

# Changes to chemical classifications and labelling under GHS 7

**On 1 January 2021, a two-year transition period from the 3<sup>rd</sup> revised edition of the GHS (GHS 3) to the 7<sup>th</sup> revised edition of the GHS (GHS 7) began.**

This information sheet explains the changes to hazard classes and categories between GHS 3 and GHS 7.

From **1 January 2021**, Australia began the transition to GHS 7 for workplace hazardous chemicals. The transition period is for two years and will end on **31 December 2022**.

Manufacturers and importers of hazardous chemicals must review the changes, outlined below, to determine if the classification requirements for any of their products have changed, and ensure that their classifications, labels and safety data sheets (SDS) are up to date by the end of the transition period on **31 December 2022**.

More information about the transition period can be found in the information sheet on changes to workplace chemical laws in Australia.

The information provided below is general advice only, for the complete criteria and guidance for classifying hazardous chemicals, as well as the hazard communication information to be included on labels and SDS, you should refer to GHS 7. It can be found on the United Nations Economic Commission for Europe website:

[http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev07/07files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev07/07files_e.html)

For more information about GHS 7 classification and labelling requirements, including the requirements for precautionary statements, please refer to the information sheet for manufacturers and importers of hazardous chemicals.

## Aerosols

### What are the changes?

GHS 7 renames the 'Flammable Aerosols' hazard class to 'Aerosols' and adds a new hazard category for non-flammable aerosols (Category 3).

### What do these changes mean?

Non-flammable aerosols will now be included in the aerosols hazard class and will need to meet new classification and labelling requirements. The classification and labelling requirements for Category 1 and 2 aerosols (i.e. flammable aerosols) are not affected by this change.

Note that a non-flammable aerosol should not be classified as a gas under pressure, in the same way that a flammable aerosol should not be classified as a flammable gas, flammable liquid or flammable solid.

## Classification of non-flammable aerosols under GHS 7

The classification criteria for the new non-flammable aerosol category is set out below.

These criteria are based on section 2.3.4.1 of GHS 7, which instead uses decision logics to set out the aerosol classification criteria. To ensure you correctly classify aerosols you should refer to Chapter 2.3 of GHS 7.

Category	Criteria
<b>Category 3</b>	<p>(1) Any aerosol that contains <math>\leq 1\%</math> flammable components (by mass) <u>and</u> that has a heat of combustion of <math>&lt; 20\text{kJ/g}</math>; or</p> <p>(2) Any aerosol that contains <math>&gt; 1\%</math> (by mass) flammable components or which has a heat of combustion of <math>\geq 20\text{ kJ/g}</math> but which - based on the results of the ignition distance test, the enclosed space ignition test or the aerosol foam flammability test - does not meet the criteria for Category 1 or Category 2.</p>

## Hazard communication non-flammable aerosols under GHS 7

The new label elements required for non-flammable aerosols are shown below:

Category	Pictogram	Signal Word	Hazard Statement
<b>Category 3</b>	<i>No pictogram required</i>	Warning	Pressurised container: May burst if heated

## What do you need to do?

If you manufacture or import non-flammable aerosols you must review the classification criteria and hazard communication requirements in GHS 7 and prepare updated classifications, labels and SDS for these products.

## Flammable, pyrophoric and chemically unstable gases

### What are the changes?

The existing flammable gas category (Category 1) is divided into two new categories:

- Flammable gas Category 1A
- Flammable gas Category 1B

**Note:** flammable gas Category 2 has not changed and is not being adopted in Australia.

Three new flammable gas categories are also being introduced as part of Flammable Gas Category 1A. These are:

- Pyrophoric gas
- Chemically unstable gas A

- Chemically unstable gas B

A pyrophoric gas is a flammable gas that is likely to ignite spontaneously in air at a temperature of 54°C or below, while a chemically unstable gas is a flammable gas that can explode in the absence of air or oxygen.

## What do these changes mean?

The new flammable gas categories 1A and 1B replace flammable gas Category 1, meaning that Category 1 flammable gases must be reclassified into either flammable gas Category 1A or flammable gas Category 1B.

Pyrophoric gases and chemically unstable gases were previously classified as Category 1 flammable gases in Australia. The new classification requirements for pyrophoric gases and chemically unstable gases mean that these chemicals now have their own hazard categories and will need to be correctly reclassified.

## Classification of flammable gases under GHS 7

The classification criteria for flammable gas categories are set out below, copied from Table 2.2.1 of the GHS. To ensure you correctly classify flammable gases you should refer to Chapter 2.2 of the GHS.

Category		Criteria
1A	Flammable gas	Gases, which at 20°C and a standard pressure of 101.3 kPa: <ul style="list-style-type: none"> <li>(a) are ignitable when in a mixture of 13% or less by volume in air; or</li> <li>(b) have a flammable range with air of at least 12 percentage points regardless of the lower flammability limit.</li> </ul> unless data show they meet the criteria for Category 1B.
	Pyrophoric gas	Flammable gases that ignite spontaneously in air at a temperature of 54°C or below
	Chemically unstable gas	A
B		Flammable gases which are chemically unstable at: <ul style="list-style-type: none"> <li>(a) a temperature greater than 20°C; or</li> <li>(b) a pressure greater than 101.3 kPa</li> </ul>
1B	Flammable gas	Gases which meet the flammability criteria for Category 1A, but which are not pyrophoric or chemically unstable, and have at least either: <ul style="list-style-type: none"> <li>(a) a lower flammability limit of more than 6% by volume in air; or</li> <li>(b) a fundamental burning velocity of less than 10 cm/s.</li> </ul>

## Hazard communication for flammable gases under GHS 7

The labelling elements for flammable gases are set out below.

Category		Pictogram	Signal Word	Hazard Statement	
1A	Flammable gas		Danger	Extremely flammable gas	
	Pyrophoric gas			Extremely flammable gas. May ignite spontaneously if exposed to air	
	Chemically unstable gas			A	Extremely flammable gas. May react explosively even in the absence of air
				B	Extremely flammable gas. May react explosively even in the absence of air at elevated pressure and/or temperature
1B	Flammable gas		Flammable gas		

## What do you need to do?

Manufacturers and importers of hazardous chemicals must review their classifications for flammable gases and relevant data (if available) to determine if the classification of any of their products have changed.

By default, current Category 1 flammable gases are re-classified as a Category 1A flammable gas, unless data is available to support classification in Category 1B.

When classifying within Category 1A, consideration must be given as whether the criteria for pyrophoric or chemically unstable gas A or B are also met. If these criteria are met, the substance or mixture must be classified as a Category 1A Pyrophoric gas or Category 1A Chemically Unstable gas A or B as appropriate.

If the criteria for these additional categories are not met, or there is no data to support classification as pyrophoric or chemically unstable gas A or B, the substance or mixture must be classified as Category 1A flammable gas.

## Desensitised explosives

### What are the changes?

GHS 7 includes a new hazard class for desensitised explosives.

Desensitised explosives are solid or liquid explosive substances or mixtures which are phlegmatised to suppress their explosive properties. They include:

- solid desensitised explosives: explosive substances or mixtures which are wetted with water or alcohols or are diluted with other substances, to form a homogenous solid mixture to suppress their explosive properties, and

- liquid desensitised explosives: explosive substances or mixtures which are dissolved or suspended in water or other liquid substances, to form a homogenous liquid mixture to suppress their explosive properties.

## What do these changes mean?

Desensitised explosives must now be classified into the desensitised explosives hazard class. This includes desensitised explosives which were previously classified into other hazard classes, including flammable solids, oxidising solids.

As desensitised explosives are not part of the explosives hazard class, they should be labelled in accordance with the GHS when used, handled or stored in a workplace. This differs from chemicals in the explosives hazard class, which should be labelled in accordance with the Australian Code for the Transport of Explosives by Road and Rail (<https://www.safeworkaustralia.gov.au/doc/australian-code-transport-explosives-road-and-rail-3rd-edition>) when used, handled or stored in a workplace.

## Classification of desensitised explosives under GHS 7

Desensitised explosives are classified into one of the four categories below depending on their corrected burning rate (Ac) using the burning rate (external fire) test described in Part V, sub-section 51.4 of the UN Recommendations of the Transport of Dangerous Goods, Manual of Tests and Criteria. To ensure you correctly classify desensitised explosives you should refer to Chapter 2.17 of the GHS.

Category	Criteria
Category 1	Desensitised explosives with a corrected burning rate equal to or greater than 300 kg/min but not more than 1,200 kg/min
Category 2	Desensitised explosives with a corrected burning rate equal to or greater than 140 kg/min but not more than 300 kg/min
Category 3	Desensitised explosives with a corrected burning rate equal to or greater than 60 kg/min but not more than 140 kg/min
Category 4	Desensitised explosives with a corrected burning less than 60 kg/min

## Hazard communication of desensitised explosives under GHS 7

The labelling elements for desensitised explosives are set out below.

Category	Pictogram	Signal Word	Hazard Statement
Category 1		Danger	Fire, blast or projection hazard; increased risk of explosion if desensitising agent is reduced
Category 2			Fire or projection hazard; increased risk of explosion if desensitising agent is reduced
Category 3		Warning	Fire or projection hazard; increased risk of explosion if desensitising agent is reduced

Category	Pictogram	Signal Word	Hazard Statement
Category 4		Warning	Fire hazard; increased risk of explosion if desensitising agent is reduced

## What do you need to do?

If you manufacture or import desensitised explosives, including substances such as nitrocellulose used in lacquers and other specialist coating products, you will need to ensure these products are classified, labelled and have SDS prepared in accordance with GHS 7 by the end of the transition period on 31 December 2022.

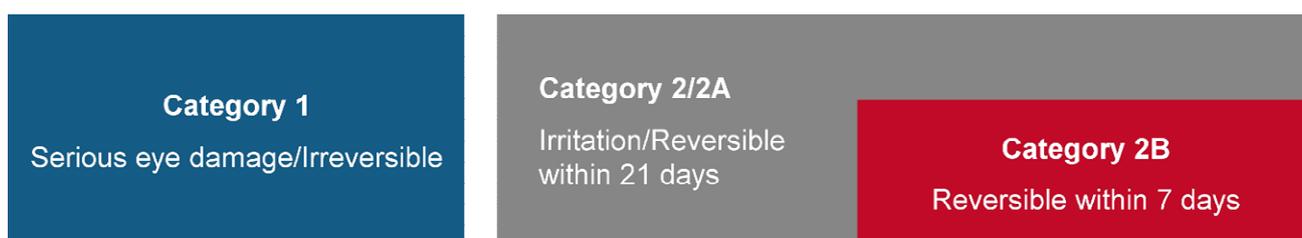
## Eye irritation

### What are the changes?

The definition of 'hazardous chemical' under the model Work Health and Safety (WHS) laws is changing to clarify that it captures all Category 2 eye irritants, including those that fall under Category 2B. This will be done by removing Category 2B eye irritants from the list of exempt hazard classes and categories.

### What do these changes mean?

Category 2B eye irritants were previously exempted from the definition of a 'hazardous chemical'. This made it unclear whether Category 2B eye irritants should be classified for eye irritation in Australia, because the criteria for Category 2/2A (which was not exempt) and Category 2B (which was exempt) overlap.



Removing the exemption for Category 2B eye irritants makes it clear that all Category 2 eye irritants, including those which fall under Category 2B, are hazardous chemicals under the model WHS laws.

This means they must be classified, labelled and have a safety data sheet in accordance with GHS 7.

## Classification of eye irritation under GHS 7

Within the GHS, serious eye damage and eye irritation is separated into two categories based on the severity and reversibility of the effects. Category 1 causes irreversible damage, while Category 2/2A's damage is reversible within 21 days.

The classification criteria for Category 2/2A and Category 2B are shown below.

Hazard Class	Category	Criteria
Serious eye damage/eye irritation	Category 2/2A	Substances that produce in at least 2 of 3 tested animals a positive response in any or all of the following: <ul style="list-style-type: none"> <li>a) corneal opacity <math>\geq 1</math></li> <li>b) iritis <math>\geq 1</math></li> <li>c) conjunctival redness <math>\geq 2</math></li> <li>d) conjunctival oedema (chemosis) <math>\geq 2</math></li> </ul> when calculated as the mean score following grading at 24, 48 and 72 hours after instillation of the test material, and which fully reverses within an observation period of normally 21 days.
	Category 2B	Within Category 2A an eye irritant is considered mildly irritating to eyes (Category 2B) when the effects listed above are fully reversible within 7 days of observation.

Sub-categorisation of eye irritants is permitted but not mandatory in Australia. Further, as Category 2B sits within Category 2/2A, you may instead classify a Category 2B eye irritant into Category 2/2A and use its associated hazard communication elements.

To ensure you correctly classify for serious eye damage/eye irritation you should refer to Chapter 3.3 of the GHS.

## Hazard communication of eye irritation under GHS 7

The labelling elements for Category 2/2A and Category 2B eye irritation are set out below.

Hazard Class	Category	Pictogram	Signal Word	Hazard Statement
Serious eye damage/eye irritation	Category 2/2A		Warning	Causes serious eye irritation
	Category 2B	No pictogram	Warning	Causes eye irritation

## What do you need to do?

Manufacturers and importers of hazardous chemicals should review their classifications for eye irritants to determine if the classification of any of their products have changed. Manufacturers and importers who were not preparing GHS labels and safety data sheets for Category 2B eye irritants must now do so, whether they choose to categorise them as Category 2B or Category 2/2A.

## Further information

See our suite of guidance documents on the transition to GHS 7:  
<https://www.safeworkaustralia.gov.au/ghs-7-transition>