodium perborate monohydrate	140	3377
Sodium hydrogendifluoride	154	2439	Sodium perchlorate	140	1502
Sodium hydrosulfide, hydrated, with not less than 25% water of crystallization	154	2949	Sodium permanganate	140	1503
Sodium hydrosulfide, with less than 25% water of crystallization	135	2318	Sodium peroxide	144	1504
Sodium hydrosulfide, with not less than 25% water of crystallization	154	2949	Sodium peroxoborate, anhydrous	140	3247
Sodium hydrosulfite	135	1384	Sodium persulfate	140	1505
Sodium hydrosulphide, hydrated, with not less than 25% water of crystallization	154	2949	Sodium persulphate	140	1505
Sodium hydrosulphide, with less than 25% water of crystallization	135	2318	Sodium phosphide	139	1432
Sodium hydrosulphide, with not less than 25% water of crystallization	154	2949	Sodium picramate, wetted with not less than 20% water	113	1349
Sodium hydrosulphite	135	1384	Sodium potassium alloys	138	1422
Sodium hydroxide, solid	154	1823	Sodium potassium alloys, liquid	138	1422
			Sodium potassium alloys, solid	138	3404
			Sodium silicofluoride	154	2674
			Sodium sulfide, anhydrous	135	1385
			Sodium sulfide, hydrated, with not less than 30% water	153	1849
			Sodium sulfide, with less than 30% water of crystallization	135	1385
			Sodium sulphide, anhydrous	135	1385

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Sodium sulphide, hydrated, with not less than 30% water	153	1849	Substituted nitrophenol pesticide, liquid, poisonous, flammable	131	3013
Sodium sulphide, with less than 30% water of crystallization	135	1385	Substituted nitrophenol pesticide, liquid, toxic	153	3014
Sodium superoxide	143	2547	Substituted nitrophenol pesticide, liquid, toxic, flammable	131	3013
Solids containing corrosive liquid, n.o.s.	154	3244	Substituted nitrophenol pesticide, solid, poisonous	153	2779
Solids containing flammable liquid, n.o.s.	133	3175	Substituted nitrophenol pesticide, solid, toxic	153	2779
Solids containing poisonous liquid, n.o.s.	151	3243	Sulfamic acid	154	2967
Solids containing toxic liquid, n.o.s.	151	3243	Sulfur	133	1350
Soman	153	2810	Sulfur, molten	133	2448
Stannic chloride, anhydrous	137	1827	Sulfur chlorides	137	1828
Stannic chloride, pentahydrate	154	2440	Sulfur dioxide	125	1079
Stannic phosphides	139	1433	Sulfur hexafluoride	126	1080
Stibine	119	2676	Sulfuric acid	137	1830
Straw, wet, damp or contaminated with oil	133	1327	Sulfuric acid, fuming	137	1831
Strontium arsenite	151	1691	Sulfuric acid, fuming, with less than 30% free Sulfur trioxide	137	1831
Strontium chlorate	143	1506	Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide	137	1831
Strontium nitrate	140	1507	Sulfuric acid, spent	137	1832
Strontium perchlorate	140	1508	Sulfuric acid, with more than 51% acid	137	1830
Strontium peroxide	143	1509	Sulfuric acid, with not more than 51% acid	157	2796
Strontium phosphide	139	2013	Sulfuric acid and Hydrofluoric acid mixture	157	1786
Strychnine	151	1692	Sulfurous acid	154	1833
Strychnine salts	151	1692	Sulfur tetrafluoride	125	2418
Styrene monomer, stabilised	128P	2055	Sulfur trioxide, stabilised	137	1829
Substituted nitrophenol pesticide, liquid, flammable, poisonous	131	2780	Sulfuryl chloride	137	1834
Substituted nitrophenol pesticide, liquid, flammable, toxic	131	2780	Sulfuryl fluoride	123	2191
Substituted nitrophenol pesticide, liquid, poisonous	153	3014	Sulphamic acid	154	2967

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Sulphur	133	1350	Tellurium compound, n.o.s.	151	3284
Sulphur, molten	133	2448	Tellurium hexafluoride	125	2195
Sulphur chlorides	137	1828	Terpene hydrocarbons, n.o.s.	128	2319
Sulphur dioxide	125	1079	Terpinolene	128	2541
Sulphur hexafluoride	126	1080	Tetrabromoethane	159	2504
Sulphuric acid	137	1830	1,1,2,2-Tetrachloroethane	151	1702
Sulphuric acid, fuming	137	1831	Tetrachloroethane	151	1702
Sulphuric acid, fuming, with less than 30% free Sulphur trioxide	137	1831	Tetrachloroethylene	160	1897
Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide	137	1831	Tetraethyl dithiopyrophosphate	153	1704
Sulphuric acid, spent	137	1832	Tetraethylenepentamine	153	2320
Sulphuric acid, with more than 51% acid	137	1830	Tetraethyl silicate	129	1292
Sulphuric acid, with not more than 51% acid	157	2796	1,1,1,2-Tetrafluoroethane	126	3159
Sulphuric acid and Hydrofluoric acid mixture	157	1786	Tetrafluoroethane and Ethylene oxide mixture, with not more than 5.6% Ethylene oxide	126	3299
Sulphurous acid	154	1833	Tetrafluoroethylene, stabilised	116P	1081
Sulphur tetrafluoride	125	2418	Tetrafluoromethane	126	1982
Sulphur trioxide, stabilised	137	1829	Tetrafluoromethane, compressed	126	1982
Sulphuryl chloride	137	1834	1,2,3,6-Tetrahydrobenzaldehyde	129	2498
Sulphuryl fluoride	123	2191	Tetrahydrofuran	127	2056
Tabun	153	2810	Tetrahydrofurfurylamine	129	2943
Tars, liquid	130	1999	Tetrahydrophthalic anhydrides	156	2698
Tear gas candles	159	1700	1,2,3,6-Tetrahydropyridine	129	2410
Tear gas devices	159	1693	Tetrahydrothiophene	130	2412
Tear gas grenades	159	1700	Tetramethylammonium hydroxide	153	1835
Tear gas substance, liquid, n.o.s.	159	1693	Tetramethylammonium hydroxide, solid	153	3423
Tear gas substance, solid, n.o.s.	159	1693	Tetramethylammonium hydroxide, solution	153	1835
Tear gas substance, solid, n.o.s.	159	3448	Tetramethylsilane	130	2749
			Tetranitromethane	143	1510
			Tetrapropyl orthotitanate	128	2413
			Textile waste, wet	133	1857

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Thallium chlorate	141	2573	Titanium powder, wetted with not less than 25% water	170	1352
Thallium compound, n.o.s.	151	1707	Titanium sponge granules	170	2878
Thallium nitrate	141	2727	Titanium sponge powders	170	2878
4-Thiapentanal	152	2785	Titanium tetrachloride	137	1838
Thickened GD	153	2810	Titanium trichloride, pyrophoric	135	2441
Thioacetic acid	129	2436	Titanium trichloride mixture	157	2869
Thiocarbamate pesticide, liquid, flammable, poisonous	131	2772	Titanium trichloride mixture, pyrophoric	135	2441
Thiocarbamate pesticide, liquid, flammable, toxic	131	2772	TNT, wetted with not less than 10% water	113	3366
Thiocarbamate pesticide, liquid, poisonous	151	3006	TNT, wetted with not less than 30% water	113	1356
Thiocarbamate pesticide, liquid, poisonous, flammable	131	3005	Toluene	130	1294
Thiocarbamate pesticide, liquid, toxic	151	3006	2,4-Toluenediamine, solid	151	1709
Thiocarbamate pesticide, liquid, toxic, flammable	131	3005	2,4-Toluenediamine, solution	151	3418
Thiocarbamate pesticide, solid, poisonous	151	2771	Toluene diisocyanate	156	2078
Thiocarbamate pesticide, solid, toxic	151	2771	Toluidines, liquid	153	1708
Thioglycol	153	2966	Toluidines, solid	153	1708
Thioglycolic acid	153	1940	Toluidines, solid	153	3451
Thiolactic acid	153	2936	2,4-Toluylenediamine	151	1709
Thionyl chloride	137	1836	2,4-Toluylenediamine, solid	151	1709
Thiophene	130	2414	2,4-Toluylenediamine, solution	151	3418
Thiophosgene	157	2474	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3492
Thiophosphoryl chloride	157	1837	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3493
Thiourea dioxide	135	3341	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	154	3389
Tinctures, medicinal	127	1293	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	154	3390
Tin tetrachloride	137	1827	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	131	3488
Titanium disulfide	135	3174			
Titanium disulphide	135	3174			
Titanium hydride	170	1871			
Titanium powder, dry	135	2546			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	131	3489	Toxic liquid, water-reactive, n.o.s.	139	3123
Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3383	Toxic solid, corrosive, inorganic, n.o.s.	154	3290
Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3384	Toxic solid, corrosive, organic, n.o.s.	154	2928
Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	151	3381	Toxic solid, flammable, organic, n.o.s.	134	2930
Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	151	3382	Toxic solid, inorganic, n.o.s.	151	3288
Toxic by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone A)	142	3387	Toxic solid, organic, n.o.s.	154	2811
Toxic by inhalation liquid, oxidising, n.o.s. (Inhalation Hazard Zone B)	142	3388	Toxic solid, oxidising, n.o.s.	141	3086
Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	155	3490	Toxic solid, self-heating, n.o.s.	136	3124
Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	155	3491	Toxic solid, water-reactive, n.o.s.	139	3125
Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	139	3385	Toxins	153	—
Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	139	3386	Toxins, extracted from living sources, liquid, n.o.s.	153	3172
Toxic liquid, corrosive, inorganic, n.o.s.	154	3289	Toxins, extracted from living sources, solid, n.o.s.	153	3172
Toxic liquid, corrosive, organic, n.o.s.	154	2927	Toxins, extracted from living sources, solid, n.o.s.	153	3462
Toxic liquid, flammable, organic, n.o.s.	131	2929	Triallylamine	132	2610
Toxic liquid, inorganic, n.o.s.	151	3287	Triallyl borate	156	2609
Toxic liquid, organic, n.o.s.	153	2810	Triazine pesticide, liquid, flammable, poisonous	131	2764
Toxic liquid, oxidising, n.o.s.	142	3122	Triazine pesticide, liquid, flammable, toxic	131	2764
			Triazine pesticide, liquid, poisonous	151	2998
			Triazine pesticide, liquid, poisonous, flammable	131	2997
			Triazine pesticide, liquid, toxic	151	2998
			Triazine pesticide, liquid, toxic, flammable	131	2997
			Triazine pesticide, solid, poisonous	151	2763
			Triazine pesticide, solid, toxic	151	2763
			Tributylamine	153	2542

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Tributylphosphane	135	3254	Trimethylamine, aqueous solution	132	1297
Trichloroacetic acid	153	1839	1,3,5-Trimethylbenzene	129	2325
Trichloroacetic acid, solution	153	2564	Trimethyl borate	129	2416
Trichloroacetyl chloride	156	2442	Trimethylchlorosilane	155	1298
Trichlorobenzenes, liquid	153	2321	Trimethylcyclohexylamine	153	2326
Trichlorobutene	152	2322	Trimethylhexamethylenediamines	153	2327
1,1,1-Trichloroethane	160	2831	Trimethylhexamethylene diisocyanate	156	2328
Trichloroethylene	160	1710	Trimethyl phosphite	130	2329
Trichloroisocyanuric acid, dry	140	2468	Trinitrobenzene, wetted with not less than 10% water	113	3367
Trichlorosilane	139	1295	Trinitrobenzene, wetted with not less than 30% water	113	1354
Tricresyl phosphate	151	2574	Trinitrobenzoic acid, wetted with not less than 10% water	113	3368
Triethylamine	132	1296	Trinitrobenzoic acid, wetted with not less than 30% water	113	1355
Triethylenetetramine	153	2259	Trinitrochlorobenzene, wetted with not less than 10% water	113	3365
Triethyl phosphite	130	2323	Trinitrophenol, wetted with not less than 10% water	113	3364
Trifluoroacetic acid	154	2699	Trinitrophenol, wetted with not less than 30% water	113	1344
Trifluoroacetyl chloride	125	3057	Trinitrotoluene, wetted with not less than 10% water	113	3366
Trifluorochloroethylene, stabilised	119P	1082	Trinitrotoluene, wetted with not less than 30% water	113	1356
1,1,1-Trifluoroethane	115	2035	Tripropylamine	132	2260
Trifluoromethane	126	1984	Tripropylene	128	2057
Trifluoromethane, refrigerated liquid	120	3136	Tris-(1-aziridinyl)phosphine oxide, solution	152	2501
Trifluoromethane and Chlorotrifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane	126	2599	Tungsten hexafluoride	125	2196
2-Trifluoromethylaniline	153	2942	Turpentine	128	1299
3-Trifluoromethylaniline	153	2948	Turpentine substitute	128	1300
Triisobutylene	128	2324	Undecane	128	2330
Triisopropyl borate	129	2616			
Trimethoxysilane	132	9269			
Trimethylacetyl chloride	131	2438			
Trimethylamine, anhydrous	118	1083			

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted	166	3507	Vinyl fluoride, stabilised	116P	1860
Uranium hexafluoride, radioactive material, fissile	166	2977	Vinylidene chloride, stabilised	130P	1303
Uranium hexafluoride, radioactive material, non fissile or fissile-excepted	166	2978	Vinyl isobutyl ether, stabilised	127P	1304
Urea hydrogen peroxide	140	1511	Vinyl methyl ether, stabilised	116P	1087
Urea nitrate, wetted with not less than 10% water	113	3370	Vinylpyridines, stabilised	131P	3073
Urea nitrate, wetted with not less than 20% water	113	1357	Vinyltoluenes, stabilised	130P	2618
Valeraldehyde	129	2058	Vinyltrichlorosilane	155P	1305
Valeryl chloride	132	2502	Vinyltrichlorosilane, stabilised	155P	1305
Vanadium compound, n.o.s.	151	3285	VX	153	2810
Vanadium oxytrichloride	137	2443	Water-reactive liquid, corrosive, n.o.s.	138	3129
Vanadium pentoxide	151	2862	Water-reactive liquid, n.o.s.	138	3148
Vanadium tetrachloride	137	2444	Water-reactive liquid, poisonous, n.o.s.	139	3130
Vanadium trichloride	157	2475	Water-reactive liquid, toxic, n.o.s.	139	3130
Vanadyl sulphate	151	2931	Water-reactive solid, corrosive, n.o.s.	138	3131
Vanadyl sulphate	151	2931	Water-reactive solid, flammable, n.o.s.	138	3132
Vehicle, flammable gas powered	115	3166	Water-reactive solid, n.o.s.	138	2813
Vehicle, flammable liquid powered	128	3166	Water-reactive solid, oxidising, n.o.s.	138	3133
Vehicle, fuel cell, flammable gas powered	115	3166	Water-reactive solid, poisonous, n.o.s.	139	3134
Vehicle, fuel cell, flammable liquid powered	128	3166	Water-reactive solid, self-heating, n.o.s.	138	3135
Vinyl acetate, stabilised	129P	1301	Water-reactive solid, toxic, n.o.s.	139	3134
Vinyl bromide, stabilised	116P	1085	Wheelchair, electric, with batteries	154	3171
Vinyl butyrate, stabilised	129P	2838	White asbestos	171	2590
Vinyl chloride, stabilised	116P	1086	White phosphorus, dry	136	1381
Vinyl chloroacetate	155	2589	White phosphorus, in solution	136	1381
Vinyl ethyl ether, stabilised	127P	1302	White phosphorus, molten	136	2447
			White phosphorus, under water	136	1381

Name of Material	Guide No.	UN No.	Name of Material	Guide No.	UN No.
Wood preservatives, liquid	129	1306	Zinc dross	138	1435
Wool waste, wet	133	1387	Zinc dust	138	1436
Xanthates	135	3342	Zinc fluorosilicate	151	2855
Xenon	120	2036	Zinc hydrosulfite	171	1931
Xenon, compressed	120	2036	Zinc hydrosulphite	171	1931
Xenon, refrigerated liquid (cryogenic liquid)	120	2591	Zinc nitrate	140	1514
Xylenes	130	1307	Zinc permanganate	140	1515
Xylenols	153	2261	Zinc peroxide	143	1516
Xylenols, liquid	153	3430	Zinc phosphide	139	1714
Xylenols, solid	153	2261	Zinc powder	138	1436
Xylidines, liquid	153	1711	Zinc residue	138	1435
Xylidines, solid	153	1711	Zinc resinate	133	2714
Xylidines, solid	153	3452	Zinc silicofluoride	151	2855
Xylyl bromide	152	1701	Zinc skimmings	138	1435
Xylyl bromide, liquid	152	1701	Zirconium, dry, coiled wire, finished metal sheets or strip	170	2858
Xylyl bromide, solid	152	3417	Zirconium, dry, finished sheets, strips or coiled wire	135	2009
Yellow phosphorus, dry	136	1381	Zirconium hydride	138	1437
Yellow phosphorus, in solution	136	1381	Zirconium nitrate	140	2728
Yellow phosphorus, under water	136	1381	Zirconium picramate, wetted with not less than 20% water	113	1517
Zinc ammonium nitrite	140	1512	Zirconium powder, dry	135	2008
Zinc arsenate	151	1712	Zirconium powder, wetted with not less than 25% water	170	1358
Zinc arsenate and Zinc arsenite mixture	151	1712	Zirconium scrap	135	1932
Zinc arsenite	151	1712	Zirconium suspended in a flammable liquid	170	1308
Zinc arsenite and Zinc arsenate mixture	151	1712	Zirconium suspended in a liquid (flammable)	170	1308
Zinc ashes	138	1435	Zirconium tetrachloride	137	2503
Zinc bromate	140	2469			
Zinc chlorate	140	1513			
Zinc chloride, anhydrous	154	2331			
Zinc chloride, solution	154	1840			
Zinc cyanide	151	1713			
Zinc dithionite	171	1931			

NOTES

NOTES

GUIDES

SUGGESTED OPERATIONS SHOULD ONLY BE PERFORMED BY ADEQUATELY TRAINED AND EQUIPPED PERSONNEL

HOW TO USE THE ORANGE GUIDES

1

GUIDE 117 GASES - TOXIC - FLAMMABLE (EXTREME HAZARD)

GASES - TOXIC - FLAMMABLE (EXTREME HAZARD) **GUIDE 117**

POTENTIAL HAZARDS

HEALTH

- **TOXIC**, Extremely Hazardous.
- May be fatal if inhaled or absorbed through skin.
- Initial odor may be irritating or foul and may deaden your sense of smell.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause environmental contamination.

FIRE OR EXPLOSION

- These materials are extremely flammable.
- May form explosive mixtures with air.
- May be ignited by heat, sparks or flames.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff may create fire or explosion hazard.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Reusable cylinders may rocket.

PUBLIC SAFETY

- **CALL 911**. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is **NO RISK OF FIRE**.
- Structural firefighters' protective clothing provides thermal protection but **only limited chemical protection**.

EVACUATION

- Immediate precautionary measure
- Isolate spill or leak area for at least 100 metres (330 feet) in all directions.

Spill

- See **Table 1 - Initial Isolation and Protective Action Distances**.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

EMERGENCY RESPONSE

FIRE:

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.
- **Large Fire**
- Water spray, fog or regular foam.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Damaged cylinders should be handled only by specialists.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- **ALWAYS** stay away from tanks engulfed in fire.

SPILL OR LEAK

- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Consider igniting spill or leak to eliminate toxic gas concerns.

FIRST AID

- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- Give artificial respiration if victim is not breathing.
- **Do not perform mouth-to-mouth resuscitation if victim ingested or inhaled the substance; wash face and mouth before giving artificial respiration. Use a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

2

3

4

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Page 169

1

GUIDE NUMBER AND TITLE

- The guide title identifies the general hazards associated with the materials in this Guide.

2

POTENTIAL HAZARDS

- Emergency responders should consult this section first!
- Describes the material hazard in terms of **FIRE OR EXPLOSION** and **HEALTH** effects upon exposure.
- The primary potential hazard is listed first.
- Allows the responders to make decisions to protect the emergency response team, and the surrounding population.

SUGGESTED OPERATIONS SHOULD ONLY BE PERFORMED BY ADEQUATELY TRAINED AND EQUIPPED PERSONNEL

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PUBLIC SAFETY

- This section is divided into three subsections:
 - › **General Information:** describes initial precautionary measures to be taken by those first on the scene.
 - › **PROTECTIVE CLOTHING:** provides general guidance on personal protective equipment requirements including respiratory protection. The protective clothing information is general and correct selection is situation dependent, after considering the physical and chemical properties of the material, weather conditions, spill versus fire, topography, etc.
 - › **EVACUATION:** suggests protective distances for immediate precautionary measures defined for small and large spills, including suggested guidance for conditions where fire is present or likely (potential fragmentation hazard).
 - The term “isolate” indicates a zone of no entry that applies to the public and first responders who are not equipped, trained, and prepared to mitigate the incident.
 - The term “evacuate” indicates people should be removed from inside this zone, if it can be done safely. If removal is too risky, sheltering-in-place can also be considered in this zone. Evacuation aims to protect as many people as possible, and applies mainly to the public.
- Materials **highlighted in green** in the yellow-bordered and blue-bordered pages direct the reader to consult Table 1, detailing specific response distances for toxic inhalation hazard materials, water-reactive materials and chemical warfare agents (green-bordered pages).

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EMERGENCY RESPONSE

- This section is divided into three subsections:
 - › **FIRE:** provides extinguishing procedures for **Small Fire, Large Fire, and/or Fire Involving Tanks or Car/Trailer Loads**
 - › **SPILL OR LEAK:** includes general recommendations, and may describe the response procedure for **Small Spill** and **Large Spill**
 - › **FIRST AID:** provides general guidance prior to seeking expert medical care.

GUIDE Vehicle Fire

00

INHALED

- If overcome by smoke or fumes, remove victim to fresh air #.
- Apply resuscitation if victim is not breathing. Administer oxygen if breathing is difficult.
- Keep victim warm and quiet.
- Obtain immediate medical care

EYES

- Hold eyelids open and flush with clean, running water (if available) for at least 15 minutes.
- Remove any contact lenses.
- Obtain immediate medical care.

FIRE BURNS

- Immerse or flood affected area with cold water for at least 15 minutes.
- Bandage lightly with sterile dressing.
- Treat for shock if necessary.
- Do not forcibly separate skin from any adhering material.
- Obtain immediate medical care.

EMERGENCY RESPONSE

ENGINE FIRE

- Shut off engine and any electrical equipment and leave 'off'.
- Use fire extinguisher provided in the vehicle.
- Inject the contents through any available opening, without raising the bonnet if possible.
- If necessary, extinguish blaze with sand, earth, or large amounts of water.
- If unable to control fire, evacuate the immediate area and keep upwind.
- Contact police and local fire brigade. Tell them location and condition of vehicle and any damage observed. Advise of dangerous goods in load.
- Warn other traffic.

CABIN FIRE

- Shut off engine and any electrical equipment and leave 'off'.
- If safe to do so, remove burning materials.
- Beware of toxic fumes from burning upholstery.
- Use fire extinguisher provided in the vehicle.
- If necessary, extinguish blaze with sand, earth or large amounts of water.
- If unable to control fire, evacuate the immediate area and keep upwind.
- Contact police and local fire brigade. Tell them location and condition of vehicle and any damage observed. Advise of dangerous goods in load.
- Warn other traffic.

EMERGENCY RESPONSE

CARGO FIRE

- Shut off engine and any electrical equipment and leave 'off.
- Where the cargo requires special procedures, refer to the HAZCHEM code on the EIP or SDS for the substances involved
- Use personal protective equipment (PPE) on vehicle.
- Use fire extinguisher provided with the vehicle.
- If necessary, extinguish blaze with sand, earth or (if HAZCHEM code permits) large amounts of water.
- If safe to do so, remove burning materials from cargo or remove other materials from area of fire. If no, keep good cool by spraying with water.
- If unable to control fire, evacuate the immediate area and keep upwind.
- Contact police and local fire brigade. Tell them location material, quantity, UN Number and emergency contact, as well as condition of vehicle and any damage observed.
- Warn other traffic.

TYRE FIRE

- Stop vehicle. Assess fire and its extent in relations to load and hazards.
- Use fire extinguisher provided in the vehicle. consider flooding the tyre with water if available.
- If possible change tyre and place it at least 15 metres from the vehicle, in an area free from combustible material; the tyre could re-ignite
If fire cannot be put out or tyre cannot be removed:
- If tyre is on prime mover, and if safe to do so, consider dropping the trailer and carefully driving the prime mover to a nearby safe location.
- Consider driving again, carefully, until burning rubber is thrown off.
If fire persists after the above measures have been taken:
- If unable to control fire, evacuate the immediate area and keep upwind.
- Contact police and local fire brigade. Tell them location and condition of vehicle and any damage observed. Advise of dangerous goods in load.
- Warn other traffic.

BRAKE OVERHEATING

- Stop vehicle. Assess fire and its extent in relations to load and hazards. Allow brake to cool.
Only use extinguisher or water if there is a fire or immediate danger of fire
Do not drive the vehicle until the braking system has been inspected by a competent person and, if necessary, repaired.
If an uncontrolled fire develops:
- Evacuate the immediate area and keep upwind.
- Contact police and local fire brigade. Tell them location and condition of vehicle and any damage observed. Advise of dangerous goods in load.
- Warn other traffic.

GUIDE Mixed Load/Unidentified Cargo

111

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat, shock, friction or contamination.
- May react violently or explosively on contact with air, water or foam.
- May be ignited by heat, sparks or flames.
- Vapours may travel to source of ignition and flash back.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Inhalation, ingestion or contact with substance may cause severe injury, infection, disease or death.
- High concentration of gas may cause asphyxiation without warning.
- Contact may cause burns to skin and eyes.
- Fire or contact with water may produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Document first. If Transport Document not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations.

EVACUATION

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: Material may react with extinguishing agent.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Shower and wash with soap and water.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE Explosives* - Division 1.1, 1.2, 1.3 or 1.5

112

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- MAY EXPLODE AND THROW FRAGMENTS 1600 METRES (1 MILE) OR MORE IF FIRE REACHES CARGO.
- For information on "Compatibility Group" letters, refer to Glossary section.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Isolate spill or leak area immediately for at least 500 metres (1/3 mile) in all directions.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will provide thermal protection, but provides on limited chemical protection

EVACUATION

Immediate Precautionary measure

Large Spill

- Consider initial EVACUATION for 800 metres (1/2 mile) in all directions.

Fire

- If rail car or trailer is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 metres (1 mile) in all directions.

* For information on "Compatibility Group" Letters, refer to the Glossary section.

EMERGENCY RESPONSE

FIRE

CARGO Fire

- DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!
- Stop all traffic and clear the area for at least 1600 metres (1 mile) in all directions and let burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.

TIRE or VEHICLE Fire

- Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt.
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METRES (330 FEET) OF ELECTRIC DETONATORS.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

GUIDE 113 Flammable Solids - Toxic (Wet/Desensitised Explosive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- DRIED OUT material may explode if exposed to heat, flame, friction or shock; treat as an explosive (GUIDE 112).
- Keep material wet with water or treat as an explosive (GUIDE 112).
- Runoff to sewer may create fire or explosion hazard.

HEALTH

- Some are toxic and may be fatal if inhaled, swallowed or absorbed through skin. Specifically, Dinitrophenol wetted (UN1320) sodium dinitro-o-cresolate, wetted (UN1348) and Barium Azide, wetted (UN1571) are known to be toxic.
- Contact may cause burns to skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Isolate spill or leak area immediately for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial EVACUATION for 500 metres (1/3 mile) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CARGO Fire

- DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!
- Stop all traffic and clear the area for at least 1600 metres (1 mile) in all directions and let burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.

TIRE or VEHICLE Fire

- Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt.
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.

Small Spill

- Flush area with flooding quantities of water.

Large Spill

- Wet down with water and dike for later disposal.
- KEEP "WETTED" PRODUCT WET BY SLOWLY ADDING FLOODING QUANTITIES OF WATER.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

GUIDE Explosives* - Division 1.4 or 1.6

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **MAY EXPLODE AND THROW FRAGMENTS 800 METRES (1/2 MILE) OR MORE IF FIRE REACHES CARGO.**
- For information on **Compatibility Group** letters, refer to **Glossary** section.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first.** If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will provide thermal protection **but provides only limited chemical protection.**

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area immediately for at least 100 metres (330 feet) in all directions.

Large Spill

- **Consider initial EVACUATION for 250 metres (800 feet) in all directions.**

Fire

- If rail car or trailer is involved in a fire, **ISOLATE** for 800 metres (1/2 mile) in all directions; also initiate evacuation including emergency responders for 800 metres (1/2 mile) in all directions.
- If fire threatens cargo area containing packages bearing the 1.4S label or packages containing material classified as 1.4S, consider isolating at least 15 metres (50 feet) in all directions.

* For information on "Compatibility Group" Letters, refer to the Glossary section.

EMERGENCY RESPONSE

FIRE

CARGO Fire

- DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!
- Stop all traffic and clear the area for at least 800 metres (1/2 mile) in all directions and let burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.

TYRE or VEHICLE Fire

- Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt.
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- If fire cannot be prevented from involving cargo, treat cargo fire and evacuate in all directions for at least 800 metres (1/2 mile) in all directions and let burn.
- Pay special attention to tyre fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

CLASS 1.4S Fire

- Packages bearing the 1.4S label or packages containing material classified as 1.4S are designed or packaged in such a manner that when involved in a fire, they may burn vigorously with localised detonation and projection of fragments
- Effects are usually confined to immediate vicinity of packages
- Fight fire with normal precautions from a reasonable distance.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METRES (330 FEET) OF ELECTRIC DETONATORS.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

SUPPLEMENTAL INFORMATION

- Packages bearing the 1.4S label or packages containing material classified as 1.4S are designed or packaged in such a manner that when involved in a fire, they may burn vigorously with localized detonations and projection of fragments.
- Effects are usually confined to immediate vicinity of packages.
- If fire threatens cargo area containing packages bearing the 1.4S label or packages containing material classified as 1.4S, consider isolating at least 15 metres (50 feet) in all directions. Fight fire with normal precautions from a reasonable distance.

GUIDE 115 Gases - Flammable (Including Refrigerated Liquids)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE**

- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapours from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966), Methane (UN1971) and Hydrogen and Methane mixture, compressed (UN2034) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

- Vapours may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing provides thermal protection but provides only limited chemical protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area for at least 100 metres (330 feet) in all directions.

Large Spill

- Consider initial downwind evacuation for at least 800 metres (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.
- In fires involving Liquefied Petroleum Gases (LPG) (UN1075); Butane, (UN1011); Butylene, (UN1012); Isobutylene, (UN1055); Propylene, (UN1077); Isobutane, (UN1969); and Propane, (UN1978), also refer to BLEVE – SAFETY PRECAUTIONS (Page 366)

EMERGENCY RESPONSE

FIRE

- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.
- CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Hydrogen, refrigerated liquid (UN1966) burn with an invisible flame. Hydrogen and Methane mixture, compressed (UN2034) may burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.
- CAUTION: For LNG - Liquefied natural gas (UN1972) pool fires, DO NOT USE water. Use dry chemical or high-expansion foam.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- CAUTION: For LNG - Liquefied natural gas (UN1972), DO NOT apply water, regular or alcohol-resistant foam directly on spill. Use high-expansion foam if available to reduce vapors.
- Prevent spreading of vapours through sewers, ventilation systems and confined areas.
- Isolate area until gas has dispersed.
- CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE Gases - Flammable (Unstable)

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- EXTREMELY FLAMMABLE.
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air. Acetylene (UN1001, UN3374) may react explosively even in the absence of air.
- Silane (UN2203) will ignite spontaneously in air.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Vapours may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Some may be toxic if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will provide thermal protection, but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 800 metres (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Stop leak if you can do it without risk.
- Do not touch or walk through spilled material.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 117 Gases - Toxic - Flammable (Extreme Hazard)

POTENTIAL HAZARDS

HEALTH

- TOXIC; Extremely Hazardous.
- May be fatal if inhaled or absorbed through skin.
- Initial odour may be irritating or foul and may deaden your sense of smell.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- These materials are extremely flammable.
- May form explosive mixtures with air.
- May be ignited by heat, sparks or flames.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Vapours may travel to source of ignition and flash back.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff may create fire or explosion hazard.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.

EMERGENCY RESPONSE

FIRE

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Consider igniting spill or leak to eliminate toxic gas concerns.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE Gases - Flammable - Corrosive

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- EXTREMELY FLAMMABLE.
- May be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Vapours may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- May cause toxic effects if inhaled.
- Vapours are extremely irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer where there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 800 metres (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

POTENTIAL HAZARDS

HEALTH

- TOXIC; may be fatal if inhaled or absorbed through skin.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Flammable; may be ignited by heat, sparks or flames.
- May form explosive mixtures with air. Ethylene oxide (UN 1040) may react explosively even in the absence of air.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Vapours may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- Runoff may create fire or explosion hazard.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area for at least 100 metres (330 feet) in all directions.

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials.
For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- FOR CHLOROSILANES, DO NOT USE WATER; use AFFF alcohol-resistant medium-expansion foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- FOR CHLOROSILANES, use AFFF alcohol-resistant medium-expansion foam to reduce vapours.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 120

Gases - Inert (Including Refrigerated Liquids)

POTENTIAL HAZARDS

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

FIRE OR EXPLOSION

- Non-flammable gases.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will provide thermal protection but provides only limited chemical protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids or solids.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.

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There are no materials that refer to this guide.

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There are no materials that refer to this guide.

GUIDE 122

Gases - Oxidising (Including Refrigerated Liquids)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Substance does not burn but will support combustion.
- Some may react explosively with fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 500 metres (1/3 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Isolate area until gas has dispersed.
- CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.

GUIDE Gases - Toxic and/or Corrosive 123

POTENTIAL HAZARDS

HEALTH

- TOXIC; may be fatal if inhaled or absorbed through skin.
- Vapours may be irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE Gases - Toxic and/or Corrosive - Oxidising 124

POTENTIAL HAZARDS

HEALTH

- TOXIC; may be fatal if inhaled or absorbed through skin.
- Fire will produce irritating, corrosive and/or toxic gases.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Substance does not burn but will support combustion.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- These are strong oxidisers and will react vigorously or explosively with many materials including fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react violently with air, moist air and/or water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service. As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

CAUTION: These materials do not burn but will support combustion. Some will react violently with water.

- Contain fire and let burn. If fire must be fought, water spray or fog is recommended.
- Water only; no dry chemical, CO₂ or Halon®.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE Gases - Corrosive 125

POTENTIAL HAZARDS

HEALTH

- TOXIC; may be fatal if inhaled, ingested or absorbed through skin.
- Vapours are extremely irritating and corrosive.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- For UN1005: Anhydrous ammonia, at high concentrations in confined spaces, presents a flammability risk if a source of ignition is introduced.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.

EMERGENCY RESPONSE**FIRE****Small Fire**

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not get water inside containers.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with Hydrogen fluoride, anhydrous (UN1052), flush with large amounts of water. For skin contact, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available. For eyes, flush with water or a saline solution for 15 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 126 Gases - Compressed or Liquefied (Including Refrigerant Gases)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- Caution: aerosols (UN1950) may contain a flammable propellant.

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 500 metres (1/3 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- Some of these materials, if spilled, may evaporate leaving a flammable residue.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.

GUIDE 127 Flammable Liquids (Water-Miscible)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapours may form explosive mixtures with air.
- Vapours may travel to source of ignition and flash back.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapour explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapours may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 300 metres (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

CAUTION: For fire involving UN1170, UN1987 or UN3475, alcohol-resistant foam should be used.

CAUTION: Ethanol (UN1170) can burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Do not use straight streams.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour-suppressing foam may be used to reduce vapours.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 128 Flammable Liquids (Water-Immiscible)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapours may form explosive mixtures with air.
- Vapours may travel to source of ignition and flash back.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapour explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- For hybrid vehicles, GUIDE 147 (lithium ion batteries) or GUIDE 138 (sodium batteries) should also be consulted.
- If molten aluminum is involved, refer to GUIDE 169.

HEALTH

- **CAUTION:** Petroleum crude oil (UN1267) may contain **TOXIC** hydrogen sulphide gas.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapours may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 300 metres (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Do not use straight streams.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour-suppressing foam may be used to reduce vapours.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 129

Flammable Liquids (Water-Miscible/Noxious)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapours may form explosive mixtures with air.
- Vapours may travel to source of ignition and flash back.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapour explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapours may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 metres (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.
- Do not use dry chemical extinguishers to control fires involving nitromethane (UN1261) or nitroethane (UN2842).

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Do not use straight streams.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour-suppressing foam may be used to reduce vapours.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 130 Flammable Liquids (Water-Immiscible/Noxious)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapours may form explosive mixtures with air.
- Vapours may travel to source of ignition and flash back.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapour explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapours may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service. As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 metres (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Do not use straight streams.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour-suppressing foam may be used to reduce vapours.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE Flammable Liquids - Toxic

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POTENTIAL HAZARDS

HEALTH

- TOXIC; may be fatal if inhaled, ingested or absorbed through skin.
- Inhalation or contact with some of these materials will irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapours may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Vapours may form explosive mixtures with air.
- Vapours may travel to source of ignition and flash back.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapour explosion and poison hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point. Use of water spray when fighting fire may be inefficient. CAUTION: Methanol (UN1230) will burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour-suppressing foam may be used to reduce vapours.

Small Spill

- Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE Flammable Liquids - Corrosive

132

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- Vapours may form explosive mixtures with air.
- Vapours may travel to source of ignition and flash back.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapour explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or ingested/swallowed.
- Contact with substance may cause severe burns to skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapours may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Some of these materials may react violently with water.

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Do not get water inside containers.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour-suppressing foam may be used to reduce vapours.
- Absorb with earth, sand or other non-combustible material and transfer to containers (except for Hydrazine).
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by friction, heat, sparks or flames.
- Some may burn rapidly with flare-burning effect.
- Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence.
- Substance may be transported in a molten form at a temperature that may be above its flash point.
- May re-ignite after fire is extinguished.

HEALTH

- Fire may produce irritating and/or toxic gases.
- Contact may cause burns to skin and eyes.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, sand, earth, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire Involving Metal Pigments or Pastes (e.g. "Aluminum Paste")

- Aluminum Paste fires should be treated as a combustible metal fire. Use DRY sand, graphite powder, dry sodium chloride-based extinguishers, G-1® or Met-L-X® powder. Also, see GUIDE 170.

Fire involving Tanks or Car/Trailer Loads

- Cool containers with flooding quantities of water until well after fire is out.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Large Spill

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim calm and warm.

GUIDE Flammable Solids - Toxic and/or Corrosive

134

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.

HEALTH

- TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Do not get water inside containers.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE Substances - Spontaneously Combustible

135

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May ignite on contact with moist air or moisture.
- May burn rapidly with flare-burning effect.
- Some react vigorously or explosively on contact with water.
- Some may decompose explosively when heated or involved in a fire.
- May re-ignite after fire is extinguished.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.

HEALTH

- Fire will produce irritating, corrosive and/or toxic gases.
- Inhalation of decomposition products may cause severe injury or death.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.
- **CAUTION: Pentaborane (UN1380) is highly toxic and may be fatal if inhaled, ingested or absorbed through skin.**

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER, CO₂ OR FOAM ON MATERIAL ITSELF.
- Some of these materials may react violently with water.

CAUTION: For Xanthates, UN3342 and for Dithionite (Hydrosulfite/Hydrosulphite) UN1384, UN1923 and UN1929, USE FLOODING AMOUNTS OF WATER for SMALL AND LARGE fires to stop the reaction. Smothering will not work for these materials, they do not need air to burn.

Small Fire

- Dry chemical, soda ash, lime or DRY sand, EXCEPT for UN1384, UN1923, UN1929 and UN3342.

Large Fire

- DRY sand, dry chemical, soda ash or lime EXCEPT for UN1384, UN1923, UN1929 and UN3342, or withdraw from area and let fire burn.
- CAUTION: UN3342 when flooded with water will continue to evolve flammable Carbon disulfide/Carbon disulphide vapours.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers or in contact with substance.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

CAUTION: For spills of Xanthates, UN3342 and for Dithionite (Hydrosulfite/Hydrosulphite), UN1384, UN1923 and UN1929, dissolve in 5 parts water and collect for proper disposal.

- CAUTION: UN3342 when flooded with water will continue to evolve flammable Carbon disulfide/Carbon disulphide vapours.
- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 136 Substances - Spontaneously Combustible - Toxic and/or Corrosive (Air-Reactive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Extremely flammable; will ignite itself if exposed to air.
- Burns rapidly, releasing dense, white, irritating fumes.
- Substance may be transported in a molten form.
- May re-ignite after fire is extinguished.
- Corrosive substances in contact with metals may produce flammable hydrogen gas.
- Containers may explode when heated.

HEALTH

- Fire will produce irritating, corrosive and/or toxic gases.
- TOXIC; ingestion of substance or inhalation of decomposition products will cause severe injury or death.
- Contact with substance may cause severe burns to skin and eyes.
- Some effects may be experienced due to skin absorption.
- Runoff from fire control may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- For Phosphorus (UN1381): Special aluminized protective clothing should be worn when direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- Consider initial downwind evacuation for at least 300 metres (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Water spray, wet sand or wet earth.

Large Fire

- Water spray or fog.
- Do not scatter spilled material with high-pressure water streams.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.

Small Spill

- Cover with water, sand or earth. Shovel into metal container and keep material under water.

Large Spill

- Dike for later disposal and cover with wet sand or earth.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, keep exposed skin areas immersed in water or covered with wet bandages until medical attention is received.
- Removal of solidified molten material from skin requires medical assistance.
- Remove and isolate contaminated clothing and shoes at the site and place in metal container filled with water. Fire hazard if allowed to dry.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Keep victim calm and warm.

GUIDE Substances - Water-Reactive - Corrosive

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POTENTIAL HAZARDS

HEALTH

- CORROSIVE and/or TOXIC; inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- EXCEPT FOR ACETIC ANHYDRIDE (UN1715), THAT IS FLAMMABLE, some of these materials may burn, but none ignite readily.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Substance will react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Flammable/toxic gases may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials.
For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- When material is not involved in fire, do not use water on material itself.

Small Fire

- Dry chemical or CO₂.
- Move containers from fire area if you can do it without risk.

Large Fire

- Flood fire area with large quantities of water, while knocking down vapours with water fog. If insufficient water supply: knock down vapours only.

Fire involving Tanks or Car/Trailer Loads

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours; do not put water directly on leak, spill area or inside container.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 138 Substances - Water-Reactive (Emitting Flammable Gases)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Produce flammable gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Runoff may create fire or explosion hazard.

HEALTH

- Inhalation or contact with vapours, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate the area before entry.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER OR FOAM.

Small Fire

- Dry chemical, soda ash, lime or sand.

Large Fire

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- Move containers from fire area if you can do it without risk.

Fire Involving Metals or Powders (Aluminum, Lithium, Magnesium, etc.)

- Use dry chemical, DRY sand, sodium chloride powder, graphite powder or Met-L-X® powder; in addition, for Lithium you may use Lith-X® powder or copper powder.
Also, see GUIDE 170.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- DO NOT GET WATER on spilled substance or inside containers.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

Powder Spill

- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 139 Substances - Water-Reactive (Emitting Flammable And Toxic Gases)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Produce flammable and toxic gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Highly toxic: contact with water produces toxic gas, may be fatal if inhaled.
- Inhalation or contact with vapours, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate the area before entry.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER OR FOAM. (FOAM MAY BE USED FOR CHLOROSILANES, SEE BELOW)

Small Fire

- Dry chemical, soda ash, lime or sand.

Large Fire

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- FOR CHLOROSILANES, DO NOT USE WATER; use AFFF alcohol-resistant medium-expansion foam; DO NOT USE dry chemicals, soda ash or lime on chlorosilane fires (large or small) as they may release large quantities of hydrogen gas that may explode.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- DO NOT GET WATER on spilled substance or inside containers.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- FOR CHLOROSILANES, use AFFF alcohol-resistant medium-expansion foam to reduce vapours.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

Powder Spill

- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

CAUTION: Ammonium Nitrate may explode if involved in fire or contaminated with hydrocarbons (fuels), organic matter, other contaminants or when hot molten and contained; Treat as an explosive (GUIDE 112).

- These substances will accelerate burning when involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Inhalation, ingestion or contact (skin, eyes) with vapours or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.
- **If ammonium nitrate** is in a tank, rail car or tank truck and involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions also, initiate evacuation including emergency responders for 1600 metres (1 mile) in all directions.

EMERGENCY RESPONSE**FIRE****Small Fire**

- Consider initial evacuation in all directions for at least 500 metres (1/3 mile).
- Use water. Do not use carbon dioxide, dry chemicals or foam.
- If not sure about size of fire, treat as large fire.
- If safe to do so from a protected position or use unmanned monitors apply FLOODING quantities of water.
- Allow fire to burn out and containers to cool.

Large Fire or Fire involving transport containers

- Do not fight cargo fire involving Ammonium Nitrate - Withdraw, evacuate and isolate area for at least 1600 metres (1 mile). Treat as an explosive (GUIDE 112)
- If unable to control truck fire, or fire cannot be prevented from involving Ammonium Nitrate, treat as cargo fire involving Ammonium Nitrate.
- Do not enter area for 24 hours or until expert advice has been provided.
- Do not move cargo or vehicle if cargo has been exposed to heat.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Do not get water inside containers.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Small Liquid Spill

- Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Following product recovery, flush area with water.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- These substances will accelerate burning when involved in a fire.
- May explode from heat or contamination.
- Some may burn rapidly.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Toxic by ingestion.
- Inhalation of dust is toxic.
- Fire may produce irritating, corrosive and/or toxic gases.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Use water. Do not use dry chemicals or foams. CO₂ or Halon® may provide limited control.

Large Fire

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Large Spill

- Dike far ahead of spill for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Oxidisers - Toxic (Liquid)

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- These substances will accelerate burning when involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- TOXIC; inhalation, ingestion or contact (skin, eyes) with vapours or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Toxic/flammable fumes may accumulate in confined areas (basement, tanks, tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Use water. Do not use dry chemicals or foams. CO₂ or Halon® may provide limited control.

Large Fire

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift.
- Do not get water inside containers.

Small Liquid Spill

- Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Oxidisers (Unstable)

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Caution oxidisers (such as chlorites, chlorates and perchlorates) may explode if involved in fire or contaminated with hydrocarbons, (fuels), organic matter, other contaminants or when hot, molten and contained. Treat as an explosive (Guide 112).
- May explode from friction, heat or contamination.
- These substances will accelerate burning when involved in a fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- TOXIC; inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.
- Fire may produce irritating and/or toxic gases.
- Toxic fumes or dust may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Consider initial evacuation in all directions for at least 500 metres (1/3 mile).
- Use water. Do not use carbon dioxide, dry chemicals or foam.
- If not sure about size of fire, treat as large fire.
- If safe to do so from a protected position or use unmanned monitors apply FLOODING quantities of water.
- Allow fire to burn out and containers to cool.

Large Fire

- Do not fight cargo fire involving the product - Withdraw, evacuate and isolate area for at least 1600 metres (1 mile). Treat as an explosive (GUIDE 112).
- If unable to control truck fire, or fire cannot be prevented from involving the product, treat as cargo fire involving the product.
- Do not enter area for 24 hours or until expert advice has been provided.
- Do not get water inside containers: a violent reaction may occur.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Use water spray to reduce vapours or divert vapour cloud drift.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Flush area with flooding quantities of water.

Large Spill

- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Oxidisers (Water-Reactive)

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May ignite combustibles (wood, paper, oil, clothing, etc.).
- React vigorously and/or explosively with water.
- Produce toxic and/or corrosive substances on contact with water.
- Flammable/toxic gases may accumulate in tanks and hopper cars.
- Some may produce flammable hydrogen gas upon contact with metals.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- TOXIC; inhalation or contact with vapour, substance, or decomposition products may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER OR FOAM.

Small Fire

- Dry chemical, soda ash or lime.

Large Fire

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- DO NOT GET WATER on spilled substance or inside containers.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

Large Spill

- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 145 Organic Peroxides (Heat and Contamination Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat or contamination.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial evacuation for at least 250 metres (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Water spray or fog is preferred; if water not available use dry chemical, CO₂ or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Keep substance wet using water spray.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Large Spill

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 146 Organic Peroxides (Heat, Contamination and Friction Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat, shock, friction or contamination.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial evacuation for at least 250 metres (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Water spray or fog is preferred; if water not available use dry chemical, CO₂ or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Keep substance wet using water spray.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Large Spill

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Lithium Ion Batteries

147

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 °C (302 °F)), when damaged or abused (e.g., mechanical damage or electrical overcharging).
- May burn rapidly with flare-burning effect.
- May ignite other batteries in close proximity.

HEALTH

- Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Burning batteries may produce toxic hydrogen fluoride gas (see GUIDE 125).
- Fumes may cause dizziness or suffocation.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If rail car or trailer is involved in a fire, ISOLATE for 500 metres (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 metres (1/3 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Absorb with earth, sand or other non-combustible material.
- Leaking batteries and contaminated absorbent material should be placed in metal containers.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

GUIDE 148 Organic Peroxides (Heat and Contamination Sensitive/Temperature Controlled)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat, contamination or loss of temperature control.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" they decompose violently and catch fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May ignite spontaneously if exposed to air.
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- DO NOT allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing, see GUIDE 120), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial evacuation for at least 250 metres (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- The temperature of the substance must be maintained at or below the “Control Temperature” at all times.

Small Fire

- Water spray or fog is preferred; if water not available use dry chemical, CO₂ or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- BEWARE OF POSSIBLE CONTAINER EXPLOSION.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Substances (Self-Reactive) 149

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Self-decomposition, self-polymerisation, or self-ignition may be triggered by heat, chemical reaction, friction or impact.
- May be ignited by heat, sparks or flames.
- Some may decompose explosively when heated or involved in a fire.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- May burn violently. Decomposition or polymerisation may be self-accelerating and produce large amounts of gases.
- Vapours or dust may form explosive mixtures with air.

HEALTH

- Inhalation or contact with vapours, substance or decomposition products may cause severe injury or death.
- May produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial evacuation for at least 250 metres (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- BEWARE OF POSSIBLE CONTAINER EXPLOSION.
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 150 Substances (Self-Reactive/ Temperature Controlled)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Self-decomposition, self-polymerisation, or self-ignition may be triggered by heat, chemical reaction, friction or impact.
- Self-accelerating decomposition may occur if the specific control temperature is not maintained.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" they decompose or polymerize violently and may catch fire.
- May be ignited by heat, sparks or flames.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May burn violently. Decomposition or polymerisation may be self-accelerating and produce large amounts of gases.
- Vapours or dust may form explosive mixtures with air.

HEALTH

- Inhalation or contact with vapours, substance or decomposition products may cause severe injury or death.
- May produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- DO NOT allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing, see GUIDE 120), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial evacuation for at least 250 metres (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- The temperature of the substance must be maintained at or below the "Control Temperature" at all times.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- BEWARE OF POSSIBLE CONTAINER EXPLOSION.
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Substances - Toxic (Non-Combustible)

151

POTENTIAL HAZARDS

HEALTH

- Highly toxic, may be fatal if inhaled, swallowed or absorbed through skin.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Containers may explode when heated.
- Runoff may pollute waterways.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Cover with plastic sheet to prevent spreading.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE Substances - Toxic (Combustible) 152

POTENTIAL HAZARDS

HEALTH

- Highly toxic, may be fatal if inhaled, swallowed or absorbed through skin.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See **Table 1 - Initial Isolation and Protective Action Distances** for highlighted materials.
For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Cover with plastic sheet to prevent spreading.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 153 Substances - Toxic and/or Corrosive (Combustible)

POTENTIAL HAZARDS

HEALTH

- TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Dry chemical, CO₂, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 154 Substances - Toxic and/or Corrosive (Non-Combustible)

POTENTIAL HAZARDS

HEALTH

- TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some are oxidisers and may ignite combustibles (wood, paper, oil, clothing, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- For electric vehicles or equipment, GUIDE 147 (lithium ion batteries) or GUIDE 138 (sodium batteries) should also be consulted.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Dry chemical, CO₂, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 155 Substances - Toxic and/or Corrosive (Flammable/Water-Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapours form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapours may travel to source of ignition and flash back.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

HEALTH

- **TOXIC;** inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.
- Bromoacetates and chloroacetates are extremely irritating/lachrymators.
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE** Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See **Table 1 - Initial Isolation and Protective Action Distances** for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

CAUTION: For Acetyl chloride (UN1717), use CO₂ or dry chemical only.

Small Fire

- CO₂, dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- FOR CHLOROSILANES, DO NOT USE WATER; use AFFF alcohol-resistant medium-expansion foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapour-suppressing foam may be used to reduce vapours.
- FOR CHLOROSILANES, use AFFF alcohol-resistant medium-expansion foam to reduce vapours.
- DO NOT GET WATER on spilled substance or inside containers.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 156 Substances - Toxic and/or Corrosive (Combustible/Water-Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
- When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapours may travel to source of ignition and flash back.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

HEALTH

- TOXIC; inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See **Table 1 - Initial Isolation and Protective Action Distances** for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

Small Fire

- CO₂, dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- FOR CHLOROSILANES, DO NOT USE WATER; use AFFF alcohol-resistant medium-expansion foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapour-suppressing foam may be used to reduce vapours.
- FOR CHLOROSILANES, use AFFF alcohol-resistant medium-expansion foam to reduce vapours.
- DO NOT GET WATER on spilled substance or inside containers.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 157 Substances - Toxic and/or Corrosive (Non-Combustible/Water-Sensitive)

POTENTIAL HAZARDS

HEALTH

- TOXIC; inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.
- Reaction with water or moist air may release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- For UN1796, UN1802, UN1826, UN2032, UN3084, UN3085 at high concentrations above 65 , UN2031 may act as oxidisers, also consult GUIDE 140.
- Vapours may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Note: Some foams will react with the material and release corrosive/toxic gases.

Small Fire

- CO₂ (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapour-suppressing foam may be used to reduce vapours.
- DO NOT GET WATER INSIDE CONTAINERS.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with Hydrofluoric acid (UN1790), flush with large amounts of water. For skin contact, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available. For eyes, flush with water or a saline solution for 15 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

POTENTIAL HAZARDS

HEALTH

- Inhalation or contact with substance may cause infection, disease or death.
- Category A Infections Substances (UN2814, UN2900 or UN3549) are more hazardous, or are in a more hazardous form, than infectious substances shipped as Category B Biological Substances (UN3373) or clinical waste / medical waste (UN3291).
- Runoff from fire control may cause environmental contamination.
- Note: Damaged packages containing solid CO₂ as a refrigerant may produce water or frost from condensation of air. Do not touch this solid or liquid as it could be contaminated by the contents of the parcel.
- Contact with solid CO₂ may cause burns, severe injury and/or frostbite.

FIRE OR EXPLOSION

- Some of these materials may burn, but none ignite readily.
- Some may be transported in flammable liquids.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Identify the substance involved.

PROTECTIVE CLOTHING

- Wear respiratory protection, such as fit-tested N95 respirator (at minimum), powered air purifying respirator (PAPR), or positive pressure self-contained breathing apparatus (SCBA).
- Wear full coverage body protection (e.g., Tyvek suit), faceshield, and disposable fluid-resistant gloves (e.g., latex or nitrile).
- Wear appropriate footwear; disposable shoe covers can be worn to protect against contamination.
- Puncture- and cut-resistant gloves should be worn over fluid-resistant gloves if sharp objects (e.g., broken glass, needles) are present.
- Wear insulated gloves (e.g. cryo gloves) over fluid-resistant gloves when handling dry ice (UN1845).
- Decontaminate protective clothing and personal protective equipment after use and before cleaning or disposal with an appropriate chemical disinfectant (e.g., 10% solution of bleach, equivalent to 0.5% sodium hypochlorite) or through a validated decontamination technology (e.g., autoclave) or process.
- Structural firefighters' protective clothing will provide thermal protection but provides only limited chemical protection.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, soda ash, lime or sand.

Large Fire

- Use extinguishing agent suitable for type of surrounding fire.
- Do not scatter spilled material with high-pressure water streams.
- Move containers from fire area if you can do it without risk.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Absorb with earth, sand or other non-combustible material.
- Cover damaged package or spilled material with absorbent material such as paper towel, towel or rag to absorb any liquids, and, beginning from outside edge, pour liquid bleach or other chemical disinfectant to saturate. Keep wet with liquid bleach or other disinfectant.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to a safe isolated area.

CAUTION: Victim may be a source of contamination.

- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Effects of exposure (inhalation, ingestion, injection/inoculation or skin contact) to substance may be delayed. Victim should consult medical professional for information regarding symptoms and treatment.
- For further assistance, contact your local Poison Control Centre.

GUIDE Substances (Irritating)

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POTENTIAL HAZARDS

HEALTH

- Inhalation of vapours or dust is extremely irritating.
- May cause burning of eyes and flow of tears.
- May cause coughing, difficult breathing and nausea.
- Brief exposure effects last only a few minutes.
- Exposure in an enclosed area may be very harmful.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but none ignite readily.
- Containers may explode when heated.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres (150 feet) for liquids and at least 25 metres (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See **Table 1 - Initial Isolation and Protective Action Distances** for highlighted materials.
For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.

Small Spill

- Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects should disappear after individual has been exposed to fresh air for approximately 10 minutes.

GUIDE Halogenated Solvents

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POTENTIAL HAZARDS

HEALTH

- Toxic by ingestion.
- Vapours may cause dizziness or suffocation.
- Exposure in an enclosed area may be very harmful.
- Contact may irritate or burn skin and eyes.
- Fire may produce irritating and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but none ignite readily.
- Most vapours are heavier than air.
- Air/vapour mixtures may explode when ignited.
- Container may explode in heat of fire.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire.
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Dry chemical, CO₂, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.

Small Liquid Spill

- Pick up with sand, earth or other non-combustible absorbent material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Wash skin with soap and water.
- Keep victim calm and warm.

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Very low levels of contained radioactive materials and low radiation levels outside packages result in low risks to people. Damaged packages may release measurable amounts of radioactive material, but the resulting risks are expected to be low.
- Some radioactive materials cannot be detected by commonly available instruments.
- Packages do not have RADIOACTIVE I, II, or III labels. Some may have EMPTY labels or may have the word "Radioactive" in the package marking.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Many have cardboard outer packaging; content (physically large or small) can be of many different physical forms.
- Radioactivity does not change flammability or other properties of materials.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 metres (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 162 Radioactive Materials (Low to Moderate Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Low radiation hazard when material is inside container. If material is released from package or bulk container, hazard will vary from low to moderate. Level of hazard will depend on the type and amount of radioactivity, the kind of material it is in, and/or the surfaces it is on.
- Some material may be released from packages during accidents of moderate severity but risks to people are not great.
- Released radioactive materials or contaminated objects usually will be visible if packaging fails.
- Some exclusive use shipments of bulk and packaged materials will not have "RADIOACTIVE" labels. Placards, markings and Transport Documents provide identification.
- Some packages may have a "RADIOACTIVE" label and a second hazard label. The second hazard is usually greater than the radiation hazard; so follow this GUIDE as well as the response GUIDE for the second hazard class label.
- Some radioactive materials cannot be detected by commonly available instruments.
- Some radio active materials may be transported unpackaged. E.g. UN 2912 (LSA-I) and UN 2913 (SCO-I)
- Runoff from control of cargo fire may cause low-level pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Uranium and Thorium metal cuttings may ignite spontaneously if exposed to air (see GUIDE 136).
- Nitrates are oxidisers and may ignite other combustibles (see GUIDE 141).

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 metres (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Dike to collect large liquid spills.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 163 Radioactive Materials (Low to High Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by Transport Documents contain non-life-endangering amounts. Partial releases might be expected if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages (large and small, usually metal), contain the most hazardous amounts. They can be identified by package markings or by Transport Documents. Life-threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type A, Type B or Type C packages. Package type will be marked on packages, and shipment details will be on Transport Documents.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one metre from a single, isolated, undamaged package.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change flammability or other properties of materials.
- Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 metres.

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 metres in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe; contents of damaged packages may cause external radiation exposure, and much higher external exposure if contents (source capsules) are released.
- Contamination and internal radiation hazards are not expected, but not impossible.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by Transport Documents contain non-life-endangering amounts. Radioactive sources may be released if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages, (large and small, usually metal) contain the most hazardous amounts. They can be identified by package markings or by Transport Documents. Life-threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one metre from a single, isolated, undamaged package.
- Radiation from the package contents, usually in durable metal capsules, can be detected by most radiation instruments.
- Water from cargo fire control is not expected to cause pollution.

FIRE OR EXPLOSION

- Packagings can burn completely without risk of content loss from sealed source capsule.
- Radioactivity does not change flammability or other properties of materials.
- Radioactive source capsules and Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Delay final cleanup until instructions or advice is received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres.

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 metres in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Contents are seldom liquid. Content is usually a metal capsule, easily seen if released from package.
- If source capsule is identified as being out of package, DO NOT TOUCH. Stay away and await advice from Radiation Authority.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Persons exposed to special form sources are not likely to be contaminated with radioactive material.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 165 Radioactive Materials (Fissile/Low to High Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type AF or IF packages, identified by package markings, do not contain life-threatening amounts of material. External radiation levels are low and packages are designed, evaluated and tested to control releases and to prevent a fission chain reaction under severe transport conditions.
- Type B(U)F, B(M)F and CF packages (identified by markings on packages or Transport Documents) contain potentially life-endangering amounts. Because of design, evaluation and testing of packages, fission chain reactions are prevented and releases are not expected to be life-endangering for all accidents except those of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type AF, BF or CF packages. Package type will be marked on packages, and shipment details will be on Transport Documents.
- The transport index (TI) shown on labels or a Transport Document might not indicate the radiation level at one metre from a single, isolated, undamaged package; instead, it might relate to controls needed during transport because of the fissile properties of the materials. Alternatively, the fissile nature of the contents may be indicated by a criticality safety index (CSI) on a special FISSILE label or on the Transport Document.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control is not expected to cause pollution.

FIRE OR EXPLOSION

- These materials are seldom flammable. Packages are designed to withstand fires without damage to contents.
- Radioactivity does not change flammability or other properties of materials.
- Type AF, IF, B(U)F, B(M)F and CF packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres.

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 metres in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.

Liquid Spill

- Package contents are seldom liquid. If any radioactive contamination resulting from a liquid release is present, it probably will be low-level.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 166 Radioactive Materials - Corrosive (Uranium Hexafluoride/Water-Sensitive)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- Chemical hazard greatly exceeds radiation hazard.
- Substance reacts with water and water vapour in air to form toxic and corrosive hydrogen fluoride gas and an extremely irritating and corrosive, white-coloured, water-soluble residue.
- If inhaled, may be fatal.
- Direct contact causes burns to skin, eyes, and respiratory tract.
- Low-level radioactive material; very low radiation hazard to people.
- Runoff from control of cargo fire may cause low-level pollution.

FIRE OR EXPLOSION

- Substance does not burn.
- The material may react violently with fuels.
- Product will decompose to produce toxic and/or corrosive fumes.
- Containers in protective overpacks (horizontal cylindrical shape with short legs for tie-downs), are identified with "AF", "B(U)F" or "H(U)" on Transport Documents or by markings on the overpacks. They are designed and evaluated to withstand severe conditions including total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.
- Bare filled cylinders, identified with UN2978 as part of the marking (may also be marked H(U) or H(M)), may rupture in heat of engulfing fire; bare empty (except for residue) cylinders will not rupture in fires.
- Radioactivity does not change flammability or other properties of materials.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 metres in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 metres in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER OR FOAM ON MATERIAL ITSELF.
- Move containers from fire area if you can do it without risk.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Cool containers with flooding quantities of water until well after fire is out.
- If this is impossible, withdraw from area and let fire burn.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- DO NOT GET WATER INSIDE CONTAINERS.
- Without fire or smoke, leak will be evident by visible and irritating vapours and residue forming at the point of release.
- Use fine water spray to reduce vapours; do not put water directly on point of material release from container.
- Residue buildup may self-seal small leaks.
- Dike far ahead of spill to collect runoff water.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- In case of contact with Hydrofluoric acid (UN1790), flush with large amounts of water. For skin contact, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available. For eyes, flush with water or a saline solution for 15 minutes.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Keep victim calm and warm.

GUIDE 167

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GUIDE Carbon Monoxide (Refrigerated Liquid)

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POTENTIAL HAZARDS

HEALTH

- TOXIC; Extremely Hazardous.
- Inhalation extremely dangerous; may be fatal.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- odourless, will not be detected by sense of smell.

FIRE OR EXPLOSION

- EXTREMELY FLAMMABLE.
- May be ignited by heat, sparks or flames.
- Flame may be invisible.
- Containers may explode when heated.
- Vapour explosion and poison hazard indoors, outdoors or in sewers.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Vapours may travel to source of ignition and flash back.
- Runoff may create fire or explosion hazard.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres in all directions; also, consider initial evacuation for 800 metres in all directions.

EMERGENCY RESPONSE**FIRE**

- CAUTION: Flame can be invisible. Use an alternate method of detection (thermal camera, broom handle, etc.)
- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE Aluminum (Molten)

169

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Substance is transported in molten form at a temperature above 705°C (1300°F).
- Violent reaction with water; contact may cause an explosion or may produce a flammable gas.
- Will ignite combustible materials (wood, paper, oil, debris, etc.).
- Contact with nitrates or other oxidisers may cause an explosion.
- Contact with containers or other materials, including cold, wet or dirty tools, may cause an explosion.
- Contact with concrete will cause spalling and small pops.

HEALTH

- Contact causes severe burns to skin and eyes.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear flame-retardant structural firefighters' protective clothing, including faceshield, helmet and gloves, as this will provide limited thermal protection.

EMERGENCY RESPONSE

FIRE

- Do Not Use Water, except in life-threatening situations and then only in a fine spray.
- Do not use halogenated extinguishing agents or foam.
- Move combustibles out of path of advancing pool if you can do so without risk.
- Extinguish fires started by molten material by using appropriate method for the burning material; keep water, halogenated extinguishing agents and foam away from the molten material.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Do not attempt to stop leak, due to danger of explosion.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Substance is very fluid, spreads quickly, and may splash. Do not try to stop it with shovels or other objects.
- Dike far ahead of spill; use dry sand to contain the flow of material.
- Where possible allow molten material to solidify naturally.
- Avoid contact even after material solidifies. Molten, heated and cold aluminum look alike; do not touch unless you know it is cold.
- Clean up under the supervision of an expert after material has solidified.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- For severe burns, immediate medical attention is required.
- Removal of solidified molten material from skin requires medical assistance.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May react violently or explosively on contact with water.
- Some are transported in flammable liquids.
- May be ignited by friction, heat, sparks or flames.
- Some of these materials will burn with intense heat.
- Dusts or fumes may form explosive mixtures in air.
- Containers may explode when heated.
- May re-ignite after fire is extinguished.

HEALTH

- Oxides from metallic fires are a severe health hazard.
- Inhalation or contact with substance or decomposition products may cause severe injury or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres for liquids and at least 25 metres for solids.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 50 metres.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres in all directions; also, consider initial evacuation for 800 metres in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER, FOAM OR CO₂.
- Dousing metallic fires with water will generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment (i.e., building, cargo hold, etc.).
- Use DRY sand, graphite powder, dry sodium chloride-based extinguishers, G-1® or Met-L-X® powder.
- Confining and smothering metal fires is preferable rather than applying water.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- If impossible to extinguish, protect surroundings and allow fire to burn itself out.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Substances (Low to Moderate Hazard)

171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Some may be transported hot.
- For UN3508, be aware of possible short circuiting as this product is transported in a charged state.
- Polymeric beads, expandable (UN2211) may evolve flammable vapours.

HEALTH

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Some liquids produce vapours that may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 metres for liquids and at least 25 metres for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#) for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 metres in all directions; also, consider initial evacuation for 800 metres in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Do not scatter spilled material with high-pressure water streams.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Small Spill

- Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

GUIDE Gallium and Mercury

172

POTENTIAL HAZARDS

HEALTH

- Inhalation of vapours or contact with substance will result in contamination and potential harmful effects.
- Fire will produce irritating, corrosive and/or toxic gases.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may react upon heating to produce corrosive and/or toxic fumes.
- Runoff may pollute waterways.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 metres in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 100 metres.

Fire

- When any large container is involved in a fire, consider initial evacuation for 500 metres in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- Do not direct water at the heated metal.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not use steel or aluminum tools or equipment.
- Cover with earth, sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- For mercury, use a mercury spill kit.
- Mercury spill areas may be subsequently treated with calcium sulphide/calcium sulfide or with sodium thiosulphate/sodium thiosulfate wash to neutralize any residual mercury.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE Adsorbed Gases - Toxic*

173

POTENTIAL HAZARDS

HEALTH

- TOXIC; may be fatal if inhaled or absorbed through skin.
- Vapours may be irritating.
- Contact with gas may cause burns and injury.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some gases may burn or be ignited by heat, sparks or flames but NOT readily due to low transportation pressures.
- May form explosive mixtures with air.
- Oxidisers may ignite combustibles (wood, paper, oil, clothing, etc.) but NOT readily due to low transportation pressures.
- Vapours may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Runoff may create fire hazard.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer when there is no risk of fire. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Immediate precautionary measure

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#).

Fire

- If several small packages (rail or trailer) are involved in a fire, ISOLATE for 1600 metres in all directions; also, consider initial evacuation for 1600 metres in all directions.

* **SOME SUBSTANCES MAY ALSO BE FLAMMABLE, CORROSIVE AND/OR OXIDISING**

EMERGENCY RESPONSE

FIRE

- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.
- For UN3515, UN3518, UN3520, use water only; no dry chemical, CO₂ or Halon®.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Several Small Packages (rail or trailer)

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Some gases may be flammable. ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- For flammable gases, all equipment used when handling the product must be grounded.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- For oxidising substances, keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE Adsorbed Gases - Flammable or Oxidising

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POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some gases will be ignited by heat, sparks or flames but NOT readily due to low transportation pressure.
- Substance does not burn but will support combustion.
- Vapours may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when exposed to prolonged direct flame impingement.

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas may cause burns and injury.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- CALL EMERGENCY RESPONSE Telephone Number on Transport Documents first. If Transport Documents are not available or no answer, refer to appropriate emergency service.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 metres in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will provide thermal protection but provides only limited chemical protection.

EVACUATION

Immediate precautionary measure

Large Spill

- Consider initial downwind evacuation for at least 800 metres.

Fire

- If several small packages (rail or trailer) are involved in a fire, ISOLATE for 1600 metres in all directions; also, consider initial evacuation for 1600 metres in all directions.

EMERGENCY RESPONSE

FIRE

- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.
- Use extinguishing agent suitable for type of surrounding fire.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Several Small Packages (rail or trailer)

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- For flammable gases, ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- For oxidising substances, keep combustibles (wood, paper, oil, etc.) away from spilled material.
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapours through sewers, ventilation systems and confined areas.
- Ventilate the area.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 000 (Australia) or 111 (New Zealand) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

INTRODUCTION TO GREEN TABLES - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Table 1 - Initial Isolation and Protective Action Distances suggests distances useful to protect people from vapours/gases resulting from spills involving:

- materials that are considered toxic by inhalation (TIH) (PIH in the US)
- materials that produce toxic gases upon contact with water
- chemical warfare agents

This table provides first responders with initial guidance until technically qualified emergency response personnel are available. For each material, first responders will find distances for the following zones:

- The **Initial Isolation Zone** defines an area surrounding the incident in which people may be exposed to dangerous (upwind) and life-threatening (downwind) concentrations of material.
- The **Protective Action Zone** defines an area downwind from the incident in which people may become incapacitated and unable to take protective action and/or incur serious or irreversible health effects. Table 1 provides specific guidance for small and large spills occurring day or night.

Adjusting distances for a specific incident involves many interdependent variables and should be made only by personnel technically qualified to make such adjustments. For this reason, no precise guidance can be provided in this document to aid in adjusting the table distances however, general guidance follows.

Factors That May Change the Protective Action Distances

Fire

In the **orange-bordered pages**, under **Evacuation-Fire**, the evacuation distance required to protect against fragmentation hazard of a large container. If the material becomes involved in a **FIRE**, the toxic hazard may be less than the fire or explosion hazard. In these cases, the **Fire** hazard distance should be used as an isolation distance and Table 1 should be used to protection downwind for residual material release.

Worst-case scenario: terrorism, sabotage or catastrophic accident

Initial isolation and protective action distances in this guidebook are derived from historical data on transportation incidents and the use of statistical models. For worst-case scenarios involving the instantaneous release of the entire contents of a package (e.g., as a result of terrorism, sabotage or catastrophic accident) the distances may increase substantially. For such events, doubling of the initial isolation and protective action distances is appropriate in absence of other information.

When more than one large package is leaking

If more than one tank car containing TIH materials involved in the incident is leaking, LARGE SPILL distances may need to be increased.

Other factors that can increase the protective action distance:

For a material with a protective action distance of 11.0 km (7.0 miles), the actual distance can be larger in certain atmospheric conditions. If the dangerous goods vapour plume is channeled in a valley or between many tall buildings, distances may be larger than shown in Table 1 due to less mixing of the plume with the atmosphere. Daytime spills in regions with known strong inversions or snow cover, or occurring near sunset, may require an increase of the protective action distance because airborne contaminants mix and disperse more slowly and may travel much farther downwind. In such cases, the nighttime protective action distance may be more appropriate. In addition, protective action distances may be larger for liquid spills when either the material or outdoor temperature exceeds 30 C (86 F).

Water-reactive materials

Materials that react with water to produce large amounts of toxic gases are included in Table 1 - Initial Isolation and Protective Action Distances. Some of these materials have 2 entries in Table 1. They are identified by **(when spilled on land)** since they are TIH products and **(when spilled in water)** because they produce additional toxic gases when spilled in water. Choose the larger protective action distance if: it is not clear whether the spill is on land or in water, the spill occurs both on land and in water.

Table 2 Water-Reactive Materials Which Produce Toxic Gases

This table lists materials that produce large amounts of Toxic Inhalation Hazard gases (TIH) when spilled in water as well as the toxic gases that are produced when spilled in water.

NOTE: The produced TIH gases indicated in Table 2 are for information purposes only. In Table 1, the initial isolation and protective action distances have already taken into consideration the produced TIH gas. When a water-reactive TIH-producing material is spilled into a river or stream, the source of the toxic gas may flow downstream for a great distance.

Table 3 lists Initial Isolation and Protective Action Distances for Toxic Inhalation Hazard materials that may be more commonly encountered.

This table lists materials that may be more commonly encountered. These materials are:

- UN1005- Ammonia, anhydrous
- UN1017-Chlorine
- UN1040-Ethylene oxide and UN1040-Ethylene oxide with nitrogen
- UN1050-Hydrogen chloride, anhydrous (UN1050) and UN2186-Hydrogen chloride, refrigerated liquid
- UN1052-Hydrogen fluoride, anhydrous
- UN1079-Sulfur dioxide/Sulphur dioxide

This table provides Initial Isolation and Protective Action Distances for large spills (more than 208 litres or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and for different wind speeds.

PROTECTIVE ACTION DECISION FACTORS TO CONSIDER

The choice of protective actions for a given situation depends on a number of factors. For some cases, evacuation may be the best option; in others, sheltering in-place may be the best course. Sometimes, these two actions may be used in combination. In any emergency, officials need to quickly give the public instructions. The public will need continuing information and instructions while being evacuated or sheltered in-place.

Proper evaluation of the factors listed below will determine the effectiveness of evacuation or in-place protection (shelter in-place). The importance of these factors can vary with emergency conditions. In specific emergencies, other factors may need to be identified and considered as well. This list indicates what kind of information may be needed to make the initial decision.

The Dangerous Goods

- Degree of health hazard
- Chemical and physical properties
- Amount involved
- Containment/control of release
- Rate of vapour movement

The Population Threatened

- Location
- Number of people
- Time available to evacuate or shelter in-place
- Ability to control evacuation or shelter in-place
- Building types and availability
- Special institutions or populations, e.g., nursing homes, hospitals, prisons

Weather Conditions

- Effect on vapour and cloud movement
- Potential for change
- Effect on evacuation or shelter in-place

PROTECTIVE ACTIONS

Protective Actions are those steps taken to preserve the health and safety of emergency responders and the public during an incident involving releases of dangerous goods. Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) predicts the size of downwind areas which could be affected by a cloud of toxic gas. People in this area should be evacuated and/or sheltered in-place inside buildings.

Isolate Hazard Area and Deny Entry means to keep everybody away from the area if they are not directly involved in emergency response operations. Unprotected emergency responders should not be allowed to enter the isolation zone. This “isolation” task is done first to establish control over the area of operations. This is the first step for any protective actions that may follow. See Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) for more detailed information on specific materials.

Evacuate means to move all people from a threatened area to a safer place. To perform an evacuation, there must be enough time for people to be warned, to get ready, and to leave an area. If there is enough time, evacuation is the best protective action. Begin evacuating people nearby and those outdoors in direct view of the scene. When additional help arrives, expand the area to be evacuated downwind and crosswind to at least the extent recommended in this guidebook. Even after people move to the distances recommended, they may not be completely safe from harm. They should not be permitted to congregate at such distances. Send evacuees to a definite place, by a specific route, far enough away so they will not have to be moved again if the wind shifts.

Shelter In-Place means people should seek shelter inside a building and remain inside until the danger passes. **It is vital for first responders to maintain communications with sheltered-in-place people** so that they are advised about changing conditions. Sheltering-in-place is used when either: evacuating the public would cause greater risk than staying where they are or an evacuation cannot be performed.

Direct the people inside to close all doors and windows and to shut off all ventilating, heating and cooling systems. Stay far from windows to avoid shattered glass and projectile metal fragments in the event of a fire and/or explosion. Tune in to local radio or TV station and stay inside until told it is safe to leave by first responders.

Shelter in-place may not be the best option if (a) the vapours are flammable (b) if it will take a long time for the gas to clear the area or (c) if buildings cannot be closed tightly. Vehicles can offer some protection for a short period if the windows are closed and the ventilating systems are shut off. Vehicles are not as effective as buildings for in-place protection.

Every dangerous goods incident is different. Each will have special problems and concerns. Action to protect the public must be selected carefully. These pages can help with initial decisions on how to protect the public. Officials must continue to gather information and monitor the situation until the threat is removed.

BACKGROUND ON TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Initial Isolation and Protective Action Distances in this guidebook were determined for small and large spills occurring during day or night. The overall analysis was statistical in nature and was conducted using: state-of-the-art emission rate and dispersion models statistical release data from the U.S. DOT HMIS (Hazardous Materials Information System) database meteorological observations from over 120 locations in United States, Canada and Mexico and the most current toxicological exposure guidelines.

For each chemical, thousands of hypothetical releases were modeled to account for the statistical variation in both release amount and atmospheric conditions. Based on this statistical sample, the 90th percentile Protective Action Distance for each chemical and category was selected to appear in the Table. A brief description of the analysis is provided below. A detailed report outlining the methodology and data used in the generation of the Initial Isolation and Protective Action Distances may be obtained from the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

DESCRIPTION OF THE ANALYSIS

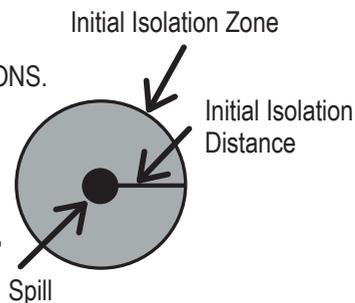
Release amounts and emission rates into the atmosphere were statistically modeled based on (1) data from the U.S. DOT HMIS database (2) container types and sizes authorized for transport as specified in 49 CFR 172.101 and Part 173 (3) physical properties of the individual materials, and (4) atmospheric data from a historical database. For liquified gases, which can flash to form both a vapour/aerosol mixture and an evaporating pool, the emission mode calculated one or both of: the release of vapour due to evaporation of pools on the ground, direct release of vapours from the container. The emission model also calculated the emission of toxic vapour by-products generated from spilling water-reactive materials in water. Small spills involve 208 litres for liquids (55 US gallons) and 300 kg for solids (660 lbs). Large spills involve greater quantities. The exceptions are the entries at the beginning of Table 1 marked (**when used as a weapon**). The volumes used for these calculations varies, but in most cases: Small spills include releases up to 2 kg (4.4 lbs), and Large Spills include releases up to 25 kg (55 lbs). **Downwind dispersion** of the vapour was estimated for each case modeled. Using a database containing hourly meteorological data from 120 cities in the United States, Canada and Mexico the atmospheric parameters affecting the dispersion and the emission rate were selected. The dispersion calculation accounted for the time- dependent emission rate from the source and density of the vapour plume (i.e., heavy gas effects). Since atmospheric mixing is less effective at dispersing vapour plumes during nighttime, day and night were separated in the analysis. In the table Day refers to time periods after sunrise and before sunset, while Night includes all hours between sunset and sunrise.

Toxicological short-term exposure guidelines for the materials were applied to determine the downwind distance to which persons may become incapacitated and unable to take protective action or incur serious health effects after a single or rare, exposure. When available, toxicological exposure guidelines were chosen from AEGL-2 or ERPG-2 emergency response guidelines, with AEGL-2 values being the first choice. For materials without AEGL-2 or ERPG-2 values, emergency response guidelines were estimated from lethal concentration limits derived from animal studies. This approach was recommended by an independent panel of toxicological experts from industry and academia.

HOW TO USE TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

- (1) The responder should already have:
 - Identified the material by its UN Number and Name; (if a UN Number cannot be found, use the Name of Material index in the blue-bordered pages to locate that number.)
 - confirmed that the material is highlighted in green in the yellow or blue-bordered pages. If not, Table 1 doesn't apply
 - Found the three-digit guide for that material in order to consult the emergency actions recommended jointly with this table;
 - Noted the wind direction.
- (2) Look in Table 1 (the green-bordered pages) for the UN Number and Name of the Material involved in the incident. Some UN Numbers have more than one shipping name listed - look for the specific name of the material. (If the shipping name is not known and Table 1 lists more than one name for the same UN Number, use the entry with the largest protective action distances.)
- (3) Determine if the incident involves a SMALL or LARGE spill and if DAY or NIGHT. A SMALL SPILL consists of a release of less than 208 litres. This generally corresponds to a spill from a single small package (e.g. a drum), a small cylinder, or a small leak from a large package. A LARGE SPILL consists of a release of more than 208 litres (55 US gallons). This usually involves a spill from a large package, or multiple spills from many small packages. DAY is any time after sunrise and before sunset. NIGHT is any time between sunset and sunrise.

- (4) Look up the INITIAL ISOLATION DISTANCE. This distance defines the radius of a zone (Initial Isolation Zone) surrounding the spill in ALL DIRECTIONS. Within this zone, all public should be evacuated (protective clothing and respiratory protection is required in this zone). Persons should be directed to move out of the zone in a direction perpendicular to wind direction (crosswind), and away from the spill, to a minimum distance as prescribed by the Initial Isolation Distance.

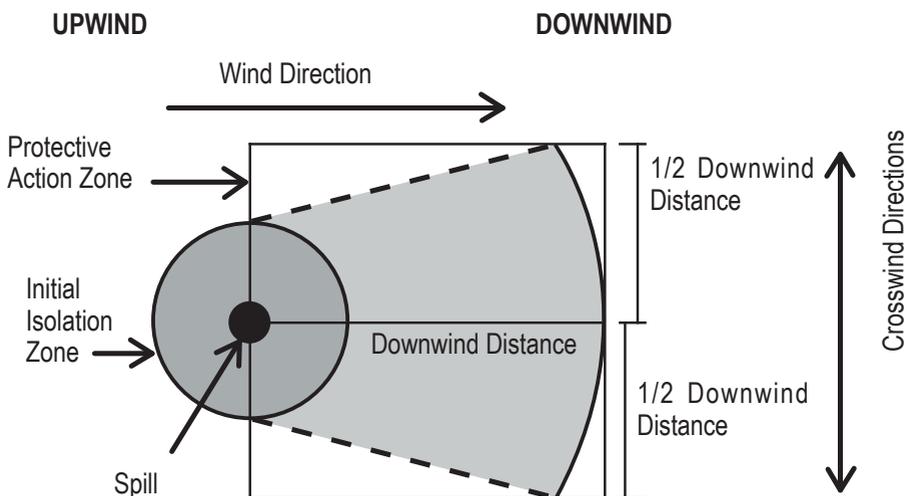


- (5) Look up the initial PROTECTIVE ACTION DISTANCE. For a given material, spill size, and whether day or night, Table 1 gives the downwind distance—in kilometres and miles—from the spill/leak source for which protective actions should be considered. For practical purposes, the Protective Action Zone (i.e., the area in which people are at risk of harmful exposure) is a square, whose length and width are the same as the downwind distance shown in Table 1. Protective actions are those steps taken to

preserve the health and safety of emergency responders and the public. People in this area should be evacuated and/or sheltered-in-place. Consult pages 288-290.

(6) Initiate Protective Actions beginning with those closest to the spill site and working away from the site in the downwind direction. When a water-reactive TIH (PIH in the US) producing material is spilled into a river or stream, the source of the toxic gas may move with the current or stretch from the spill point downstream for a large distance.

In the fire below, the spill is located at the centre of the small circle. The larger circle represents the INITIAL ISOLATION zone around the spill. The square (the protective action zone) is the area in which you should take protective actions.



NOTE 1: See “Introduction To Green Tables - Initial Isolation And Protective Action Distances” under “Factors That May Change the Protective Action Distances” (page 288)

NOTE 2: When a product in Table 1 has the mention “(when spilled in water)”, refer to Table 2 – Water-Reactive Materials for the list of gases produced when these materials are spilled in water. The TIH gases in Table 2 are for information purposes only.

Call the emergency response telephone number listed on the Transport Documents or the appropriate response agency as soon as possible for additional information on the material, safety precautions and mitigation procedures.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
1005	125	Ammonia, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	Refer to table 3				
1005	125	Anhydrous ammonia								
1008	125	Boron trifluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.5 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
1008	125	Boron trifluoride, compressed								
1016	119	Carbon monoxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.7 mi)	4.3 km (2.7 mi)		
1016	119	Carbon monoxide, compressed								
1017	124	Chlorine	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)		Refer to table 3			
1026	119	Cyanogen	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)		
1040	119P	Ethylene oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)		Refer to table 3			
1040	119P	Ethylene oxide with Nitrogen								
1045	124	Fluorine	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.3 mi)	2.3 km (1.4 mi)		
1045	124	Fluorine, compressed								
1048	125	Hydrogen bromide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	3.4 km (2.1 mi)		
1050	125	Hydrogen chloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)		Refer to table 3			
1051	117	AC (when used as a weapon)	60 m (200 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)	1000 m	3.7 km (2.3 mi)	8.4 km (5.3 mi)		

1051	117P	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	60 m (200 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	200 m (600 ft)	0.7 km (0.5 mi)	1.7 km (1.1 mi)
1051	117P	Hydrogen cyanide, anhydrous, stabilised	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)		Refer to table 3	
1052	125	Hydrogen fluoride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	400 m (1250 ft)	2.2 km (1.4 mi)	6.3 km (3.9 mi)
1053	117	Hydrogen sulphide	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	200 m (600 ft)	0.7 km (0.4 mi)	2.1 km (1.3 mi)
1053	117	Hydrogen sulphide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	150 m (500 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)
1061	118	Methylamine, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.3 km (0.8 mi)	4.1 km (2.6 mi)
1062	123	Methyl bromide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	200 m (600 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)
1064	117	Methyl mercaptan	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.3 km (0.8 mi)	4.1 km (2.6 mi)
1067	124	Dinitrogen tetroxide	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	400 m (1250 ft)	1.4 km (0.9 mi)	3.3 km (2.1 mi)
1067	124	Nitrogen dioxide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	800 m (2500 ft)	4.3 km (2.7 mi)	10.8 km (6.7 mi)
1069	125	Nitrosyl chloride	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.6 mi)	1000 m	7.5 km (4.7 mi)	11.0+ km (7.0+ mi)
1076	125	CG (when used as a weapon)	150 m (500 ft)	0.8 km (0.5 mi)	3.2 km (2.0 mi)			
1076	125	DP (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	200 m (600 ft)	1.0 km (0.7 mi)	2.4 km (1.5 mi)
1076	125	Phosgene	100 m 300 ft	0.6 km (0.4 mi)	2.4 km (1.5 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
1079	125	Sulfur dioxide	100 m (300 ft)	0.6 km (0.4 mi)	2.5 km (1.6 mi)		Refer to table 3	
1079	125	Sulphur dioxide	100 m (300 ft)	0.6 km (0.4 mi)	2.5 km (1.6 mi)		Refer to table 3	
1082	119P	Refrigerant gas R-1113	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	0.8 km (0.5 mi)
1082	119P	Trifluoroethylene, stabilised	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)			

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
		First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
		Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
1092	131P Acrolein, stabilised	100 m (300 ft)	1.2 km (0.8 mi)	3.3 km (2.1 mi)	500 m (1500 ft)	6.1 km (3.8 mi)	10.8 km (6.7 mi)		
1093	131P Acrylonitrile, stabilised	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.2 km (0.8 mi)	2.3 km (1.4 mi)		
1098	131 Allyl alcohol	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	1.2 km (0.8 mi)		
1135	131 Ethylene chlorohydrin	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)		
1143	131P Crotonaldehyde	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
1143	131P Crotonaldehyde, stabilised	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.8 km (1.1 mi)		
1162	155 Dimethyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	1.0 km (0.6 mi)	1.8 km (1.1 mi)		
1163	131 1,1-Dimethylhydrazine	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.8 km (1.1 mi)		
1163	131 Dimethylhydrazine, unsymmetrical	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	0.9 km (0.6 mi)		
1182	155 Ethyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.3 mi)		
1183	139 Ethyldichlorosilane (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.9 km (0.6 mi)	1.8 km (1.1 mi)		
1185	131P Ethyleneimine, stabilised	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	200 m (600 ft)	2.1 km (1.3 mi)	5.8 km (3.6 mi)		
1196	155 Ethyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.2 km (0.2 mi)	0.5 km (0.4 mi)	150 m (500 ft)	1.1 km (0.7 mi)	2.1 km (1.3 mi)		
1238	155 Methyl chloroformate	30 m (100 ft)	0.2 km (0.2 mi)	0.5 km (0.4 mi)	300 m (1000 ft)	3.1 km (2.0 mi)	5.8 km (3.6 mi)		
1239	131 Methyl chloromethyl ether	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)					

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
1380	135	Pentaborane	60 m (200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)	200 m (600 ft)	2.7 km (1.7 mi)	6.2 km (3.9 mi)		
1384	135	Sodium dithionite (when spilled in water)								
1384	135	Sodium hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.5 km (1.6 mi)		
1384	135	Sodium hydrosulphite (when spilled in water)								
1390	139	Alkali metal amides (when spilled in water)	30 m (100 ft)	0.1 k (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.2 km (1.4 mi)		
1397	139	Aluminum phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.7 km (0.5 mi)	500 m (1500 ft)	2.0 km (1.2 mi)	6.5 km (4.0 mi)		
1419	139	Magnesium aluminum phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	500 m (1500 ft)	1.8 km (1.1 mi)	5.8 km (3.6 mi)		
1432	139	Sodium phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.8 km (2.4 mi)		
1510	143	Tetranitromethane	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)		
1541	155	Acetone cyanohydrin, stabilised (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.2 km (0.2 mi)	0.8 km (0.5 mi)		
1556	152	MD (when used as a weapon)	300 m (1000 ft)	1.6 km (1.0 mi)	4.3 km (2.7 mi)	1000 m	11.0+ km	11.0+ km	(7.0+ mi)	
1556	152	Methyldichlorarsine	100 m (300 ft)	1.4 km (0.9 mi)	2.1 km (1.3 mi)	300 m (1000 ft)	3.8 km (2.4 mi)	5.2 km (3.3 mi)		
1556	152	PD (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	1.6 km (1.0 mi)		

1560	157	Arsenic chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.5 km (1.0 mi)
1560	157	Arsenic trichloride	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.7 mi)	150 m (500 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
1569	131	Bromoacetone	60 m (200 ft)	0.5 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	3.6 km (2.2 mi)
1580	154	Chloropicrin	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	2.1 km (1.3 mi)	5.9 km (3.7 mi)
1581	123	Chloropicrin and Methyl bromide mixture						
1581	123	Methyl bromide and Chloropicrin mixture	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)
1582	119	Chloropicrin and Methyl chloride mixture						
1582	119	Methyl chloride and Chloropicrin mixture	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)
1583	154	Chloropicrin mixture, n.o.s.	60 m (200 ft)	0.5 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	3.6 km (2.2 mi)
1589	125	CK (when used as a weapon)	30 m (100 ft)	0.2 km (0.2 mi)	1.4 km (0.9 mi)	300 m (1000 ft)	1.4 km (0.9 mi)	6.1 km (3.8 mi)
1589	125	Cyanogen chloride, stabilised	300 m (1000 ft)	1.8 km (1.2 mi)	6.4 km (4.0 mi)	1000 m (3000 ft)	9.7 km (6.0 mi)	11.0+ km (7.0+ mi)
1595	156	Dimethyl sulfate	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.6 km (0.4 mi)
1595	156	Dimethyl sulphate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)
1605	154	Ethylene dibromide						
1612	123	Compressed gas and hexaethyl tetraphosphate mixture	100 m (300 ft)	0.8 km (0.5 mi)	2.7 km (1.7 mi)	400 m (1250 ft)	3.5 km (2.2 mi)	8.1 km (5.1 mi)
1612	123	Hexaethyl tetraphosphate and compressed gas mixture						

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

		SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)					
UN No.	Guide	NAME OF MATERIAL	First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during		
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	
1613	154	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide									
1613	154	Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.1 km (0.7 mi)		
1614	152	Hydrogen cyanide, stabilised (absorbed)	60 m (200 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)		150 m (500 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)		
1647	151	Ethylene dibromide and Methyl bromide mixture, liquid									
1647	151	Methyl bromide and Ethylene dibromide mixture, liquid	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)		150 m (500 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)		
1660	124	Nitric oxide									
1660	124	Nitric oxide, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)		100 m (300 ft)	0.6 km (0.4 mi)	2.2 km (1.4 mi)		
1670	157	Perchloromethyl mercaptan	30 m (100 ft)	0.2 km (0.2 mi)	0.4 km (0.2 mi)		100 m (300 ft)	0.8 km (0.5 mi)	1.2 km (0.8 mi)		
1672	151	Phenylcarbamylamine chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)		60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.4 mi)		
1680	157	Potassium cyanide									
1680	157	(when spilled in water) Potassium cyanide, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)		60 m (200 ft)	0.2 km (0.2 mi)	1.0 km (0.6 mi)		
1689	157	Sodium cyanide									
1689	157	(when spilled in water) Sodium cyanide, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)		100 m (300 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)		

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT
1744	154	Bromine	60 m (200 ft)	0.8 km (0.5 mi)	0.1 km (0.1 mi)	2.3 km (1.5 mi)	300 m (1000 ft)	3.8 km (2.4 mi)	7.5 km (4.7 mi)	
1744	154	Bromine, solution								
1744	154	Bromine, solution (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)	
1745	144	Bromine, solution (Inhalation Hazard Zone B)	100 m (300 ft)	0.9 km (0.5 mi)	2.5 km (1.6 mi)	2.5 km (1.6 mi)	400 m (1250 ft)	5.4 km (3.3 mi)	10.7 km (6.6 mi)	
1745	144	Bromine pentafluoride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.2 km (0.7 mi)	4.0 km (2.5 mi)	
1745	144	Bromine pentafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)	
1746	144	Bromine trifluoride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.7 mi)	3.7 km (2.3 mi)	
1746	144	Bromine trifluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
1747	155	Butyltrichlorosilane (when spilled in water)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	1.1 km (0.7 mi)	200 m (600 ft)	1.4 km (0.9 mi)	3.6 km (2.3 mi)	
1749	124	Chlorine trifluoride	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.1 km (0.7 mi)	1.9 km (1.2 mi)	
1752	156	Chloroacetyl chloride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	
1752	156	Chloroacetyl chloride (when spilled in water)								

1753	156	Chlorophenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.8 km (0.5 mi)
1754	137	Chlorosulfonic acid (with or without sulfur trioxide mixture) (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)
1754	137	Chlorosulfonic acid (with or without sulfur trioxide mixture) (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.7 km (0.4 mi)	2.3 km (1.4 mi)
1754	137	Chlorosulphonic acid (with or without sulphur trioxide mixture) (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)
1754	137	Chlorosulphonic acid (with or without sulphur trioxide mixture) (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.7 km (0.4 mi)	2.3 km (1.4 mi)
1758	137	Chromium oxychloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)
1762	156	Cyclohexenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)
1763	156	Cyclohexyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)
1765	156	Dichloroacetyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.5 mi)
1766	156	Dichlorophenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.4 mi)	2.0 km (1.2 mi)
1767	155	Diethyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.9 km (0.5 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
1769	156	Diphenyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	
1771	156	Dodecyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (200 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	
1777	137	Fluorosulfonic acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	
1777	137	Fluorosulphonic acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	
1781	156	Hexadecyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	
1784	156	Hexyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.3 km (0.8 mi)	
1799	156	Nonyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)	
1800	156	Octadecyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	
1801	156	Octyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)	
1804	156	Phenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.3 km (0.8 mi)	
1806	137	Phosphorus pentachloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.3 km (0.8 mi)	

1808	137	Phosphorus tribromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.5 km (0.9 mi)
1809	137	Phosphorus trichloride (when spilled on land)	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.0 km (0.7 mi)	2.1 km (1.3 mi)
1809	137	Phosphorus trichloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.7 km (0.4 mi)	2.4 km (1.5 mi)
1810	137	Phosphorus oxychloride (when spilled on land)	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.0 km (0.7 mi)	1.9 km (1.2 mi)
1810	137	Phosphorus oxychloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.1 km (1.3 mi)
1815	132	Propionyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)
1816	155	Propyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.9 km (1.2 mi)
1818	157	Silicon tetrachloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.7 km (1.7 mi)
1828	137	Sulfur chlorides (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
1828	137	Sulfur chlorides (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)
1828	137	Sulphur chlorides (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
1828	137	Sulphur chlorides (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)
1829	137	Sulfur trioxide, stabilized	60 m (200 ft)	0.4 km (0.2 mi)	1.0 km (0.6 mi)	300 m (1000 ft)	2.9 km (1.8 mi)	6.3 km (4.0 mi)
1829	137	Sulphur trioxide, stabilized						

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UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)						
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during				
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)			
1831	137	Sulfuric acid, fuming											
1831	137	Sulfuric acid, fuming with not less than 30% free Sulfur trioxide	60 m (200 ft)	0.4 km (0.2 mi)	1.0 km (0.6 mi)	300 m (1000 ft)	2.9 km (1.8 mi)	6.3 km (4.0 mi)					
1831	137	Sulphuric acid, fuming											
1831	137	Sulphuric acid, fuming with not less than 30% free Sulphur trioxide	60 m (200 ft)	0.4 km (0.2 mi)	1.0 km (0.6 mi)	300 m (1000 ft)	2.9 km (1.8 mi)	6.3 km (4.0 mi)					
1834	137	Sulfuryl chloride (when spilled on land)	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.8 km (0.5 mi)	1.5 km (0.9 mi)					
1834	137	Sulfuryl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.6 km (1.0 mi)					
1834	137	Sulphuryl chloride (when spilled on land)	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.8 km (0.5 mi)	1.5 km (1.0 mi)					
1834	137	Sulphuryl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.6 km (1.0 mi)					
1836	137	Thionyl chloride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)					
1836	137	Thionyl chloride (when spilled in water)	100 m (300 ft)	0.9 km (0.6 mi)	2.9 km (1.8 mi)	800 m (2500 ft)	9.7 km (6.0 mi)	11.0+ km (7.0+ mi)					
1838	137	Titanium tetrachloride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)					

1838	137	Titanium tetrachloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.7 km (1.0 mi)
1859	125	Silicon tetrafluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)		100 m (300 ft)	0.5 km (0.3 mi)	1.8 km (1.2 mi)
1859	125	Silicon tetrafluoride, compressed	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)		100 m (300 ft)	0.5 km (0.3 mi)	1.8 km (1.2 mi)
1892	151	ED (when used as a weapon)	150 m (500 ft)	0.9 km (0.6 mi)	2.1 km (1.3 mi)		1000 m (3000 ft)	5.9 km (3.7 mi)	8.3 km (5.2 mi)
1892	151	Ethylchloroarsine	150 m (500 ft)	1.5 km (0.9 mi)	2.1 km (1.3 mi)		400 m (1250 ft)	4.6 km (2.9 mi)	6.4 km (4.0 mi)
1898	156	Acetyl iodide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)		30 m (100 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)
1911	119	Diborane	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)		300 m (1000 ft)	1.5 km (1.0 mi)	4.6 km (2.9 mi)
1911	119	Diborane, compressed	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)		300 m (1000 ft)	1.5 km (1.0 mi)	4.6 km (2.9 mi)
1911	119	Diborane mixtures	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)		300 m (1000 ft)	1.5 km (1.0 mi)	4.6 km (2.9 mi)
1923	135	Calcium dithionite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		60 m (200 ft)	0.7 km (0.4 mi)	2.6 km (1.6 mi)
1923	135	Calcium hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		60 m (200 ft)	0.7 km (0.4 mi)	2.6 km (1.6 mi)
1923	135	Calcium hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		60 m (200 ft)	0.7 km (0.4 mi)	2.6 km (1.6 mi)
1929	135	Potassium dithionite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		60 m (200 ft)	0.6 km (0.4 mi)	2.3 km (1.5 mi)
1929	135	Potassium hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		60 m (200 ft)	0.6 km (0.4 mi)	2.3 km (1.5 mi)
1929	135	Potassium hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		60 m (200 ft)	0.6 km (0.4 mi)	2.3 km (1.5 mi)
1931	171	Zinc dithionite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		(60 m)	0.6 km (0.4 mi)	2.4 km (1.5 mi)
1931	171	Zinc hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		(60 m)	0.6 km (0.4 mi)	2.4 km (1.5 mi)
1931	171	Zinc hydrosulphite (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)		(60 m)	0.6 km (0.4 mi)	2.4 km (1.5 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

		SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)				
UN No.	Guide	NAME OF MATERIAL	First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
1953	119	Compressed gas, poisonous, flammable, n.o.s.	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)		1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)	
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)		300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)	
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)		150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)	
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)		1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)	
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)		300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)	
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)		150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)	

1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)						
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during				
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT			
1955	123	Organic phosphate compound mixed with compressed gas											
1955	123	Organic phosphate mixed with compressed gas	100 m (300 ft)	1.0 km (0.7 mi)	3.4 km (2.1 mi)	500 m (1500 ft)	4.4 km (2.7 mi)	9.6 km (6.0 mi)					
1955	123	Organic phosphorus compound mixed with compressed gas											
1967	123	Insecticide gas, poisonous, n.o.s.											
1967	123	Insecticide gas, toxic, n.o.s.											
1967	123	Parathion and compressed gas mixture	100 m (300 ft)	1.0 km (0.7 mi)	3.4 km (2.1 mi)	500 m (1500 ft)	4.4 km (2.7 mi)	9.6 km (6.0 mi)					
1975	124	Dinitrogen tetroxide and Nitric oxide mixture											
1975	124	Nitric oxide and Dinitrogen tetroxide mixture											
1975	124	Nitric oxide and Nitrogen dioxide mixture											
1975	124	Nitric oxide and Nitrogen tetroxide mixture	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.6 km (0.4 mi)	2.2 km (1.4 mi)					
1975	124	Nitrogen dioxide and Nitric oxide mixture											
1975	124	Nitrogen tetroxide and Nitric oxide mixture											
1994	136	Iron pentacarbonyl	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.2 mi)	400 m (1250 ft)	4.8 km (3.0 mi)	7.5 km (4.7 mi)					

2004	135	Magnesium diamide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.2 km (1.4 mi)
2011	139	Magnesium phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	500 m (1500 ft)	1.7 km (1.1 mi)	5.4 km (3.4 mi)
2012	139	Potassium phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.1 km (0.7 mi)	3.6 km (2.2 mi)
2013	139	Strontium phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.1 km (0.7 mi)	3.4 km (2.2 mi)
2032	157	Nitric acid, red fuming	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	150 m (500 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
2186	125	Hydrogen chloride, refrigerated liquid	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)		Refer to table 3	
2188	119	Arsine	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)
2188	119	SA (when used as a weapon)	300 m (1000 ft)	1.9 km (1.2 mi)	5.7 km (3.6 mi)	1000 m (3000 ft)	8.9 km (5.6 mi)	11.0+ km (7.0+ mi)
2189	119	Dichlorosilane	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)
2190	124	Oxygen difluoride	300 m (1000 ft)	1.8 km (1.1 mi)	7.1 km (4.4 mi)	1000 m (3000 ft)	11.0 km (7.0 mi)	11.0+ km (7.0+ mi)
2190	124	Oxygen difluoride, compressed						
2191	123	Sulfuryl fluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	400 m (1250 ft)	2.2 km (1.4 mi)	5.3 km (3.3 mi)
2191	123	Sulphuryl fluoride						
2192	119	Germane	150 m (500 ft)	0.9 km (0.5 mi)	3.3 km (2.1 mi)	500 m (1500 ft)	3.3 km (2.1 mi)	7.5 km (4.7 mi)
2194	125	Selenium hexafluoride	200 m (600 ft)	1.1 km (0.7 mi)	3.5 km (2.2 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	7.9 km (4.9 mi)
2195	125	Tellurium hexafluoride	1000 m (3000 ft)	5.8 km (3.6 mi)	10.9 km (6.8 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
2196	125	Tungsten hexafluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.7 km (1.7 mi)
2197	125	Hydrogen iodide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
2198	125	Phosphorus pentafluoride						
2198	125	Phosphorus pentafluoride, compressed	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	150 m (500 ft)	1.0 km (0.6 mi)	3.5 km (2.2 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
2199	119	Phosphine	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.7 km (2.3 mi)		
2202	117	Hydrogen selenide, anhydrous	300 m (1000 ft)	1.7 km (1.1 mi)	6.0 km (3.7 mi)	1000 m (3000 ft)	10.7 km (6.7 mi)	11.0+ km (7.0+ mi)		
2204	119	Carbonyl sulfide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.8 km (2.4 mi)		
2204	119	Carbonyl sulphide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.8 km (2.4 mi)		
2232	153	Chloroacetaldehyde	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.1 km (0.7 mi)		
2232	153	2-Chloroethanal	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)		
2285	156	Isocyanatobenzotrifluorides	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)		
2308	157	Nitrosylsulfuric acid, liquid (when spilled in water)								
2308	157	Nitrosylsulfuric acid, solid (when spilled in water)								
2308	157	Nitrosylsulphuric acid, liquid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)		
2308	157	Nitrosylsulphuric acid, solid (when spilled in water)								
2334	131	Allylamine	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.4 mi)	150 m (500 ft)	1.4 km (0.9 mi)	2.5 km (1.6 mi)		
2337	131	Phenyl mercaptan	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.2 mi)		
2353	132	Butyryl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)		
2382	131	Dimethylhydrazine, symmetrical	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	1.3 km (0.8 mi)		

2395	132	Isobutynyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)
2407	155	Isopropyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.9 km (0.6 mi)
2417	125	Carbonyl fluoride	150 m (500 ft)	0.7 km (0.5 mi)	2.5 km (1.6 mi)	2.5 km (1.6 mi)	600 m (2000 ft)	3.6 km (2.3 mi)	7.8 km (4.9 mi)
2418	125	Sulfur tetrafluoride	100 m (300 ft)	0.5 km (0.3 mi)	2.3 km (1.5 mi)	2.3 km (1.5 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	6.0 km (3.7 mi)
2420	125	Sulphur tetrafluoride	100 m (300 ft)	0.7 km (0.4 mi)	2.7 km (1.7 mi)	2.7 km (1.7 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
2421	124	Hexafluoroacetone	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)	1.2 km (0.7 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.2 km (2.6 mi)
2434	156	Nitrogen trioxide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)
2435	156	Dibenzylchlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.9 km (0.6 mi)
2437	156	Ethylphenyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.2 km (0.8 mi)
2438	131	Methylphenyldichlorosilane (when spilled in water)	60 m (200 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)	1.0 km (0.6 mi)	200 m (600 ft)	2.1 km (1.3 mi)	3.3 km (2.1 mi)
2442	156	Trimethylacetyl chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.4 mi)	1.1 km (0.7 mi)
2474	157	Trichloroacetyl chloride	60 m (200 ft)	0.6 km (0.4 mi)	1.7 km (1.1 mi)	1.7 km (1.1 mi)	200 m (600 ft)	2.1 km (1.3 mi)	4.0 km (2.5 mi)
2477	131	Thiophosgene	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
2477	131	Methyl isothiocyanate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)						
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during				
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)			
2478	155	Isocyanate solution, flammable, poisonous, n.o.s.											
2478	155	Isocyanate solution, flammable, toxic, n.o.s.	60 m (200 ft)	0.8 km (0.5 mi)	1.8 km (1.1 mi)	400 m (1250 ft)	4.4 km (2.7 mi)	7.0 km (4.3 mi)					
2478	155	Isocyanates, flammable, poisonous, n.o.s.											
2478	155	Isocyanates, flammable, toxic, n.o.s.											
2480	155P	Methyl isocyanate	150 m (500 ft)	1.7 km (1.1 mi)	5.0 km (3.1 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)					
2481	155	Ethyl isocyanate	150 m (500 ft)	2.0 km (1.2 mi)	5.1 km (3.2 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)					
2482	155P	n-Propyl isocyanate	100 m (300 ft)	1.3 km (0.8 mi)	2.7 km (1.7 mi)	600 m (2000 ft)	7.4 km (4.6 mi)	10.8 km (6.7 mi)					
2483	155P	Isopropyl isocyanate	150 m (500 ft)	1.5 km (0.9 mi)	3.2 km (2.0 mi)	1000 m (3000 ft)	11.0 km (6.9 mi)	11.0+ km (7.0+ mi)					
2484	155	tert-Butyl isocyanate	60 m (200 ft)	0.8 km (0.5 mi)	1.8 km (1.1 mi)	400 m (1250 ft)	4.4 km (2.7 mi)	7.0 km (4.3 mi)					
2485	155P	n-Butyl isocyanate	60 m (200 ft)	0.6 km (0.4 mi)	1.1 km (0.7 mi)	200 m (600 ft)	2.6 km (1.7 mi)	4.0 km (2.5 mi)					
2486	155P	Isobutyl isocyanate	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	3.1 km (1.9 mi)	4.7 km (3.0 mi)					
2487	155	Phenyl isocyanate	100 m (300 ft)	0.9 km (0.6 mi)	1.4 km (0.9 mi)	300 m (1000 ft)	3.7 km (2.3 mi)	5.4 km (3.4 mi)					
2488	155	Cyclohexyl isocyanate	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.4 km (0.9 mi)					
2495	144	Iodine pentafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.1 km (0.7 mi)	4.1 km (2.6 mi)					
2521	131P	Diketene, stabilized	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)					
2534	119	Methylchlorosilane	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.7 km (0.5 mi)	1.9 km (1.2 mi)					

2548	124	Chlorine pentafluoride	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)
2605	155	Methoxymethyl isocyanate	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	0.9 km (0.6 mi)
2606	155	Methyl orthosilicate	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.4 mi)	1.1 km (0.7 mi)
2644	151	Methyl iodide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.3 km (0.2 mi)	0.7 km (0.4 mi)
2646	151	Hexachlorocyclopentadiene	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)
2668	131	Chloroacetonitrile	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.2 mi)
2676	119	Stibine	60 m (200 ft)	0.3 km (0.2 mi)	1.6 km (1.0 mi)	200 m (600 ft)	1.3 km (0.8 mi)	4.1 km (2.6 mi)
2691	137	Phosphorus pentabromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)
2692	157	Boron tribromide (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)
2692	157	Boron tribromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.9 km (1.2 mi)
2740	155	n-Propyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.7 mi)
2742	155	sec-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	0.5 km (0.3 mi)
2742	155	Chloroformates, poisonous, corrosive, flammable, n.o.s.	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2742	155	Chloroformates, toxic, corrosive, flammable, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
2742	155	Isobutyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
2743	155	n-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)

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UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
2806	139	Lithium nitride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.9 km (1.2 mi)		
2810	153	Buzz								
2810	153	BZ (when used as a weapon)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)	400 m (1250 ft)	2.2 km (1.4 mi)	8.1 km (5.0 mi)		
2810	153	CS (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.4 km (0.3 mi)	1.9 km (1.2 mi)		
2810	153	DC (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.8 km (1.1 mi)		
2810	153	GA (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	0.6 km (0.4 mi)		
2810	153	GB (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	4.9 km (3.0 mi)		
2810	153	GD (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)		
2810	153	GF (when used as a weapon)	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.8 km (0.5 mi)	1.0 km (0.6 mi)		
2810	153	H (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)		
2810	153	HD (when used as a weapon)								
2810	153	HL (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)		
2810	153	HN-1 (when used as a weapon)	60 m (200 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)	200 m (600 ft)	1.1 km (0.7 mi)	1.8 km (1.1 mi)		
2810	153	HN-2 (when used as a weapon)	60 m (200 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	2.1 km (1.3 mi)		
2810	153	HN-3 (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)		

2810	153	L (Lewisite) (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	153	Lewisite (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
2810	153	Mustard (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	153	Mustard Lewisite (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	4.9 km (3.0 mi)
2810	153	Sarin (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)
2810	153	Soman (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	0.6 km (0.4 mi)
2810	153	Tabun (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)
2810	153	Thickened GD (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	0.3 km (0.2 mi)
2811	154	CX (when used as a weapon)	60 m (200 ft)	0.2 km (0.2 mi)	1.1 km (0.7 mi)	200 m (600 ft)	1.2 km (0.7 mi)	5.1 km (3.2 mi)
2826	155	Ethyl chloroformate	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2845	135	Ethyl phosphonous dichloride, anhydrous	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)	100 m (300 ft)	1.3 km (0.8 mi)	2.3 km (1.5 mi)
2845	135	Methyl phosphonous dichloride	30 m (100 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	200 m (600 ft)	2.4 km (1.5 mi)	4.1 km (2.6 mi)
2901	124	Bromine chloride	100 m (300 ft)	0.5 km (0.3 mi)	1.8 km (1.1 mi)	1000 m (3000 ft)	5.4 km (3.4 mi)	11.0 km (7.0 mi)
2927	154	Ethyl phosphonothioic dichloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)
2927	154	Ethyl phosphorodichloridate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)
2965	139	Boron trifluoride dimethyl etherate (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.2 km (0.8 mi)	3.6 km (2.2 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT
2977	166	Radioactive material, Uranium hexafluoride, fissile (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)		
2977	166	Uranium hexafluoride, radioactive material, fissile (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)		
2978	166	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)		
2978	166	Uranium hexafluoride, radioactive material, non fissile or fissile-excepted (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)		
2985	155	Chlorosilanes, flammable, corrosive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)		
2986	155	Chlorosilanes, corrosive, flammable, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)		
2987	156	Chlorosilanes, corrosive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)		
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)		

3023	131	2-Methyl-2-heptanethiol	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.4 mi)	0.8 km (0.5 mi)
3048	157	Aluminum phosphide pesticide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.7 km (0.5 mi)	500 m (1500 ft)	2.0 km (1.3 mi)	6.5 km (4.1 mi)
3057	125	Trifluoroacetyl chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.6 mi)	800 m (2500 ft)	5.2 km (3.3 mi)	11.0 km (7.0 mi)
3079	131P	Methacrylonitrile, stabilized	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)	150 m (500 ft)	1.6 km (1.0 mi)	2.7 km (1.7 mi)
3083	124	Perchloryl fluoride	30 m (100 ft)	0.2 km (0.2 mi)	1.1 km (0.7 mi)	1000 m (3000 ft)	5.5 km (3.4 mi)	11.0 km (7.0 mi)
3160	119	Liquefied gas, poisonous, flammable, n.o.s.						
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT
3160	119	Liquefied gas, toxic, flammable, n.o.s.	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)		
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)		
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)		
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3162	123	Liquefied gas, poisonous, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)		
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)		
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		

3162	123	Liquefied gas, toxic, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3246	156	Methanesulfonyl chloride	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.4 mi)	0.9 km (0.6 mi)
3246	156	Methanesulphonyl chloride	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)	150 m (500 ft)	1.6 km (1.0 mi)	2.7 km (1.7 mi)
3275	131	Nitriles, poisonous, flammable, n.o.s.						
3275	131	Nitriles, toxic, flammable, n.o.s.	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)	150 m (500 ft)	1.6 km (1.0 mi)	2.7 km (1.7 mi)
3276	151	Nitriles, liquid, poisonous, n.o.s.						
3276	151	Nitriles, liquid, toxic, n.o.s.						
3276	151	Nitriles, poisonous, liquid, n.o.s.	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)	150 m (500 ft)	1.6 km (1.0 mi)	2.7 km (1.7 mi)
3276	151	Nitriles, poisonous, n.o.s.						
3276	151	Nitriles, toxic, liquid, n.o.s.						
3276	151	Nitriles, toxic, n.o.s.						

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UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)						
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during				
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT			
3278	151	Organophosphorus compound, liquid, poisonous, n.o.s.											
3278	151	Organophosphorus compound, liquid, toxic, n.o.s.											
3278	151	Organophosphorus compound, poisonous, liquid, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	200 m (600 ft)	2.4 km (1.5 mi)	4.1 km (2.6 mi)					
3278	151	Organophosphorus compound, poisonous, n.o.s.											
3278	151	Organophosphorus compound, toxic, liquid, n.o.s.											
3278	151	Organophosphorus compound, toxic, n.o.s.											
3279	131	Organophosphorus compound, poisonous, flammable, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	200 m (600 ft)	2.4 km (1.5 mi)	4.1 km (2.6 mi)					
3279	131	Organophosphorus compound, toxic, flammable, n.o.s.											
3280	151	Organoarsenic compound, liquid, n.o.s.	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	150 m (500 ft)	1.6 km (1.0 mi)	3.6 km (2.2 mi)					
3280	151	Organoarsenic compound, n.o.s.											
3281	151	Metal carbonyls, liquid, n.o.s.	100 m (300 ft)	1.3 km (0.8 mi)	5.0 km (3.1 mi)	1000 m (3000 ft)	10.8 km (6.8 mi)	11.0+ km (7.0+ mi)					
3281	151	Metal carbonyls, n.o.s.											
3294	131	Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.5 km (0.3 mi)	1.9 km (1.2 mi)					

3300	119P	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.2 km (1.4 mi)
3300	119P	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s.	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

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UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
3304	125	Compressed gas, poisonous, corrosive, n.o.s.								
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)	
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)	
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)	
3304	125	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
3304	125	Compressed gas, toxic, corrosive, n.o.s.								
3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)	

3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3304	125	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s.						
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s.						
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)	
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s.								
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)		500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)	
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)		400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)	
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)		300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)	
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	

3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)						
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during				
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)			
3307	124	Liquefied gas, toxic, oxidizing, n.o.s.											
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)					
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)					
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)					
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)					
3308	125	Liquefied gas, poisonous, corrosive, n.o.s.											
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)					
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)					

3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3308	125	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3308	125	Liquefied gas, toxic, corrosive, n.o.s.						
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3308	125	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s.						
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s.								
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)		
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)		
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.								
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)		

3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	9.2 km (5.7 mi)
3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	3.2 km (2.0 mi)
3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3318	125	Ammonia solution, with more than 50% Ammonia	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.1 km (1.3 mi)
3355	119	Insecticide gas, poisonous, flammable, n.o.s.	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)	
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)	
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
3355	119	Insecticide gas, toxic, flammable, n.o.s.								
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)		1000 m (3000 ft)	5.7 km (3.6 mi)	10.1 km (6.3 mi)	
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)		300 m (1000 ft)	1.3 km (0.8 mi)	3.4 km (2.1 mi)	
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)		150 m (500 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)	
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	

3361	156	Chlorosilanes, poisonous, corrosive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
3361	156	Chlorosilanes, toxic, corrosive, n.o.s. (when spilled in water)						
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s. (when spilled in water)						
3381	151	Poisonous by inhalation liquid, n.o.s.	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.2 km (2.6 mi)
3381	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)						
3382	151	Poisonous by inhalation liquid, n.o.s.	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3382	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)						
3383	131	Poisonous by inhalation liquid, flammable, n.o.s.	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)	300 m (1000 ft)	3.1 km (2.0 mi)	5.8 km (3.6 mi)
3383	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)						
3384	131	Poisonous by inhalation liquid, flammable, n.o.s.	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)
3384	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)						

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			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT
3385	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.2 km (2.6 mi)		
3385	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.2 km (2.6 mi)		
3386	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
3386	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
3387	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.2 km (2.6 mi)		
3387	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.2 km (2.6 mi)		
3388	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)		
3388	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)		

3389	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)	400 m (1250 ft)	1.4 km (0.9 mi)	3.3 km (2.1 mi)
3389	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)
3390	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)
3416	153	CN (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	300 m (1000 ft)	1.0 km (0.6 mi)	2.9 km (1.8 mi)
3456	157	Nitrosylsulfuric acid, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	400 m (1250 ft)	4.8 km (3.0 mi)	7.5 km (4.7 mi)
3456	157	Nitrosylsulfuric acid, solid (when spilled in water)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.2 mi)			
3488	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3488	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)						

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY	NIGHT	Metres (Feet)	Kilometres (Miles)	DAY	NIGHT
3489	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)		
3489	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)		
3490	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)	300 m (1000 ft)	3.1 km (2.0 mi)	5.8 km (3.6 mi)		
3490	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)	300 m (1000 ft)	3.1 km (2.0 mi)	5.8 km (3.6 mi)		
3491	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)		
3491	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)		
3492	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.2 mi)	400 m (1250 ft)	4.8 km (3.0 mi)	7.5 km (4.7 mi)		
3492	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.2 mi)	400 m (1250 ft)	4.8 km (3.0 mi)	7.5 km (4.7 mi)		

3493	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.0 km (0.6 mi)	
3493	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)	
3494	131	Petroleum sour crude oil, flammable, poisonous	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3494	131	Petroleum sour crude oil, flammable, toxic	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3507	166	Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3512	173	Adsorbed gas, poisonous, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	173	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3512	173	Adsorbed gas, toxic, n.o.s.							
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone A)							

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	173	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3514	173	Adsorbed gas, poisonous, flammable, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3514	173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3514	173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3514	173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3514	173	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3514	173	Adsorbed gas, toxic, flammable, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3514	173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	

3514	173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3514	173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3514	173	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3515	173	Adsorbed gas, poisonous, oxidizing, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3515	173	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3515	173	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3515	173	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3515	173	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)						
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during				
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)			
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone B)											
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone D)											
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s.											
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	0.2 km (0.2 mi)
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone B)											
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone D)											

3516	173	Adsorbed gas, toxic, corrosive, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	

3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3519	173	Boron trifluoride, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3520	173	Chlorine, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3521	173	Silicon tetrafluoride, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3522	173	Arsine, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3523	173	Germane, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)
3524	173	Phosphorus pentafluoride, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3525	173	Phosphine, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)
3526	173	Hydrogen selenide, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)
3539	123	Articles containing toxic gas, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)
9191	143	Chlorine dioxide, hydrate, frozen (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

UN No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)	Metres (Feet)	Kilometres (Miles)	DAY Kilometres (Miles)	NIGHT Kilometres (Miles)
9202	168	Carbon monoxide, refrigerated liquid (cryogenic liquid)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.7 mi)	4.3 km (2.7 mi)	
9206	137	Methyl phosphonic dichloride	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)	
9263	156	Chloroacetaldehyde	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)	
9264	151	3,5-Dichloro-2,4,6-trifluoropyridine	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)	
9269	132	Trimethoxysilane	30 m (100 ft)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.3 km (0.8 mi)	2.3 km (1.5 mi)	

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HOW TO USE TABLE 2 – WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Table 2 lists materials which produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced.

The materials are listed by UN number order.

These Water Reactive materials are easily identified in Table 1 as their name is immediately followed by “(when spilled in water)”.

Note 1: The TIH gases indicated in Table 2 are for information purposes only. In Table 1, the initial isolation and protective distances have already taken into consideration the TIH gases produced. For example: Table 2 indicates that UN1689 sodium cyanide, when spilled in water, will generate hydrogen cyanide gas (HCN). In Table 1, you must refer to the distances for sodium cyanide and not the distances for hydrogen cyanide gas.

Note 2: Some water reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836)). In these instances, two entries are provided in Table 1 for land-based and water-based spills. If a Water Reactive material only has one entry in Table 1 for (when spilled in water), and the product is NOT spilled in water, Table 1 and Table 2 do NOT apply. Refer only to the appropriate orange guide.

Note 3: Materials classified as a Division 4.3 are substances that, on contact with water, are liable to become spontaneously FLAMMABLE or give off FLAMMABLE or sometimes TOXIC gases in dangerous quantities. For the purpose of this table, water reactive materials are materials that generate substantial quantities of TOXIC gases rapidly after a spill into water. Therefore, a material classified as a Division 4.3 will not always be included in Table 2.

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

UN No.	Guide No.	Name of Material	TIH Gas(es) Produced
1162	155	Dimethyldichlorosilane	HCl
1183	139	Ethylchlorosilane	HCl
1196	155	Ethyltrichlorosilane	HCl
1242	139	Methylchlorosilane	HCl
1250	155	Methyltrichlorosilane	HCl
1295	139	Trichlorosilane	HCl
1298	155	Trimethylchlorosilane	HCl
1305	155P	Vinyltrichlorosilane	HCl
1305	155P	Vinyltrichlorosilane, stabilized	HCl
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus	H ₂ S
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus	H ₂ S
1360	139	Calcium phosphide	PH ₃
1384	135	Sodium dithionite	H ₂ S SO ₂
1384	135	Sodium hydrosulfite	H ₂ S SO ₂
1384	135	Sodium hydrosulphite	H ₂ S SO ₂
1397	139	Aluminum phosphide	PH ₃
1419	139	Magnesium aluminum phosphide	PH ₃
1432	139	Sodium phosphide	PH ₃
1541	155	Acetone cyanohydrin, stabilized	HCN
1680	157	Potassium cyanide	HCN
1680	157	Potassium cyanide, solid	HCN
1689	157	Sodium cyanide	HCN
1689	157	Sodium cyanide, solid	HCN
1716	156	Acetyl bromide	HBr

Chemical Symbols for TIH Gases:

Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

UN No.	Guide No.	Name of Material	TIH Gas(es) Produced
1717	155	Acetyl chloride	HCl
1724	155	Allyltrichlorosilane, stabilized	HCl
1725	137	Aluminum bromide, anhydrous	HBr
1726	137	Aluminum chloride, anhydrous	HCl
1728	155	Amyltrichlorosilane	HCl
1732	157	Antimony pentafluoride	HF
1741	125	Boron trichloride	HCl
1745	144	Bromine pentafluoride	HF Br ₂
1746	144	Bromine trifluoride	HF Br ₂
1747	155	Butyltrichlorosilane	HCl
1752	156	Chloroacetyl chloride	HCl
1753	156	Chlorophenyltrichlorosilane	HCl
1754	137	Chlorosulfonic acid (with or without sulfur trioxide mixture)	HCl
1754	137	Chlorosulphonic acid (with or without sulphur trioxide mixture)	HCl
1758	137	Chromium oxychloride	HCl
1762	156	Cyclohexenyltrichlorosilane	HCl
1763	156	Cyclohexyltrichlorosilane	HCl
1765	156	Dichloroacetyl chloride	HCl
1766	156	Dichlorophenyltrichlorosilane	HCl
1767	155	Diethyldichlorosilane	HCl
1769	156	Diphenyldichlorosilane	HCl
1771	156	Dodecyltrichlorosilane	HCl
1777	137	Fluorosulfonic acid	HF
1777	137	Fluorosulphonic acid	HF

Chemical Symbols for TIH Gases:

Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

UN No.	Guide No.	Name of Material	TIH Gas(es) Produced
1781	156	Hexadecyltrichlorosilane	HCl
1784	156	Hexyltrichlorosilane	HCl
1799	156	Nonyltrichlorosilane	HCl
1800	156	Octadecyltrichlorosilane	HCl
1801	156	Octyltrichlorosilane	HCl
1804	156	Phenyltrichlorosilane	HCl
1806	137	Phosphorus pentachloride	HCl
1808	137	Phosphorus tribromide	HBr
1809	137	Phosphorus trichloride	HCl
1810	137	Phosphorus oxychloride	HCl
1815	132	Propionyl chloride	HCl
1816	155	Propyltrichlorosilane	HCl
1818	157	Silicon tetrachloride	HCl
1828	137	Sulfur chlorides	HCl SO ₂ H ₂ S
1828	137	Sulphur chlorides	HCl SO ₂ H ₂ S
1834	137	Sulfuryl chloride	HCl
1834	137	Sulphuryl chloride	HCl
1836	137	Thionyl chloride	HCl SO ₂
1838	137	Titanium tetrachloride	HCl
1898	156	Acetyl iodide	HI
1923	135	Calcium dithionite	H ₂ S SO ₂
1923	135	Calcium hydrosulfite	H ₂ S SO ₂
1923	135	Calcium hydrosulphite	H ₂ S SO ₂
1929	135	Potassium dithionite	H ₂ S SO ₂

Chemical Symbols for TIH Gases:

Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

UN No.	Guide No.	Name of Material	TIH Gas(es) Produced
1929	135	Potassium hydrosulfite	H ₂ S SO ₂
1929	135	Potassium hydrosulphite	H ₂ S SO ₂
1931	171	Zinc dithionite	H ₂ S SO ₂
1931	171	Zinc hydrosulfite	H ₂ S SO ₂
1931	171	Zinc hydrosulphite	H ₂ S SO ₂
2004	135	Magnesium diamide	NH ₃
2011	139	Magnesium phosphide	PH ₃
2012	139	Potassium phosphide	PH ₃
2013	139	Strontium phosphide	PH ₃
2308	157	Nitrosylsulfuric acid, liquid	NO ₂
2308	157	Nitrosylsulfuric acid, solid	NO ₂
2308	157	Nitrosylsulphuric acid, liquid	NO ₂
2308	157	Nitrosylsulphuric acid, solid	NO ₂
2353	132	Butyryl chloride	HCl
2395	132	Isobutyryl chloride	HCl
2434	156	Dibenzylchlorosilane	HCl
2435	156	Ethylphenylchlorosilane	HCl
2437	156	Methylphenylchlorosilane	HCl
2495	144	Iodine pentafluoride	HF
2691	137	Phosphorus pentabromide	HBr
2692	157	Boron tribromide	HBr
2806	138	Lithium nitride	NH ₃
2977	166	Radioactive material, Uranium hexafluoride, fissile	HF
2977	166	Uranium hexafluoride, radioactive material, fissile	HF

Chemical Symbols for TIH Gases:

Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

UN No.	Guide No.	Name of Material	TIH Gas(es) Produced
2978	166	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted	HF
2978	166	Uranium hexafluoride, radioactive material, non fissile or fissile-excepted	HF
2985	155	Chlorosilanes, flammable, corrosive, n.o.s	HCl
2986	155	Chlorosilanes, corrosive, flammable, n.o.s	HCl
2987	156	Chlorosilanes, corrosive, n.o.s	HCl
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	HCl
3048	157	Aluminum phosphide pesticide	PH ₃
3049	138	Metal alkyl halides, water-reactive, n.o.s	HCl
3049	138	Metal aryl halides, water-reactive, n.o.s	HCl
3052	135	Aluminum alkyl halides, liquid	HCl
3052	135	Aluminum alkyl halides, solid	HCl
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.	HCl
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.	HCl
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	HCl
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.	HCl
3456	157	Nitrosylsulfuric acid, solid	NO ₂
3456	157	Nitrosylsulphuric acid, solid	NO ₂
3461	135	Aluminum alkyl halides, solid	HCl
3507	166	Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted	HF
9191	143	Chlorine dioxide, hydrate, frozen	Cl ₂

Chemical Symbols for TIH Gases:

Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

HOW TO USE TABLE 3 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES

Table 3 lists Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- UN1005 - Ammonia, anhydrous
- UN1017 - Chlorine)
- UN1040 - Ethylene oxide and UN1040 - Ethylene oxide with nitrogen
- UN1050 - Hydrogen chloride, anhydrous and UN2186 - Hydrogen chloride, refrigerated liquid
- UN1052 - Hydrogen fluoride, anhydrous
- UN1079 - Sulfur dioxide/Sulphur dioxide

The materials are presented in numerical order of UN number and provide Initial Isolation and Protective Action Distances **FOR LARGE SPILLS** (more than 208 litres or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and different wind speeds.

- Rail car: 80,000 kg
- Highway tank truck or trailer: 20,000-25,000 kg
- Agricultural nurse tank: 3785 L
- Small cylinder: 72 L
- Ton cylinder: 757-1135 L

Estimating Wind Speed from Environmental Clues

mph	km/h	Wind Description	Specifications
< 6	< 10	Low wind	Wind felt on face; leaves rustle; ordinary vane moved by wind
6 - 12	10 - 20	Moderate wind	Raises dust, loose paper; small branches are moved
> 12	> 20	High wind	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty

(Data taken from the Beaufort Wind Scale has been reworked in order to create 3 categories of wind speed: low, moderate and high)

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

TRANSPORT CONTAINER	First ISOLATE in all Directions metres (Feet)	Then PROTECT persons Downwind during					
		DAY			NIGHT		
		Low wind (6 mph 10 km/h) km (Miles)	Moderate wind (6-12 mph 10 - 20 km/h) km (Miles)	High wind (12 mph > 20 km/h) km (Miles)	Low wind (6 mph 10 km/h) km (Miles)	Moderate wind (6-12 mph 10 - 20 km/h) km (Miles)	High wind (12 mph > 20 km/h) km (Miles)
UN1005 Ammonia, anhydrous: Large Spills							
Rail tank car	300 (1000)	1.9 (1.12)	1.5 (0.9)	1.1 (0.6)	4.5 (2.8)	2.5 (1.5)	1.4 (0.9)
Highway tank truck or trailer	150 (500)	0.9 (0.6)	0.5 (0.3)	0.4 (0.3)	2.0 (1.3)	0.8 (0.5)	0.6 (0.4)
Agricultural nurse tank	60 (200)	0.5 (0.3)	0.3 (0.2)	0.3 (0.2)	1.4 (0.9)	0.3 (0.2)	0.3 (0.2)
Multiple small cylinders	30 (100)	0.3 (0.2)	0.2 (0.1)	0.1 (0.1)	0.7 (0.5)	0.3 (0.2)	0.2 (0.1)
UN1017 Chlorine: Large Spills							
Rail tank car	1000 (3000)	10.1 (6.3)	6.8 (4.2)	5.3 (3.3)	11 (7)	9.2 (5.7)	6.9 (4.3)
Highway tank truck or trailer	600 (2000)	5.8 (3.6)	3.4 (2.1)	2.9 (1.8)	6.7 (4.3)	5.0 (3.1)	4.1 (2.5)
Multiple ton cylinders	300 (1000)	2.1 (1.3)	1.3 (0.8)	1.0 (0.6)	4.0 (2.5)	2.4 (1.5)	1.3 (0.8)
Multiple small cylinders or single ton cylinder	150 (500)	1.5 (0.9)	0.8 (0.5)	0.5 (0.3)	2.9 (1.8)	1.3 (0.8)	0.6 (0.4)

"+" means distance can be larger in certain atmospheric conditions

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

		Then PROTECT persons Downwind during					
		DAY			NIGHT		
		Low wind (6 mph 10 km/h) km (Miles)	Moderate wind (6-12 mph 10 - 20 km/h) km (Miles)	High wind (12 mph > 20 km/h) km (Miles)	Low wind (6 mph 10 km/h) km (Miles)	Moderate wind (6-12 mph 10 - 20 km/h) km (Miles)	High wind (12 mph > 20 km/h) km (Miles)
First ISOLATE in all Directions	metres (Feet)						
UN1040 Ethylene oxide: Large Spills							
TRANSPORT CONTAINER							
Rail tank car	200 (600)	1.6 (1.0)	0.8 (0.5)	0.7 (0.5)	3.3 (2.1)	1.4 (0.9)	0.8 (0.5)
Highway tank truck or trailer	100 (300)	0.9 (0.6)	0.5 (0.3)	0.4 (0.3)	2.0 (1.3)	0.7 (0.4)	0.4 (0.3)
Multiple small cylinders or single ton cylinder	30 (100)	0.4 (0.3)	0.2 (0.1)	0.1 (0.1)	0.9 (0.6)	0.3 (0.2)	0.2 (0.1)
UN1050 Hydrogen chloride, anhydrous: Large Spills							
UN2186 Hydrogen chloride, refrigerated liquid: Large Spills							
TRANSPORT CONTAINER							
Rail tank car	500 (1500)	3.9 (2.5)	2.1 (1.2)	1.8 (1.2)	10.1 (6.3)	3.5 (2.2)	2.3 (1.5)
Highway tank truck or trailer	200 (600)	1.5 (0.9)	0.8 (0.5)	0.6 (0.4)	3.9 (2.5)	1.5 (0.9)	0.8 (0.5)
Multiple ton cylinders	30 (100)	0.4 (0.3)	0.2 (0.1)	0.1 (0.1)	1.1 (0.7)	0.3 (0.2)	0.2 (0.1)
Multiple small cylinders or single ton cylinder	30 (100)	0.3 (0.2)	0.2 (0.1)	0.1 (0.1)	0.9 (0.6)	0.3 (0.2)	0.2 (0.1)

“+” means distance can be larger in certain atmospheric conditions

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

		Then PROTECT persons Downwind during					
		DAY			NIGHT		
		First ISOLATE in all Directions metres (Feet)	Low wind (6 mph 10 km/h) km (Miles)	Moderate wind (6-12 mph 10 - 20 km/h) km (Miles)	High wind (12 mph > 20 km/h) km (Miles)	Low wind (6 mph 10 km/h) km (Miles)	Moderate wind (6-12 mph 10 - 20 km/h) km (Miles)
UN1052 Hydrogen fluoride, anhydrous: Large Spills							
TRANSPORT CONTAINER							
Rail tank car	500 (1500)	3.5 (2.2)	2.1 (1.3)	1.8 (1.2)	6.6 (4.1)	3.1 (1.9)	2.0 (1.2)
Highway tank truck or trailer	200 (700)	2.0 (1.2)	1.0 (0.7)	0.9 (0.6)	3.7 (2.3)	1.6 (1.0)	0.9 (0.6)
Multiple small cylinders or single ton cylinder	100 (300)	0.8 (0.5)	0.4 (0.2)	0.3 (0.2)	1.7 (1.1)	0.5 (0.3)	0.3 (0.2)
TRANSPORT CONTAINER							
UN1079 Sulphur dioxide/Sulphur dioxide: Large Spills							
Rail tank car	1000 (3000)	11 (7)	11 (7)	7.2 (4.5)	11 (7)	11 (7)	10.1 (6.3)
Highway tank truck or trailer	1000 (3000)	11 (7)	6.2 (3.8)	5.3 (3.3)	11 (7)	8.2 (5.1)	6.2 (3.9)
Multiple ton cylinders	500 (1500)	5.4 (3.4)	2.4 (1.5)	1.8 (1.1)	7.8 (4.8)	4.2 (2.6)	2.9 (1.8)
Multiple small cylinders or single ton cylinder	200 (600)	3.2 (2.0)	1.5 (0.9)	1.1 (0.7)	5.8 (3.6)	2.5 (1.6)	1.5 (0.9)

"+" means distance can be larger in certain atmospheric conditions

ANZ-ERG2021 USER S GUIDE

The 2021 Australian & New Zealand Emergency Response Guidebook (ANZ-ERG2021) is based on the 2020 ERG which was developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Communications and Transport of Mexico (SCT) and with the collaboration of CI UIME (Centro de Informaci n u mica para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods. **It is primarily a guide to aid transport operators and first responders in quickly identifying the specific or generic hazards of the material(s) involved in the incident and protecting themselves and the general public during the initial response phase of the incident.**

For the purposes of this guidebook, the initial response phase is that period following arrival at the scene of an incident during which the presence and/or identification of dangerous goods is confirmed, protective actions and area securement are initiated, and assistance of qualified personnel is requested. It is not intended to provide information on the physical or chemical properties of dangerous goods.

This guidebook will assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. ANZ-ERG2021 does not address all possible circumstances that may be associated with a dangerous goods incident. It is primarily designed for use at a dangerous goods incident occurring on a highway or railroad.

Be mindful that there may be limited value in its application at fixed facility locations. ANZ-ERG2021 incorporates dangerous goods lists from the most recent United Nations Recommendations as well as from other international and national regulations. Explosives are not listed individually by either proper shipping name or UN Number. They do, however, appear under the general heading Explosives on the first page of the UN Number index (yellow-bordered pages) and alphabetically in the Name of Material index (blue-bordered pages). The letter (P) following the guide number in the yellow-bordered and blue-bordered pages identifies materials that present a polymerization hazard under certain conditions, for example: UN1092 Acrolein, stabilized 131P.

First responders at the scene of a dangerous goods incident should not solely rely on this guidebook. Seek additional specific information about any material in question as soon as possible.

The information received by contacting the appropriate emergency response agency, by calling the emergency response telephone number on the transport document, or by consulting the information on or accompanying the transport document, may be more specific and accurate than this guidebook in providing guidance for the materials involved.

BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK!

Guidebook Contents

1-Yellow-bordered pages: Index list of dangerous goods in numerical order of UN number. This list displays the 4-digit UN number of the material followed by its assigned emergency response guide and the material name.

For example:	UN No.	GUIDE No.	Name of Material
	1090	127	Acetone

2-Blue-bordered pages: Index list of dangerous goods in alphabetical order of material name. This list displays the name of the material followed by its assigned emergency response guide and 4-digit UN number.

For example:	Name of Material	GUIDE No.	UN No.
	Sulfuric acid	137	1830

3-Orange-bordered pages: All safety recommendations are provided. It comprises a total of 62 individual guides in a two-page format. Each guide provides safety commendations and emergency response information to protect yourself and the public. The left-hand page provides safety-related information whereas the right-hand page provides emergency response guidance and activities for fire situations, spill or leak incidents and first aid. Each guide applies to a group of materials which possess similar chemical and toxicological characteristics.

The guide title identifies the general hazards of the dangerous goods covered.

For example: **GUIDE 124 - Gases-Toxic and/or Corrosive-Oxidizing.**

Each guide is divided into three main sections: the first section describes **potential hazards** that the material may display in terms of fire/explosion and health effects upon exposure. Primary potential hazard is listed first. The emergency responder should consult this section first to help you make decisions about the protection of the emergency response team as well as the surrounding population.

The second section outlines suggested **public safety** measures based on the situation at hand. It provides general information regarding immediate isolation of the incident site, recommended type of protective clothing and respiratory protection. Suggested evacuation distances are listed for small and large spills and for fire situations (fragmentation hazard). It also directs the reader to consult the tables listing Toxic Inhalation Hazard (TIH) (PIH in the US) materials, chemical warfare agents and water-reactive materials (green-bordered pages) when the material is highlighted in the yellow-bordered and blue-bordered pages.

The third section covers **emergency response** actions, including first aid. It outlines special precautions for incidents which involve fire, spill or chemical exposure. Several recommendations are listed under each part which will further assist in the decision-making process. The information on first aid is general guidance prior to seeking medical care.

4-Green-bordered pages: This section contains three tables.

Table 1 lists, by UN number order, TIH (PIH in the US) materials, including certain chemical warfare agents, and water-reactive materials which produce toxic gases upon contact with water. This table provides two different types of recommended safe distances which are Initial isolation distances and Protective action distances. The materials are highlighted in green for easy identification in both numeric (yellow-bordered pages) and alphabetic (blue-bordered pages) lists of the guidebook. This table provides distances for both small (approximately 208 litres (55 US gallons) or less for liquids and 300 kilograms (660 pounds) or less for solids when spilled in water) and large spills (more than 208 litres (55 US gallons) for liquids and more than 300 kilograms (660 pounds) for solids when spilled in water) for all highlighted materials. For entries marked (when used as a weapon) volumes vary, but in most cases, small spills include releases up to 2 kg (4.4. lbs), and large spills include releases up to 25 kg (55 lbs).

Within the initial isolation distance is a distance within which all persons should be considered for evacuation in all directions from the actual spill/leak source. It is a distance (radius) which defines a circle (Initial Isolation Zone) within which persons may be exposed to dangerous concentrations upwind of the source and may be exposed to life-threatening concentrations downwind of the source.

The protective action distance are downward distances from the spill or leak source within which responders could carry out protective actions to:

- preserve the health and safety of emergency responders and the public
- Evacuate and/or shelter in place people in this area (for more information consult pages 288 - 290)

The protective action distances are divided into daytime and nighttime incidents because varying atmospheric conditions affect the size of the hazardous area's size. In fact, the quantity or concentration of the material's vapour poses problems, not its mere presence. During the night, the air is generally calmer and this causes the material to disperse less and therefore create a toxic zone which is greater than would usually occur during the day. During the day, a more active atmosphere will cause a greater dispersion of the material resulting in a lower concentration of the material in the surrounding air. The actual area where toxic levels are reached is smaller (due to increased dispersion). Daytime is after sunrise and before sunset. Nighttime is between sunset and sunrise..

For example, in the case of a small spill of UN1955-compressed gas, toxic, n.o.s., the isolation distance is 100 metres (300 feet), therefore, its initial isolation zone is 200 metres (600 feet) in diameter. Its protective action distance is 0.5 kilometres (0.3 miles) for a daytime incident and 2.5 kilometres (1.6 miles) for a nighttime incident.

Note 1: Some water-reactive materials have 2 entries in Table 1. They are identified by (when spilled on land) since they are TIH products and (when spilled in water) because they produce additional toxic gases when spilled in water.

For example: UN1746 - Bromine trifluoride and UN1836 - Thionyl chloride.

Note 2: If a water-reactive material only has one entry in Table 1 for (when spilled in water) and the product is NOT spilled in water, Table 1 and Table 2 do not apply. You will find safe distances in the appropriate orange-bordered guide.

For example: UN1183 - Ethyldichlorosilane and UN1898 Acetyl iodide.

Table 2 Water-Reactive Materials which produce toxic gases lists, by UN number order, materials that produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced. These Water Reactive materials are easily identified in **Table 1** as their name is immediately followed by **(when spilled in water)**.

NOTE: The TIH gases indicated in Table 2 are for information purposes only. These TIH gases have already been taken into account in the distances of Table 1. For example, Table 2 indicates that UN1689 sodium cyanide, when spilled in water, will generate hydrogen cyanide gas (HCN). In Table 1, you must refer to the distances for sodium cyanide, solid and not the distances for hydrogen cyanide gas.

Table 3 Initial isolation and protective action distances for large spills for different quantities of six common TIH gases. The selected materials are:

- UN1005 - Ammonia, anhydrous
- UN1017 - Chlorine
- UN1040 - Ethylene oxide and UN1040 Ethylene oxide with nitrogen
- UN1050 - Hydrogen chloride, anhydrous and UN2186 - Hydrogen chloride, refrigerated liquid
- UN1052 - Hydrogen fluoride, anhydrous
- UN1079 - Sulfur dioxide/Sulphur dioxide

The table provides Initial Isolation and Protective Action Distances for large spills (more than 208 litres or 55 US gallons) involving different container types (therefore different volume capacities) for day-time and night-time situations and different wind speeds

How to choose the appropriate isolation and protective action distances

ANZ-ERG2021 lists the isolation or evacuation in 2 places: The individual guides (orange-bordered pages) and in the Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages).

If you are dealing with a non-TIH (PIH in the US) (not highlighted in green in the yellow bordered or blue bordered pages), go to the assigned guide. Under EVACUATION you will find: initial isolation distance as an immediate precautionary measure. Specific distances for spill or fire situations (fragment hazard). Please note that certain guides may also refer to Table 1. This is just a reminder for green highlighted materials only.

If you are dealing with a TIH, water-reactive or chemical warfare material (green highlighted entries in the yellow or blue bordered pages):

If there is no fire go directly to Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) and consult the assigned guide the material (orange-bordered pages).

If a fire is involved go directly to the assigned guide (orange-bordered pages) and apply the distances found under EVACUATION- Fire and consult Table 1 distances for residual material release.

PROTECTIVE CLOTHING

Street Clothing and Work Uniforms. These garments, such as uniforms worn by police and emergency medical services personnel, provide almost no protection from the harmful effects of dangerous goods.

Structural Fire Fighters Protective Clothing (SFPC). This category of clothing, often called turnout or bunker gear, means the protective clothing normally worn by fire fighters during structural fire fighting operations. It includes a helmet, coat, pants, boots, gloves and a hood to cover parts of the head not protected by the helmet and facepiece.

This clothing must be used with full-facepiece positive pressure self-contained breathing apparatus (SCBA). This protective clothing should, at a minimum, meet the AS/NZS ISO 2801:2008 and AS/NZS 4967:2009. Structural fire fighters protective clothing provides limited protection from heat and cold. It may not provide adequate protection from the harmful vapours or liquids that are encountered during dangerous goods incidents. Each guide includes a statement about the use of SFPC in incidents involving those materials referenced by that guide. Some guides state that SFPC provides limited protection. In those cases, the responder wearing SFPC and SCBA may be able to perform an expedient, that is quick in-and-out, operation. However, this type of operation can place the responder at risk of exposure, injury or death. The incident controller makes the decision to perform this operation only if an overriding benefit can be gained (i.e., perform an immediate rescue, turn off a valve to control a leak, etc.). The coverall-type protective clothing customarily worn to fight fires in forests or bushland is not SFPC and is not recommended nor referred to elsewhere in this guidebook.

Positive Pressure Self-Contained Breathing Apparatus (SCBA). This apparatus provides a constant, positive pressure flow of air within the facepiece. SCBA should, at a minimum, meet the AS/NZS 1715:2009 and AS/NZS 1716:2012. Chemical-cartridge respirators or other filtering masks are not acceptable substitutes for positive pressure self-contained breathing apparatus. The three most common Air Purifying Respirators (ARPS) are P2, P3 and Powered Air Purifying Respirators (PAPR.) Consult your organisational policy and procedure before considering their use.

Chemical Protective Clothing and Equipment. Safe use of this type of protective clothing and equipment requires specific skills developed through training and experience. These chemical suits should at a minimum, meet AS/NZS ISO 6529:2006.

This type of special clothing may protect against one chemical but be readily permeated by chemicals for which it was not designed. Therefore, protective clothing should not be used unless it is compatible with the released material. This type of special clothing offers little or no protection against heat and/or cold. Examples of this type of equipment have been described as (1) Gas Tight Chemical Protective Suit (EN 943-1:2002) Level A protection and (2) Protective clothing against liquid chemicals (EN 14605:2005) is sometimes referred to as Level B or C protection. No single protective clothing material will protect you from all dangerous goods. Do not assume any protective clothing is resistant to cold and/or heat or flame exposure unless it is so certified by the manufacturer. Consult glossary for additional protection levels under the heading Protective Clothing.

Standards referenced in the section

Structural Firefighters Protective Clothing:

AS/NZS ISO 2801:2008 - Clothing for protection against heat and flame

General recommendations for selection, care and use of protective clothing

AS/NZS 4967:2009 - Protective clothing for firefighters Requirements and test methods for protective clothing used for structural firefighting

Positive Pressure Self-Contained Breathing Apparatus (SCBA):

AS/NZS 1715:2009 - Selection, use and maintenance of respiratory protective equipment

AS/NZS 1716:2012 - Respiratory protective devices

Chemical Protective Clothing and Equipment:

AS/NZS ISO 6529:2006 - Protective clothing Protection against chemicals

Determination of resistance of protective clothing materials to permeation by liquids and gases

EN943-1:2002 Protective clothing against dangerous solid, liquid and gaseous chemicals including liquid and solid aerosols- Part 1: performance requirements for type 1 (gas-tight) chemical protective suits.

EN14605:2005 Protective clothing against liquid chemicals: performance requirements for clothing with liquid tight (Type 3) or spray tight (Type 4) connections, including items protection to parts of the body only (Types PB 3 and PB 4)

DECONTAMINATION

The ways to decontaminate people and equipment can vary. If you need help with decontamination, contact the emergency response telephone number provided on the transport documents or the appropriate emergency service. These resources may be able to put you in contact with the chemical manufacturer to determine the appropriate procedure if not otherwise available.

Decontamination is the process of removing or neutralising hazardous materials/dangerous goods that have contaminated people and equipment during an incident.

Contamination happens in the area generally referred to as the Hot Zone. Everything and everyone entering this zone should be decontaminated when leaving, including emergency response personnel. This reduces the chances that more contamination will occur.

There are two main types of contamination:

- **Direct contamination** happens in the Hot Zone.
- **Cross contamination** happens when someone or something outside the Hot Zone was not properly decontaminated and comes in contact with another object or person, usually in the Warm or Cold Zone.

To decontaminate, you must: physically remove contaminants and/or chemically neutralise contaminants .

The NFPA, describes the following four kinds of decontamination.

(1) **Gross decontamination:** quickly removing surface contamination, which usually happens by mechanically removing the contaminant or rinsing with water from handheld hose lines, emergency showers, or other nearby water sources.

(2) **Technical decontamination:** Reducing contamination to a level as low as possible by chemical or physical methods. A hazmat team will perform this kind of decontamination.

(3) **Mass decontamination:** Reducing or removing surface contaminants as fast as possible from a large number of people in potentially life-threatening situations.

(4) **Emergency decontamination:** Immediately reducing contamination of people in potentially life-threatening situations with or without formally setting up a decontamination corridor. This process should be performed upwind and uphill from victims. Responders should avoid contact with victims, runoff or spray from the decontamination process.

Emergency and mass decontamination can be done with firefighting and rescue operations equipment. Nozzles can be put on wide-angle fog patterns and sprayed towards the ground to create a decontamination shower. Responders can also place nozzles on the discharge ports of engines.

Contaminated clothing and equipment must be removed after use and stored in a controlled area (Warm Zone) until cleanup procedures can begin. Sometimes protective clothing and equipment cannot be decontaminated and must be disposed of properly.

Chemical neutralisation releases heat. Do not perform on a victim.

FIRE AND SPILL CONTROL

FIRE CONTROL

Water is the most common and generally most available fire extinguishing agent. Exercise caution in selecting a fire extinguishing method since there are many factors to be considered in an incident. Water may be ineffective in fighting fires involving some materials.

Fires involving a spill of flammable liquids are generally controlled by applying a fire fighting foam to the surface of the burning material. Fighting flammable liquid fires requires foam concentrate which is chemically compatible with the burning material, correct mixing of the foam concentrate with water and air, and careful application and maintenance

of the foam blanket. There are two general types of fire fighting foam: regular and alcohol-resistant. Examples of regular foam are protein-base, fluoroprotein, and aqueous film-forming foam (AFFF). Some flammable liquids, including many petroleum products, can be controlled by applying regular foam. Other flammable liquids, including polar solvents (flammable liquids which are water soluble) such as alcohols and ketones, have different chemical properties. A fire involving these materials cannot be easily controlled with regular foam and requires application of alcohol-resistant foam. Polar solvent fires

may be difficult to control and require a higher foam application rate than other flammable liquid fires (see NFPA Standard 11 for further information). Refer to the appropriate guide to determine which type of foam is recommended. Although it is impossible to make specific recommendations for flammable liquids which have subsidiary corrosive or toxic hazards, alcohol-resistant foam may be effective for many of these materials. The emergency response telephone number on the transport document, or the appropriate emergency response agency, should be contacted as soon as possible for guidance on the proper fire extinguishing agent to use. The final selection of the agent and method depends on many factors such as incident location, exposure hazards, size of the fire, environmental concerns, as well as the availability of extinguishing agents and equipment at the scene.

Contact the contact the emergency response telephone number provided on the transport documents or the appropriate emergency service, as soon as possible for guidance on the proper fire extinguishing agent to use.

WATER REACTIVE MATERIALS

Water is sometimes used to flush spills and to reduce or direct vapours in spill situations. Some of the materials covered by the guidebook can react violently or even explosively with water. In these cases, consider letting the fire burn or leaving the spill alone (except to prevent its spreading by diking) until additional technical advice can be obtained.

The applicable guides clearly warn you of these potentially dangerous reactions. These materials require technical advice since:

- (1) water getting inside a ruptured or leaking container may cause an explosion
- (2) water may be needed to cool adjoining containers to prevent their rupturing (exploding) or further spread of the fires

- (3) water may be effective in mitigating an incident involving a water-reactive material only if it can be applied at a sufficient flooding rate for an extended period; and
- (4) the products from the reaction with water may be more toxic, corrosive, or otherwise more undesirable than the product of the fire without water applied.

When responding to an incident involving water-reactive materials, take into account the existing conditions such as wind, precipitation, location and accessibility to the incident, as well as the availability of the agents to control the fire or spill. Because there are variables to consider, the decision to use water on fires or spills involving water-reactive materials should be based on information from an authoritative source for example, a producer of the material, who can be contacted through the emergency response telephone number or the appropriate emergency response agency.

VAPOUR CONTROL

Limiting the amount of vapour released from a pool of flammable or corrosive liquids is an operational concern. It requires the use of proper protective clothing, specialized equipment, appropriate chemical agents, and skilled personnel. Before engaging in vapour control, get advice from an authoritative source as to the proper tactics. There are several ways to minimize the amount of vapours escaping from pools of spilled liquids, such as special foams, adsorbing agents, absorbing agents, and neutralising agents. To be effective, these vapour control methods must be selected for the specific material involved and performed in a manner that will mitigate, not worsen, the incident.

Where specific materials are known, such as at manufacturing or storage facilities, it is desirable for the dangerous goods response team to prearrange with the facility operators to select and stockpile these control agents in advance of a spill. In the field, first responders may not have the most effective vapour control agent for the material available. They are likely to have only water and only one type of fire fighting foam on their vehicles. If the available foam is inappropriate for use, they are likely to use water spray. Because the water is being used to form a vapour seal, care must be taken not to churn or further spread the spill during application. Vapours that do not react with water may be directed away from the site using the air currents surrounding the water spray. Before using water spray or other methods to safely control vapour emission or to suppress ignition, obtain technical advice, based on specific chemical name identification.

BLEVE (Boiling Liquid Expanding Vapour Explosion)

The following section presents, in a two-page format, background information on BLEVEs and includes a chart that provides important safety-related information to consider when confronted with this type of situation involving Liquefied Petroleum Gases (LPG), UN1075. LPGs include the following flammable gases: Butane, UN1011 Butylene, UN1012 Isobutylene, UN1055 Propylene, UN1077 Isobutane, UN1969 and Propane, UN1978.

A BLEVE occurs when a fire impinged, or damaged tank car fails to contain its internal pressure and explodes with a sudden pressure release. This catastrophic failure is more likely to occur with damaged pressure tank cars, even in the absence of an active fire.

What are the main hazards from a BLEVE

The main hazards from a propane or LPG BLEVE are:

fire: if the released substance is ignited there is an immediate fireball.

thermal radiation: at a distance of about 4 times the radius of a fireball, the heat radiated from a fireball is enough to burn exposed skin in 2 seconds. Wearing protective clothing limits the thermal radiation dose.

Blast: A concussive force caused by the sudden release of the pressurized substance. For a BLEVE occurring out in the open, the blast strength at a distance of 4 times the radius of a fireball can break window glass and may cause minor damage to buildings.

Projectiles: tank failure metal fragments over large distances. These fragments can and have been deadly.

The danger from these decreases as you move away from the BLEVE centre. The furthest reaching hazard is projectiles.

For a video with information on critical safety issues concerning BLEVEs, please visit <http://www.tc.gc.ca/eng/tdg/publications-menu-1238.html>. This video can be viewed directly on the website. To order a DVD copy of the video, contact us by email at: TDG-RD-TMD tc.gc.ca.

HEAT INDUCED TEAR (HIT)

A heat induced tear (HIT) is a rupture of a NON-PRESSURE tank car containing flammable liquids when exposed to the intense heat of a fire. The metal will soften and the pressure in the tank car will increase which can lead to containment failure. The tear generally occurs at the vapor space (upper side) of the container, venting large quantities of flammable liquid and vapors at high speed. A fireball and an intense heat wave will occur.

Compared to BLEVEs, HITs rarely result in the projection of tank car fragments. Heat induced tearing has occurred within 20 minutes of the derailment and as long as 10 hours following the initial fire.

Responding to these types of incidents (BLEVE and HIT) requires specialized training, equipment and a tactical approach.

BLEVE – SAFETY PRECAUTIONS

Use with caution. The following table gives a summary of tank properties, critical times, critical distances and cooling water flow rates for various tank sizes. This table is provided to give responders some guidance but it should be used with caution.

Tank dimensions are approximate and can vary depending on the tank design and application.

Minimum time to failure is based on **severe torch fire impingement** on the vapour space of a tank in good condition, and is approximate. Tanks may fail earlier if they are damaged or corroded. Tanks may fail minutes or hours later than these minimum times depending on the conditions. It has been assumed here that the tanks are not equipped with thermal barriers or water spray cooling.

Minimum time to empty is based on an engulfing fire with a properly sized pressure relief valve. If the tank is only partially engulfed, then time to empty will increase (i.e., if tank is 50% engulfed, then the tanks will take twice as long to empty). Once again, it has been assumed that the tank is not equipped with a thermal barrier or water spray.

Tanks equipped with thermal barriers or water spray cooling significantly increase the times to failure and the times to empty. A thermal barrier can reduce the heat input to a tank by a factor of ten or more. This means it could take ten times as long to empty the tank through the Pressure Relief Valve (PRV).

Fireball radius and emergency response distance is based on mathematical equations and is approximate. They assume spherical fireballs and this is not always the case.

Two safety distances for public evacuation. The minimum distance is based on tanks that are launched with a small elevation angle (i.e., a few degrees above horizontal). This is most common for horizontal cylinders. The preferred evacuation distance has more margin of safety since it assumes the tanks are launched at a 45 degree angle to the horizontal. This might be more appropriate if a vertical cylinder is involved.

It is understood that these distances are very large and may not be practical in a highly populated area. However, it should be understood that the risks increase rapidly the closer you are to a BLEVE. Keep in mind that the furthest reaching projectiles tend to come off in the zones 45 degrees on each side of the tank ends.

Water flow rate is based on $9.75(\sqrt{\text{capacity (litres)}}) = \text{litres/min}$ needed to cool tank metal.

Warning: the data given are approximate and should only be used with extreme caution. For example, where times are given for tank failure or tank emptying through the pressure relief valve – these times are typical but they can vary from situation to situation. Therefore, never risk life based on these times.

WARNING:

The data given are approximate and should only be used with extreme caution. These times can vary from situation to situation. LPG tanks have been known to BLEVE within minutes. Therefore, never risk life based on these times.

BLEVE (USE WITH CAUTION)											
Capacity	Diameter	Length	Propane Mass	Minimum time to failure for severe torch	Approximate time to empty for engulfing fire	Fireball radius	Emergency response distance	Minimum evacuation distance	Preferred evacuation distance	Cooling water flow rate	
Litres (Gallons)	metres (Feet)	metres (Feet)	Kilograms(Pounds)	Minutes	Minutes	metres (Feet)	metres (Feet)	metres (Feet)	metres (Feet)	Litres/min	USgal/min
100 (26.4)	0.3 (1)	1.5 (4.9)	40 (88)	4	8	10 (33)	90 (295)	154 (505)	307 (1007)	97	26
400 (106)	0.61 (2)	1.5 (4.9)	160 (353)	4	12	16 (53)	90 (295)	244 (801)	488 (1601)	195	51
2000 (528)	0.96 (3.2)	3 (9.8)	800 (1764)	5	18	28 (92)	111 (364)	417 (1368)	834 (2736)	435	115
4000 (1057)	1 (3.3)	4.9 (16.1)	1600 (3527)	5	20	35 (115)	140 (459)	525 (1722)	1050 (3445)	615	163
8000 (2113)	1.25 (4.1)	6.5 (21.3)	3200 (7055)	6	22	44 (144)	176 (577)	661 (2169)	1323 (4341)	870	230
22000 (5812)	2.1 (6.9)	6.7 (22)	8800 (19400)	7	28	62 (203)	247 (810)	926 (3038)	1852 (6076)	1443	381
42000 (11095)	2.1 (6.9)	11.8 (38.7)	16800 (37037)	7	32	77 (253)	306 (1004)	1149 (3770)	2200 (7218)	1994	527
82000 (21662)	2.75 (9)	13.7 (45)	32800 (72310)	8	40	96 (315)	383 (1257)	1435 (4708)	2200 (7218)	2786	736
140000 (36984)	3.3 (10.8)	17.2 (56.4)	56000 (123457)	9	45	114 (374)	457 (1499)	1715 (5627)	2200 (7218)	3640	962

Improvised Explosive Device (IED) SAFE STAND-OFF DISTANCE

Threat Description	Explosives Capacity ¹	Mandatory Evacuation Distance ²	Shelter-in-Place Zone	Preferred Evacuation Distance ³
 Pipe Bomb	5 lbs 2.3 kg	70 ft 21 m	71 - 1,199 ft 22 - 365 m	+1,200 ft 366 m
 Suicide Bomber	20 lbs 9 kg	110 ft 34 m	111 - 1,699 ft 35 - 518 m	+1,700 ft 519 m
 Briefcase/Suitcase	50 lbs 23 kg	150 ft 46 m	151 - 1,849 ft 47 - 563 m	+1,850 ft 564 m
 Car	500 lbs 227 kg	320 ft 98 m	321 - 1,899 ft 99 - 579 m	+1,900 ft 580 m
 SUV/Van	1,000 lbs 454 kg	400 ft 122 m	401 - 2,399 ft 123 - 731 m	+2,400 ft 732 m
 Small Delivery Truck	4,000 lbs 1,814 kg	640 ft 195 m	641 - 3,799 ft 196 - 1,158 m	+3,800 ft 1,159 m
 Container/Water Truck	10,000 lbs 4,536 kg	860 ft 263 m	861 - 5,099 ft 264 - 1,554 m	+5,100 ft 1,555 m
 Semi-Trailer	60,000 lbs 27,216 kg	1,570 ft 475 m	1,571 - 9,299 ft 476 - 2,834 m	+9,300 ft 2,835 m

High Explosives (TNT Equivalent)

¹ Based on the maximum amount of material that could reasonably fit into a container or vehicle. Variations possible.

² Governed by the ability of an unreinforced building to withstand severe damage or collapse.

³ Governed by the greater of fragment throw distance or glass breakage/falling glass hazard distance. These distances can be reduced for personnel wearing ballistic protection. Note that the pipe bomb, suicide bomb, and briefcase/suitcase bomb are assumed to have a fragmentation characteristic that requires greater stand-off distances than an equal amount of explosives in a vehicle.

Improvised Explosive Device (IED) SAFE STAND-OFF DISTANCE

Threat Description	LPG Mass / Volume ¹	Fireball Diameter ²	Safe Distance ^{3,4}
Small LPG Tank	20 lbs / 5 gal	40 ft	160 ft
	9 kg / 19 L	12 m	48 m
Large LPG Tank	100 lbs / 25 gal	69 ft	276 ft
	45 kg / 95 L	21 m	84 m
Commercial/Residential LPG Tank	2,000 lbs / 500 gal	184 ft	736 ft
	907 kg / 1,893 L	56 m	224 m
Small LPG Truck	8,000 lbs / 2,000 gal	292 ft	1,168 ft
	3,630 kg / 7,570 L	89 m	356 m
Semitanker LPG	40,000 lbs / 10,000 gal	499 ft	1,996 ft
	18,144 kg / 37,850 L	152 m	608 m

¹Based on the maximum amount of LPG that could reasonably fit into a container or vehicle. Variations possible.

²Assuming efficient mixing of the flammable gas with ambient air.

³Determined by U.S. firefighting practices wherein safe distances are approximately 4 times the flame height.

⁴This table is for a loaded LPG tank with explosives on the exterior. Note that an LPG tank filled with high explosives would require a significantly greater stand-off distance than if it were filled with LPG.

GLOSSARY

Adsorbed gas

A gas which sticks (adsorbs) to the surface of a solid and porous material (such as activated charcoal) contained within a metal cylinder. This results in an internal cylinder pressure of less than 101.3 kPa at 20 °C (14 psi at 68 °F) and less than 300 kPa at 50 °C (43 psi at 122 °F). These pressures are much lower than those of conventional cylinders containing compressed or liquified gases.

AEGL(s)

Acute Exposure Guideline Level(s), AEGLs represent threshold exposure limits for the general public after a once-in-a-lifetime, or rare, exposure and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. Three levels AEGL-1, AEGL-2 and AEGL-3 are developed for each of five exposure periods (10 and 30 minutes, 1 hour, 4 hours, and 8 hours) and are distinguished by varying degrees of severity of toxic effects; see AEGL-1, AEGL-2 and AEGL-3.

AEGL-1

AEGL-1 is the airborne concentration (expressed as parts per million or milligrams per cubic meter [ppm or mg/m³]) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic, non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEGL-2

AEGL-2 is the airborne concentration (expressed as ppm or mg/m³) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL-3

AEGL-3 is the airborne concentration (expressed as ppm or mg/m³) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Alcohol-resistant foam

A foam that is resistant to “polar” chemicals such as ketones and esters which may break down other types of foam.

Biological agents

Living organisms that cause disease, sickness and mortality in humans. Anthrax and Ebola are examples of biological agents.
Refer to GUIDE 158.

Blister agents (vesicants)

Substances that cause blistering of the skin. Exposure is through liquid or vapour contact with any exposed tissue (eyes, skin, lungs). Mustard (H), Distilled Mustard (HD), Nitrogen Mustard (HN) and Lewisite (L) are blister agents.

Symptoms: Red eyes, skin irritation, burning of skin, blisters, upper respiratory damage, cough, hoarseness.

GLOSSARY

Blood agents	Substances that injure a person by interfering with cell respiration (the exchange of oxygen and carbon dioxide between blood and tissues). Hydrogen cyanide (AC) and Cyanogen chloride (CK) are blood agents. Symptoms: Respiratory distress, headache, unresponsiveness, seizures, coma.
Boil over	A sudden increase in fire intensity associated with the expulsion of burning flammable liquid caused by the boiling of water that has accumulated in the bottom of a tank car.
Burn	Refers to either a chemical or thermal burn, the former may be caused by corrosive substances and the latter by liquefied cryogenic gases, hot molten substances, or flames.
Carcinogen	A substance or mixture which induces cancer or increases its incidence.
Category A	An infectious substance that poses a high risk to the health of individuals and/or animals or public health. These substances can cause serious disease and can lead to death. Effective treatment and preventative measures may not be available.
Category B	An infectious substance that poses a low to moderate risk to individuals and/or animals and/or public health. These substances are unlikely to cause serious disease. Effective treatment and preventative measures are available.
CBRN	Chemical, biological, radiological or nuclear warfare agent.
Choking agents	Substances that cause physical injury to the lungs. Exposure is through inhalation. In extreme cases, membranes swell and lungs become filled with liquid (pulmonary edema). Death results from lack of oxygen; hence, the victim is “choked”. Phosgene (CG) is a choking agent. Symptoms: Irritation to eyes/nose/throat, respiratory distress, nausea and vomiting, burning of exposed skin.
CO₂	Carbon dioxide gas.
Cold zone	Area where the command post and support functions that are necessary to control the incident are located. This is also referred to as the clean zone, green zone or support zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).
Combustible liquid	Any liquid that has a flash point greater than 60.5°C, and has a fire point that is less than its boiling point.

GLOSSARY

Compatibility Group

Letters identify explosives that are deemed to be compatible. The definition of these Compatibility Groups in this Glossary are intended to be descriptive. Please consult the transportation of dangerous goods/hazardous materials or explosives regulations of your jurisdiction for the exact wording of the definitions. Class 1 materials are considered to be “compatible” if they can be transported together without significantly increasing either the probability of an incident or, for a given quantity, the magnitude of the effects of such an incident.

- A Substances which are expected to mass detonate very soon after fire reaches them.
- B Articles which are expected to mass detonate very soon after fire reaches them.
- C Substances or articles which may be readily ignited and burn violently without necessarily exploding.
- D Substances or articles which may mass detonate (with blast and/or fragment hazard) when exposed to fire.
- E&F Articles which may mass detonate in a fire.
- G Substances and articles which may mass explode and give off smoke or toxic gases.
- H Articles which in a fire may eject hazardous projectiles and dense white smoke.
- J Articles which may mass explode.
- K Articles which in a fire may eject hazardous projectiles and toxic gases.
- L Substances and articles which present a special risk and could be activated by exposure to air or water.
- N Articles which contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental ignition or propagation.
- S Packaged substances or articles which, if accidentally initiated, produce effects that are usually confined to the immediate vicinity.

GLOSSARY

Control zones	Designated areas at dangerous goods incidents, based on safety and the degree of hazard. Many terms are used to describe control zones; however, in this guidebook, these zones are defined as the hot/exclusion/red/restricted zone, warm/contamination reduction/yellow/limited access zone, and cold/support/green/clean zone. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).
Cryogenic liquid	A refrigerated, liquefied gas that has a boiling point colder than -90°C (-130°F) at atmospheric pressure.
Decomposition products	Products of a chemical or thermal break-down of a substance.
Decontamination	The removal of dangerous goods from personnel and equipment to the extent necessary to prevent potential adverse health effects. Always avoid direct or indirect contact with dangerous goods; however, if contact occurs, personnel should be decontaminated as soon as possible. Since the methods used to decontaminate personnel and equipment differ from one chemical to another, contact the chemical manufacturer to determine the appropriate procedure. Contaminated clothing and equipment should be removed after use and stored in a controlled area (warm/contamination reduction/yellow/limited access zone) until cleanup procedures can be initiated. In some cases, protective clothing and equipment cannot be decontaminated and must be disposed of in a proper manner.
Dry chemical	A preparation designed for fighting fires involving flammable liquids, pyrophoric substances and electrical equipment. Common types contain sodium bicarbonate or potassium bicarbonate.
Edema	The accumulation of an excessive amount of watery fluid in cells and tissues. Pulmonary edema is an excessive build up of water in the lungs, for instance, after inhalation of a gas that is corrosive to lung tissue.
ERPG(s)	Emergency Response Planning Guideline(s). Values intended to provide estimates of concentration ranges above which one could reasonably anticipate observing adverse health effects; see ERPG-1, ERPG-2 and ERPG-3.

GLOSSARY

ERPG-1	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odour.
ERPG-2	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.
ERPG-3	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.
Flammable liquid	A liquid that has a flash point of 60°C (140°F) or lower.
Flash point	Lowest temperature at which a liquid or solid gives off vapour in such a concentration that, when the vapour combines with air near the surface of the liquid or solid, a flammable mixture is formed. Hence, the lower the flash point, the more flammable the material.
Flooding quantities	Minimum of 1900 L/min (500 US gal/min) of water.
Hazard zones (Inhalation Hazard Zones)	HAZARD ZONE A: Gases: LC50 of less than or equal to 200 ppm, Liquids: V equal to or greater than 500 LC50 and LC50 less than or equal to 200 ppm, HAZARD ZONE B: Gases: LC50 greater than 200 ppm and less than or equal to 1000 ppm, Liquids: V equal to or greater than 10 LC50; LC50 less than or equal to 1000 ppm and criteria for Hazard Zone A are not met. HAZARD ZONE C: LC50 greater than 1000 ppm and less than or equal to 3000 ppm, HAZARD ZONE D: LC50 greater than 3000 ppm and less than or equal to 5000 ppm.
High expansion foam	Foams that have a high expansion ratio (over 1:200) with a low water content.

GLOSSARY

Hot zone	Area immediately surrounding a dangerous goods incident which extends far enough to prevent adverse effects from released dangerous goods to personnel outside the zone. This zone is also referred to as exclusion zone, red zone or restricted zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).
IED	See “Improvised Explosive Device”.
Immiscible	In this guidebook, means that a material does not mix readily with water.
Improvised Explosive Device	A bomb that is manufactured from commercial, military or homemade explosives.
Large spill	A spill that involves quantities that are greater than 208 litres for liquids and greater than 300 kilograms for solids.
LC50	Lethal concentration 50. The concentration of a material administered by inhalation that is expected to cause the death of 50% of an experimental animal population within a specified time. (Concentration is reported in either ppm or mg/m ³).
Mass explosion	Explosion which affects almost the entire load virtually instantaneously.
MAWP	Maximum Allowable Working Pressure: The maximum allowable internal pressure that the tank may experience during normal operations
mg/m³	Milligrams of a material per cubic metre of air.
Miscible	In this guidebook, means that a material mixes readily with water.
mL/m³	Millilitres of a material per cubic meter of air. (1 mL/m ³ equals 1 ppm).
Mutagen	An agent giving rise to an increased occurrence of mutations in populations of cells and/or organisms. Mutation means a permanent change in the amount or structure of the genetic material in a cell.
Narcotic	A substance which acts as a central nervous system depressor producing effects such as drowsiness, narcosis, reduced alertness, loss of reflexes, lack of coordination, and vertigo. These effects can also be manifested as severe headache or nausea, and can lead to reduced judgment, dizziness, irritability, fatigue, impaired memory function, deficit in perception and coordination, reaction time, or sleepiness.

GLOSSARY

Nerve agents	Substances that interfere with the central nervous system. Exposure is primarily through contact with the liquid (via skin and eyes) and secondarily through inhalation of the vapour. Tabun (GA), Sarin (GB), Soman (GD) and VX are nerve agents. Symptoms: Pinpoint pupils, extreme headache, severe tightness in the chest, dyspnea, runny nose, coughing, salivation, unresponsiveness, seizures.
n.o.s.	These letters refer to “not otherwise specified”. The entries which use this description are generic names such as “Corrosive liquid, n.o.s.” This means that the actual chemical name for that corrosive liquid is not listed in the regulations; therefore, a generic name must be used to describe it on Transport Documents.
Noxious	In this guidebook, means that a material may be harmful or injurious to health or physical well-being.
Organic Peroxide	An organic (carbon-containing) compound having two oxygen atoms joined together. Organic peroxides are thermally unstable chemicals. They may have one or more of the following properties: be liable to explosive decomposition burn rapidly be sensitive to impact or friction react dangerously with other substances.
Oxidizer	A chemical which supplies its own oxygen and which helps other combustible material burn more readily.
P	See "Polymerisation".
Packing Group	The Packing Group (PG) is assigned based on the degree of danger presented by the hazardous material: PG I : High danger PG II : Medium danger PG III : Low danger
PG	See "Packing Group".
pH	pH is a value that represents the acidity or alkalinity of a water solution. Pure water has a pH of 7. A pH value below 7 indicates an acid solution (a pH of 1 is extremely acidic). A pH above 7 indicates an alkaline solution (a pH of 14 is extremely alkaline). Acids and alkalies (bases) are commonly referred to as corrosive materials.
PIH	Poison Inhalation Hazard. Term used to describe gases and volatile liquids that are toxic when inhaled. (Same as TIH).
Polar	See “Miscible”.

GLOSSARY

Polymerization	A chemical reaction that often produces heat and pressure. Once initiated, the reaction is accelerated by the heat that it produces. The uncontrolled buildup of heat and pressure can cause a fire or an explosion, or can rupture closed containers. The letter (P) following a guide number in the yellow-bordered and blue-bordered pages identifies a material that may polymerise violently under high temperature conditions or contamination with other products. It is also used to identify materials that have a strong potential for polymerisation in the absence of an inhibitor due to depletion of this inhibitor caused by accident conditions.
ppm	Parts per million. (1 ppm equals 1 mL/m ³).
Protective clothing	Includes both respiratory and physical protection. One cannot assign a level of protection to clothing or respiratory devices separately. These levels were accepted and defined by response organizations such as U.S. Coast Guard, NIOSH, and U.S. EPA. Level A: SCBA plus totally encapsulating chemical resistant clothing (permeation resistant). Level B: SCBA plus hooded chemical resistant clothing (splash suit). Level C: Full or half-face respirator plus hooded chemical resistant clothing (splash suit). Level D: Coverall with no respiratory protection.
Pyrophoric	A material which ignites spontaneously upon exposure to air (or oxygen).
Radiation Authority	As referred to in GUIDES 161 through 166 for radioactive materials, the Radiation Authority is either a Federal, state/territory agency or state/territory designated official. The responsibilities of this authority include evaluating radiological hazard conditions during normal operations and during emergencies.
Radioactivity	The property of some substances to emit invisible and potentially harmful radiation.
Refrigerated liquid	See "Cryogenic liquid".
Regrigerated liquified gas	a gas which when packaged for transport is made partially because of its low temperature. See Cryogenic liquid.
Respiratory sensitizer	A substance that induces hypersensitivity of the airways following inhalation of the substance.

GLOSSARY

Right-of-way	A defined area on a property containing one or more high-pressure natural gas pipelines.
Shelter in-place	People should seek shelter inside a building and remain inside until the danger passes. Sheltering in-place is used when evacuating the public would cause greater risk than staying where they are, or when an evacuation cannot be performed. Direct the people inside to close all doors and windows and to shut off all ventilating, heating and cooling systems . In-place protection (shelter in-place) may not be the best option if (a) the vapours are flammable; (b) it will take a long time for the gas to clear the area; or (c) if buildings cannot be closed tightly. Vehicles can offer some protection for a short period if the windows are closed and the ventilating systems are shut off. Vehicles are not as effective as buildings for in-place protection.
Skin corrosion	The production of irreversible damage to the skin following the application of a test substance for up to 4 hours.
Skin irritation	The production of reversible damage to the skin following the application of a test substance for up to 4 hours.
Skin sensitiser	A substance that will induce an allergic response following skin contact.
Small fire	A fire involving less than a surface area of 5 m ² and/or less than 20 L/kg of a material, or a fire with characteristics within and not exceed the capabilities of a person other than a fire-fighter to safely.
Small spill	A spill that involves quantities that are less than 208 litres for liquids and less than 300 kilograms for solids.
Specific gravity	Weight of a substance compared to the weight of an equal volume of water at a given temperature. Specific gravity less than 1 indicates a substance is lighter than water; specific gravity greater than 1 indicates a substance is heavier than water.

GLOSSARY

Straight (solid) stream	Method used to apply or distribute water from the end of a hose. The water is delivered under pressure for penetration. In an efficient straight (solid) stream, approximately 90% of the water passes through an imaginary circle 38 cm (15 inches) in diameter at the breaking point. Hose (solid or straight) streams are frequently used to cool tanks and other equipment exposed to flammable liquid fires, or for washing burning spills away from danger points. However, straight streams will cause a spill fire to spread if improperly used or when directed into open containers of flammable and combustible liquids.
TIH	Toxic Inhalation Hazard. Term used to describe gases and volatile liquids that are toxic when inhaled.
Vapour concentration	Saturated vapour concentration in air of a material in mL/m ³ (volatility) at 20°C and standard atmospheric pressure.
Vapour density	Weight of a volume of pure vapour or gas (with no air present) compared to the weight of an equal volume of dry air at the same temperature and pressure. A vapour density less than 1 (one) indicates that the vapour is lighter than air and will tend to rise. A vapour density greater than 1 (one) indicates that the vapour is heavier than air and may travel along the ground.
Vapour pressure	Pressure at which a liquid and its vapour are in equilibrium at a given temperature. Liquids with high vapour pressures evaporate rapidly.
Viscosity	Measure of a liquid's internal resistance to flow. This property is important because it indicates how fast a material will leak out through holes in containers or tanks.
Warm zone	Area between Hot and Cold zones where personnel and equipment decontamination and hot zone support take place. It includes control points for the access corridor and thus assists in reducing the spread of contamination. Also referred to as the contamination reduction corridor (CRC), contamination reduction zone (CRZ), yellow zone or limited access zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).
Water Reactive Material	For the purpose of this guidebook, produces significant toxic gas when it comes in contact with water.
Water-sensitive	Substances which may produce flammable and/or toxic decomposition products upon contact with water.

Water spray (fog)

Method or way to apply or distribute water. The water is finely divided to provide for high heat absorption. Water spray patterns can range from about 10 to 90 degrees. Water spray streams can be used to extinguish or control the burning of a fire or to provide exposure protection for personnel, equipment, buildings, etc. **(This method can be used to absorb vapours, knock-down vapours or disperse vapours. Direct a water spray (fog), rather than a straight (solid) stream, into the vapour cloud to accomplish any of the above).**

Water spray is particularly effective on fires of flammable liquids and volatile solids having flash points above 37.8°C (100°F).

Regardless of the above, water spray can be used successfully on flammable liquids with low flash points. The effectiveness depends particularly on the method of application. With proper nozzles, even gasoline spill fires of some types have been extinguished when coordinated hose lines were used to sweep the flames off the surface of the liquid. Furthermore, water spray carefully applied has frequently been used with success in extinguishing fires involving flammable liquids with high flash points (or any viscous liquids) by causing frothing to occur only on the surface, and this foaming action blankets and extinguishes the fire.

AUSTRALIAN APPROVAL

The Australian & New Zealand Emergency Response Guide (ANZ-ERG2021) is approved as emergency information satisfying the requirements of the Australian Code for the transport of Dangerous Goods by Road and Rail (ADG Code) and associated legislation. The approval was given national effect by Competent Authorities Panel decision number APP2021/114.

NEW ZEALAND APPROVAL

Supported by reference for use in New Zealand by the NZ Transport Agency - Waka Kotahi, and endorsed by the NZ chemical industry 'Responsible Care NZ', in consultation with representatives from the transport industry, logistics and freight forwarding, and the committee responsible for the NZS 5433 Transport of Dangerous Goods on Land. The ANZ-ERG is recommended for the transport of sector and emergency responders as an appropriate means to assist with initial response to a dangerous goods incident.

REPRODUCTION AND RESALE

In Australia, the ANZ-ERG2021 is available free of charge at the website of the National Transport Commission. <https://www.ntc.gov.au/>. In New Zealand, the ANZ-ERG2021 is available free of charge at the website of Responsible Care NZ. <https://www.responsiblecarenz.com/> It may be reproduced without further permission only if the copy accurately reproduces the entire content (text, format and colouration) of this document without modification. Modified copies are not approved emergency information satisfying obligations of the ADG code and associated legislation.

NOTES

EMERGENCY NUMBERS AND INFORMATION

AUSTRALIA

IN EVERY EMERGENCY call 000 or 112 (Mobile)

FOR EMERGENCY SERVICES
(FIRE BRIGADE, AMBULANCE, POLICE)

Help them to help you by providing the information in the shaded box below

IN CASE OF POISONING..... call 131 126

Information to provide to Emergency Services

IDENTIFICATION:

Your name / Organisation
Call back number / Location

EVENT:

Deaths / Injuries
Product(s) involved
Quantity
Type of vehicle / Container
Time / Exact location
Help: On site / To be called

OTHER HELPFUL INFORMATION:

Consignor / Origin
Carrier
Consignee / Destination
Car / Truck / Trailer / Flight No.
Bill of Lading / Waybill No.

NEW ZEALAND

IN EVERY EMERGENCY call 111

FOR EMERGENCY SERVICES
(FIRE BRIGADE, AMBULANCE, POLICE)

Help them to help you by providing the information in the shaded box on the previous page

IN CASE OF

POISONING call 0800 764 766

NATIONAL POISONS CENTRE

EMERGENCY INVOLVING

RADIOACTIVE MATERIALcall 021 393 632 (24/7)

NATIONAL RADIATION LABORATORY

OTHER CHEMICAL

EMERGENCYcall 0800 243622 (0800 CHEMCALL)

RESPONSIBLE CARE NZ - CHEMICAL EMERGENCY RESPONSE

A guidebook intended for use by first responders during the initial phase of a transportation incident involving dangerous goods/hazardous materials.



Transport of Dangerous Goods



Competent Authorities Panel

This document should not be used to determine compliance with the dangerous goods/hazardous material regulations or to create worker safety documents for specific chemicals.