Dangerous goods safety information sheet

Is it hazardous or dangerous?

Hazardous substances

Hazardous substances are those that, following exposure, can have an adverse effect on health. Examples of hazardous substances include poisons, substances that cause burns or skin and eye irritation, and substances that may cause cancer.

Hazardous substances used at mining operations in Western Australia are regulated under the Mines Safety and Inspection Regulations 1995, which are administered by Resources Safety.

Hazardous substances at non-mining workplaces are regulated under the Occupational Safety and Health Act 1984 and attendant regulations, which are administered by the WorkSafe Division of the Department of Commerce.

Many hazardous substances are also classified as dangerous goods.

Dangerous goods

Dangerous goods are substances or articles that, because of their physical, chemical (physicochemical) or acute toxicity properties, present an immediate hazard to people, property or the environment. In Western Australia, these are defined in the *Dangerous Goods Safety Act 2004* and subsidiary legislation, which are administered by Resources Safety.

Generally, classification of dangerous goods is outlined in the Australian Code for the Transport of Dangerous Goods by Road and Rail, Seventh Edition, published in 2007 (ADG7), which is closely aligned with international requirements of the United Nations Recommendations on the Transport of Dangerous Goods.

In Western Australia, there are a few additional requirements, such as all sulfur being a dangerous good for storage and handling, irrespective of form (such as lump sulfur). Also, C1 combustible liquids (such as diesel fuel) are classified as dangerous goods for storage purposes, but not for road and rail transport.

There are nine classes of dangerous goods, based on their hazardous properties, some of which are further divided into divisions. These are labeled accordingly. There are also goods too dangerous to transport and C1 combustible liquids.

The Western Australian dangerous goods safety legislation covers the following Classes and Divisions of dangerous goods:

- Class 1 (explosives);
- Class 2 (gases);
- Class 3 (flammable liquids);
- Class 4 (flammable solids, substances liable to spontaneous combustion, substances that in contact with water emit flammable gases);
- Class 5 (oxidising substances, organic peroxides);
- Division 6.1 (toxic substances);
- Class 8 (corrosive substances);
- Class 9 (miscellaneous dangerous goods and articles);

- Goods too dangerous to be transported (see appendix A of AGD7); and
- C1 combustible liquids (combustible liquid with flashpoint between 60.5 and 150°C).
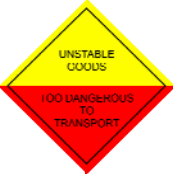
Notable omissions from the list are:

- Division 6.2 (infectious substances); and
- Class 7 (radioactive substances).

Table showing dangerous goods placards and highlighting those Classes and Divisions regulated by Resources Safety

Placards	Description	Examples, where used
	Class 1 – Explosives	Detonators, emulsion explosives, fireworks, flares, ammunition Mining, fireworks displays
	Division 2.1 – Flammable gases *Easily ignited and readily combustible*	LP gas, acetylene, LNG Welding shops, barbecues, gas depots
	Division 2.2 – Non-flammable non-toxic gases	Carbon dioxide, nitrogen, argon Hospitals, engineering workshops
	Division 2.3 – Toxic gases *Poisonous*	Ammonia, chlorine, methyl bromide Swimming pools, sewage plants, refrigeration plants, fumigation
	Class 3 – Flammable liquids *Easily ignited and readily combustible*	Petrol, acetone, ethanol Service stations, fuel terminals, paint stores

Placards	Description	Examples, where used
FLAMMABLE SOLID 4	Division 4.1 – Flammable solids *Easily ignited and readily combustible*	Sulfur, firelighters, matches Chemical plants, wood barbecues
SPONTANEOUSLY COMBUSTIBLE 4	Division 4.2 – Spontaneously combustible substances *Can burst into flames without being lit*	Xanthates, sodium hydrosulphide Mining, research laboratories
DANGEROUS WHEN WET 4 DANGEROUS WHEN WET 4	Division 4.3 – Water reactive substances *Produces flammable or toxic gases if wet or reacts violently if mixed with water*	Aluminium phosphide, calcium carbide Agriculture, industry
OXIDIZING AGENT 5.1	Division 5.1 – Oxidizing agents *Although not necessarily combustible themselves, can cause or contribute to combustion of other material*	Calcium hypochlorite, ammonium nitrate Swimming pools, mining, industry
ORGANIC PEROXIDE 5.2 ORGANIC PEROXIDE 5.2	Division 5.2 – Organic peroxides *Thermally unstable and liable to react violently with other material*	Methyl ethyl ketone peroxide (MEKP), benzoyl peroxide Polymer industry, fibreglass manufacture
TOXIC 6	Division 6.1 – Toxic substances *Poisonous*	Sodium cyanide, dicholoromethane, toluene diisocyanate, some pesticides Mining, agriculture
INFECTIOUS SUBSTANCE 6	Division 6.2 – Infectious substances	Pathology specimens, AIDS virus, clinical waste Hospitals, research laboratories

Placards	Description	Examples, where used
	Class 7 – Radioactive material	Uranium, [137]Cesium, [60]Cobalt, [241]Americium Hospitals, research laboratories, industry, mining Further information available from Department of Health
	Class 8 – Corrosive substances *Causes tissue burns or severely corrodes certain metals*	Hydrochloric acid, sodium hydroxide, sulfuric acid Chemical industry, mining, swimming pools
	Class 9 – Miscellaneous dangerous goods *Presents a danger not covered by other Classes*	Dry ice, asbestos, expandable polymeric beads
 Not applicable for transport as generated and used on site	Goods too dangerous to transport *Too dangerous to transport because of instability and potential to react violently*	Styrene monomer (without inhibitor), nitroglycerin, nickel picrate Chemical industry, research laboratories
Not required to be labelled for transport COMBUSTIBLE LIQUID C1	C1 combustible liquids *Liquids that burn but more difficult to ignite than flammable liquids*	Diesel fuel Service stations, fuel terminals, mining