



SAFETY DATA SHEET

QUICK REFERENCE GUIDE

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This poster covers the basic outline of a 16 section Safety Data Sheet. Before using any product ensure you read the product's SDS to ensure you understand the hazards, the personal protection and the first aid measures relevant to the product. An SDS is an important tool for eliminating or minimising the risks associated with the use of hazardous chemicals in workplaces.

SECTION 1: Identification

This section provides information about the identification of the hazardous chemical, recommended uses and the contact details of the Australian manufacturer or importer, including an emergency contact.

Product identifier - The SDS must include the product identifier of the hazardous chemical, exactly as found on the label.

Other means of identification - The hazardous chemical must be identified by its product identifier. The SDS must include; any company product codes, numbers or other unique identifiers....

Recommended use of the chemical and restrictions on use - This section must include a brief description of what the chemical does, e.g. *A flame retardant or anti-oxidant, and restrictions on use should be stated as far as known.*

Supplier's name, address, contact details and emergency phone number.

SECTION 8: Exposure Controls & Personal Protection

This section provides guidance on how to eliminate or minimise risks associated with exposure to hazardous chemicals. "Exposure control" means the full range of specific protective measures (including engineering control measures) to be taken during the use of a hazardous chemical in order to minimise personal exposure to the chemical.

Control parameters - exposure standards, biological monitoring - An indication of the measures to be taken to minimise the risk of exposure to hazardous chemicals, and keep exposure below the relevant exposure standard.

Exposure standards - It represents the airborne concentrations of individual substances that should not impair the health of, nor cause discomfort to all workers.

Exposure control - The measures taken to minimise the exposure to hazardous chemicals and keep the exposure below the relevant standard should be indicated.

Appropriate Engineering controls - A description for the appropriate engineering control measures relating to the intended use of the hazardous chemical, e.g. "Use only in a well-ventilated area" or "Use explosion-proof ventilation equipment".

Personal Protective Equipment (PPE) - PPE should be used only when other control measures (e.g. elimination, substitution, isolation, engineering controls) have been found to be impracticable or in conjunction with one or more control measures. This section of the SDS should include information on PPE provided that it clearly recommends other controls to minimise exposure to the hazardous chemical.

- Eye and face protection - e.g. 'Safety glasses with side shields'.
- Skin protection - the protective equipment to be worn e.g. types of gloves, boots and bodysuits required.
- Respiratory protection - the appropriate types of respiratory protection based on the chemical hazard and potential for exposure, e.g. air-purifying respirators requiring specific respiration filters, air-line respirator or breathing apparatus.

TWA - Time-Weighted Average
STEL - Short term Exposure Limits

SECTION 9: Physical & Chemical Properties

This section of the SDS describes the physical and chemical properties of a hazardous chemical. The data should apply to the hazardous chemical as supplied. If the hazardous chemical is a mixture, the physicochemical data should describe the mixture. If that information is not available, the properties of the most relevant ingredients should be provided.

Appearance: Physical state, colour, e.g. Liquid, gas or solid.

Odour: Description of the smell of the substance.
pH: Indicates the acidity or alkalinity of a solution on a logarithmic scale on which 7 is neutral, lower values are more acid and higher values more alkaline.

Melting point/freezing point: Indicates the temperature at which a given solid will melt/freeze.
Initial boiling point and boiling range: Indicates the temperature at which the first drop of distillate appears after commencement of distillation.

Flash point: The temperature at which a compound gives off sufficient vapour to be ignited with a spark or flame.
Evaporation rate: An evaporation rate is the rate at which a material will vaporize compared to the rate of vaporization of a specific known material.

Flammability (solid, gas): It is the ability of a material to ignite and burn readily.
Upper/Lower explosive (flammability) limits: The highest or lowest concentration (percentage of the substance in air) that will produce a flash of fire when an ignition source is present.

Vapour pressure: The pressure of a vapour in contact with its liquid or solid form.
Vapour density: The density of a particular gas or vapour relative to that of hydrogen at the same pressure and temperature.

Relative density: The ratio of the density of a substance to the density of a standard, usually water for a liquid or solid, and air for a gas.

Solubility (ies): Solubility is a chemical property referring to the ability for a given substance, the solute, to dissolve in a solvent.

Partition coefficient: n-octanol/water: Is the ratio of concentrations of a compound in a mixture of two immiscible phases at equilibrium.

Auto-ignition temperature: Is the lowest temperature at which a substance will spontaneously ignite in a normal atmosphere without an external source of ignition, such as a flame or spark.

Viscosity: Viscosity is a measure of a fluid's resistance to flow.

Particle size: Is a term used to compare solid, liquid or gas dimensions.

Volatil organic compounds content (VOC): Organic substances that evaporate at room temperature.
% volatile: Percent volatile by volume is the percentage of a liquid or solid that will evaporate at an ambient temperature of 20°C (unless some other temperature is specified).

Additional parameters
Shape and aspect: ratio, crystallinity, dustiness, the surface area, degree of aggregation or Agglomeration, ionisation (redox potential) and biodegradability or biopersistence.

SECTION 10: Stability & Reactivity

This section of the SDS provides information regarding the stability and reactivity of the hazardous chemical. Information on the possibility of hazardous reactions is necessary to ensure the safe handling and storage of chemicals and to ensure effective firefighting and spill control measures.

Reactivity - The reactivity hazards of the chemical and the conditions in which hazardous reactions may occur are described, some of these include:
- Whether the hazardous chemical will react
- Potential for dust explosion.

Test data for the hazardous chemical should be provided. Although, some of the data may be generalised information gathered from a chemical family.

Chemical Stability - Information about the hazardous chemical's stability under normal ambient storage and handling conditions. The likely changes in the surrounding environment such as temperature and pressure conditions must be considered. Stabilisers used should be described, including the safety implications if there are any physical appearance changes in the product, which may compromise the stabiliser used.

Conditions to avoid - Information about any conditions that may cause a hazardous reaction, such as: Temperature, pressure, shock, static discharge, vibrations and other physical stresses.

Incompatible materials - A list of anything that could produce a hazardous situation must be listed, such as classes of chemicals and specific substances.

Hazardous decomposition products - A list of any hazardous products that may be produced as a result of the decomposition of the chemical during use, storage or heating. Any anticipated outcomes of a reaction with another material should be described and advice provided about what should be done if an unstable situation occurs.

SECTION 11: Toxicological Information

This section of the SDS provides toxicological information relevant to the health hazard category assigned to the chemical using the GHS. It should be based on expert toxicological advice and on the toxicological hazards information provided in the GHS classification criteria. A concise but complete and comprehensible description of the various toxicological health effects (for both acute and chronic effects) consistent with hazard classification, and the available data used to identify those effects, should be provided.

Information on toxicological effects: Acute Toxicity (Table 1)

Product/ingredient name	Result	Species	Dose	Exposure
Chemical ingredients used, eg: n-butyl acetate.	LD50 is the abbreviation of 'Lethal Dose, 50%' and LC50 is 'Lethal Concentration 50%'. Concentration 50%.	Animal type, eg. Rat and rabbit.	The amount of the ingredient used, eg. >21.1 mg/l/2000 ppm.	The amount of time exposed.

Conclusion/Summary: A summary and conclusion from this table. There are no data available on the mixture itself' is written if no conclusion has been made.

Irritation/Corrosion: Any information regarding irritation/corrosion is recorded here. 'Not available' is written when no information is available.

Conclusion/Summary - Skin, Eyes & Respiratory: Results of any irritation/corrosion effects on certain areas.

Sensitisation: Sensitization is a non-associative learning process in which repeated administrations of a stimulus results in the progressive amplification of a response.

Conclusion/Summary - Skin & Respiratory: Results/ Summary from Sensitisation.

Mutagenicity: Refers to a chemical or physical agent's capacity to cause mutations (genetic alterations).

Carcinogenicity: A carcinogen is any substance, radionuclide, or radiation that is an agent directly involved in causing cancer.

Reproductive toxicity: Reproductive toxicity is a hazard associated with some chemical substances, they'll interfere in some way with normal reproduction.

Teratogenicity: These may include growth retardation, delayed mental development or other congenital disorders without any structural malformations.

Conclusion/Summary: Results of effects and critical hazards.

Information on Specific Target Organ Toxicity (single & repeated exposure) tables

Name	Category	Route of exposure	Target organs
Ingredient used, e.g. Xylene, n-butyl acetate, etc.	Category number indicated	Breathing (inhalation), contact with skin (dermal) and eating or drinking (ingestion)	Effects on target organs, e.g. Narcotic effects, Respiratory tract irritation.

SECTION 12: Ecological Information

This section of the SDS provides information about the environmental and ecological hazards of hazardous chemicals. This information can assist in handling spills and evaluating waste treatment practices and should clearly indicate species, media, units, test duration and test conditions. Where information is not available, this should be stated.

Ecological information should be given for each ingredient, where available and appropriate.

Ecotoxicity: Refers to the potential for biological, chemical or physical stressors to affect ecosystems. Information on data gathered from tests performed on aquatic and/or terrestrial organisms should be provided.

Persistence and degradability: It is the potential for the hazardous chemicals to degrade in the environment, either through biodegradation or other processes. Test results relevant to assess the persistence and degradability should be given.

Bioaccumulative potential - It is the potential for the hazardous chemical to accumulate in biota and possibly pass through the food chain. Relevant test results should be given.

Mobility in Soil - It is the potential for a hazardous chemical to be released into the environment to move under natural forces to the groundwater or to a distance from the site of release. Information on the potential for the mobility in soil should be provided if relevant.

Other adverse effects - Information on any other adverse effects on the environment should be provided where data is available, e.g. environmental fate (exposure), ozone depletion potential and global warming potential.

SECTION 13: Disposal Considerations

This section of the SDS provides information on the most effective way to dispose of a chemical safely.

Disposal methods - Information describing the correct disposal, recycling and reclamation of the hazardous chemical and its container. This section should include the clear management directions for the disposal of the containers and methods to be followed. The physical/ chemical properties that may affect the disposal options should be indicated. The person conducting the disposal should refer to Section 8 - Exposure Controls and Personal Protection.

Environmental regulations - The local council and/ or state environment authority may be able to provide advice on the disposal of chemicals.

SECTION 14: Transport Information

This section provides basic classification information for the transportation or shipment of a hazardous chemical by road, rail, sea or air as required by relevant transport legislation. Where information is not available or relevant this should be stated.

ADG Code - Australian Code for the transport of Dangerous Goods by Road and Rail. Provided by the Australian Transport Council. Accessible at ntc.gov.au

UN Number - United Nations (UN) Number means a number assigned to dangerous goods by the United Nations Subcommittee of Experts on the Transport of Dangerous Goods. This should be listed as in the ADG Code should be provided.

Proper shipping name or technical name - This means the proper name under the ADG /IMDG code, must be provided.

Transport hazards class(es) - The transport class/division assigned to the hazardous chemical should be provided.



Packing group - It is a number that is assigned to certain hazardous chemicals in accordance with their degree of hazard:
- Packing group I is the highest hazard
- Packing group III is the lowest

Environmental hazards - There should be an indication as to whether the hazardous chemical is a known marine pollutant according to the International Maritime Dangerous Goods (IMDG) Code. Also it is recommended that the SDS indicates whether the substance or mixture is classified as having an acute aquatic toxicity hazard as required under the ADG Code.

Special precautions for user - Information on the precautions and requirements that users should be aware of must be instructed, and also anything that complies with transporting the hazardous chemical.

Special precautions during transport - Whether the chemical is shock sensitive, if there is any specific storage requirements during transit/ warehousing or overseas regulatory transport requirements.

Hazchem Code or emergency information - Hazchem code for most dangerous goods it provides information on the fire-fighting medium to be used. This must be provided.

SECTION 15: Regulatory Information

This section of the SDS provides advice on other regulatory information on the hazardous chemical that is not provided elsewhere in the SDS, for example whether the hazardous chemical is subject to the following international agreements:

The Standard Uniform Schedule of Medicines and Poisons (SUSMP) - List the relevant poisons schedule number.

Model Work Health and Safety Regulations - Scheduled Substances - A table listing the ingredient name that has specific requirements i.e. crystalline silica cannot be used in abrasive blasting.

Australia inventory (AICS): Whether the mixture is allowed to be used in Australia based off chemical inventory.

New Zealand (NZIoC): Whether the mixture is allowed to be used in New Zealand based off chemical inventory.

SECTION 16: Other Information

This section of the SDS provides any other information relevant to the preparation of the SDS, including:

Date of preparation or review - When revisions are made to an SDS, clearly indicate where the changes have been made to the previous version of the SDS. Suppliers should keep a record of an explanation for the changes if they are required to provide a reference upon request.

Key abbreviations or acronyms used - A key/legend for all the abbreviations and acronyms used in the SDS. Key literature references and sources for data used to compile the SDS should also be included.

SECTION 3: Composition/ information on ingredients

The ingredient(s) of the hazardous chemical must be identified. This includes the identification of impurities and stabilising additives that contribute to the classification of the hazardous chemical.

Disclosure of Ingredient Names

The chemical identity of an ingredient must be disclosed on an SDS in accordance with Schedule 8 of the Work Health Safety (WHS) Regulations. In some cases, a generic name may be used. Ingredients that are not classified as hazardous but have an exposure standard and which are present above 1% are listed.

Chemical Abstracts Service (CAS)

CAS Number - A unique numerical identifier assigned by Chemical Abstracts Service (CAS) to every chemical substance described in the open scientific literature including organic and inorganic compounds, minerals.... The CAS number provides a single unique identifier. The same material can have many different names. For example, Ethanol, Ethyl Alcohol in CAS 64-17-5.

Concentration of ingredients - The proportions of the ingredients of a hazardous chemical must also be enclosed. For multiple ingredients proportions must be listed in descending order by mass or volume. Ingredients can be stated as a range e.g. 10-30%.

SECTION 4: First Aid Measures

This section of the SDS provides information about the initial care that does not involve the use of sophisticated equipment or access to a wide selection of medications to be given to a person affected by a hazardous chemical. It should state whether medical attention is required for a chemical, including the urgency of treatment required.

Description of necessary first aid measures - To provide first aid instructions for each relevant route of exposure and describe expected immediate and delayed symptoms. Sub-headings to indicate the procedure for each route should be used - Inhalation, Skin Contact, Eye Contact and Ingestion.

Symptoms caused by exposure - The most important symptoms and effects should be identified, to allow the correct first aid measures to be administered.

Medical attention and special treatment - Information on clinical testing and medical monitoring for delayed effects, specific details on antidotes and contraindications (specific treatment or procedures that may be harmful to a person) must be included.

SECTION 5: Fire Fighting Measures

This section of the SDS provides information on how to fight a fire caused by a hazardous chemical, or a fire arising in its vicinity.

Suitable extinguishing media - This describes the types of fire extinguishers/agents needed, and whether any extinguishers are unsuitable for a situation involving a particular hazardous chemical, e.g. 'Water spray (fog) or foam' or 'Do not use water jet'.

Specific hazards arising from the chemical - This describes the physical hazards that may arise from a hazardous chemical being burnt, e.g. 'May produce toxic fumes' and 'May create flammable gas when wetted'.

Special protective equipment & precautions for fire fighters - An indication of any fire-fighting precautions and the appropriate protective clothing to be worn, e.g. 'Keep container cool with water spray' or 'Wear boot, gloves and eye protection'.

Hazchem Code - For most dangerous goods it provides information on the fire-fighting medium to be used.

SECTION 6: Accidental Release Measures

This section of the SDS provides information on the appropriate ways to respond to the release of chemicals, in the form of spills, leaks or other accidents. This is so that the adverse effects on people, property and the environment at or near the workplace can be prevented or minimised. This information should distinguish between responses for large and small spills where the spill volume has a significant impact on the hazard or response.

Personal precautions, protective equipment and emergency procedures - Advice for the correct emergency response procedures are provided, for both emergency and non-emergency personnel.

- The use of suitable equipment to prevent any physical contamination

- The removal of ignition sources and providing sufficient ventilation

- Emergency evacuation procedures

Environmental precautions - Contamination of the environment can lead to indirect human chemical exposures within and outside of the workplace. Sufficient advice and precautions for avoiding accidental release of hazardous chemicals into the environment should be given, e.g. 'Keep away from drains, sewers and waterways'.

Methods and materials for containment and cleaning up - The appropriate advice on containment, cleaning up spillage and disposal should be provided.

- Some containment techniques include: Covering drains and Capping Procedures, to prevent spillage and further spread of a spill.

- Clean up procedures include: Decontamination techniques, absorbent materials and neutralisation techniques.

SECTION 7: Handling & Storage

This section of the SDS provides guidance on safe handling and storage practices to minimise the risks of release and exposure to the hazardous chemical. These precautions should be appropriate to the intended use of the chemical and its unique properties.

Precautions for safe handling - An indication of the protective measures to be followed such as the safe handling of hazardous chemicals, the prevention of inappropriate handling and how to minimise the release of hazardous chemicals outside of the workplace. General warnings of what practices to avoid and restrict should also be included - Eating, drinking and smoking in work areas is prohibited or 'Wash hands after use'.

Conditions for safe storage, including any incompatibilities - This includes the appropriate advice consistent with the physical and chemical properties of a hazardous chemical (referred to in section 9), such as how to avoid, control, maintain and other advice on various dangerous situations.

SAFETY FIRST