

Safety Data Sheet

Cyclohexane

Section 1: Identification of the material and supplier

Product name:	Cyclohexane
Other names:	Hexahydrobenzene, Hexamethylene
Product Codes/Trade Names:	Cyclohexane
Recommended use:	Organic solvent
Supplier:	Wilmar BioEthanol (Australia) Pty Ltd
Address:	265 Whitehall St, Yarraville, Victoria, 3013
Telephone:	1800 819 618
Email address:	bioethanol@wilmar.com.au
Web site:	www.wilmar-international.com
Facsimile:	1800 647 260
Emergency phone number:	1800 774 557 Transpacific Emergency Response (available in Australia only)

This Safety Data Sheet (SDS) is issued by the Supplier in accordance with National Standards and Guidelines from Safe Work Australia (SWA – formerly ASCC/NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its SDS by any other person or organization. The Supplier will issue a new SDS when there is a change in product specifications and/or Standards, Codes, Guidelines, or Regulations.

Section 2: Hazard identification

This material is hazardous according to criteria of Safe Work Australia.



Signal Word

Danger

Hazard Classification

Flammable Liquids – Category 2

Skin Corrosion/Irritation – Category 2

Specific Target Organ Toxicity (Single Exposure) – Category 3

Aspiration Hazard – Category 1

Acute Hazard to the Aquatic Environment - Category 1

Hazard Statement(s)

H225 Highly flammable liquid and vapour

H304 May be fatal if swallowed and enters airways

H315 Causes skin irritation

H336 May cause drowsiness or dizziness

H400 Very toxic to aquatic life

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Prevention Precautionary Statement(s)

- P102 Keep out of reach of children.
P103 Read label before use.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical, ventilating, lighting and all other equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing mist, vapours or spray.
P264 Wash hands, face and all exposed skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective clothing, gloves, eye/face protection and suitable respirator.

Response Precautionary Statement(s)

- P101 If medical advice is needed, have product container or label at hand.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 Do NOT induce vomiting.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P362 Take off contaminated clothing and wash before reuse.
P370+P378 In case of fire: Use alcohol resistant foam, standard foam or dry agent for extinction.
P391 Collect spillage.

Storage Precautionary Statement(s)

- P405 Store locked up
P403+233 Store in a well ventilated place. Keep container tightly closed

Disposal Precautionary Statement(s)

- P501 Dispose of contents/container in accordance with local, regional, national and international regulations

Poisons Schedule (Aust): Not applicable

DANGEROUS GOODS CLASSIFICATION

Classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

Class: 3 Flammable Liquid

Section 3: Composition / Information on ingredients

CHEMICAL ENTITY	CAS NO.	PROPORTION
Cyclohexane	110-82-7	100%
		<hr/> 100%

Section 4: First aid measures

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126, New Zealand 0800 764 766).

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Inhalation: Remove victim from exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have a qualified person give oxygen through a facemask. If breathing has stopped apply artificial respiration at once. In the event of cardiac arrest, apply external cardiac massage. Seek immediate medical advice.

Skin contact: For gross contamination, immediately drench with water and remove clothing. Continue to flush skin and hair with plenty of water (and soap if material is insoluble). For skin burns, cover with a clean, dry dressing until medical help is available. If blistering occurs, do NOT break blisters. If swelling, redness, blistering, or irritation occurs seek medical assistance.

Eye contact: If in eyes wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion: Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water to drink. Never give anything by the mouth to an unconscious patient. If vomiting occurs give further water. Get to a doctor or hospital quickly.

PPE for First Aiders: Wear overalls, safety glasses and impervious gloves. Use with adequate ventilation. If inhalation risk exists wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Notes to physician: Treat symptomatically.

Section 5: Fire fighting measures

Hazchem Code: 3YE

Suitable extinguishing media: If material is involved in a fire use alcohol resistant foam, standard foam or dry agent (carbon dioxide, dry chemical powder).

Specific hazards: Flammable liquid. May form flammable vapour mixtures with air. Flameproof equipment necessary in area where this chemical is being used. Nearby equipment must be earthed. Electrical requirements for work area should be assessed according to AS3000. Vapour may travel a considerable distance to source of ignition and flash back. Avoid all ignition sources. All potential sources of ignition (open flames, pilot lights, furnaces, spark producing switches and electrical equipment etc) must be eliminated both in and near the work area. Do NOT smoke.

Fire fighting further advice: If safe to do so, remove containers from path of fire. Keep containers cool with water spray. On burning may emit toxic fumes, including those of carbon monoxide and carbon dioxide. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

Section 6: Accidental release measures

Emergency Procedure: Shut off all possible sources of ignition. Clear area of all unprotected personnel. Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation.

Containment Procedure: If safe to do so, isolate the leak. Small spills are allowed to evaporate provided there is adequate ventilation. Contain - prevent run off into drains and waterways. If contamination of sewers or waterways has occurred advise local emergency services.

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Clean Up Procedure: Cover with damp absorbent (inert material, sand or soil). Sweep or vacuum up, but avoid generating dust. Collect and seal in properly labelled containers or drums for disposal. Use a spark-free shovel.

Dangerous Goods – Initial Emergency Response Guide No: 14

Section 7: Handling and storage

Handling: Avoid skin and eye contact and inhalation of vapour, mist or aerosols.

Storage: Store in a cool, dry, well-ventilated place and out of direct sunlight. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Store away from sources of heat or ignition. Keep containers closed when not in use - check regularly for leaks.

This material is classified as a Dangerous Good Class 3 Flammable Liquid as per the criteria of the Australian Dangerous Goods Code and must be stored in accordance with the relevant regulations.

Section 8: Exposure controls / Personal protection

National occupational exposure limits:

	TWA		STEL		CARCINOGEN CATEGORY	NOTICES
	ppm	mg/m3	ppm	mg/m3		
Cyclohexane	100	350	300	1050	-	-

As published by Safe Work Australia.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15-minute period, which should not be exceeded at any time during a normal eight-hour workday.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept too as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

Biological Limit Values: As per the "National Model Regulations for the Control of Workplace Hazardous Substances (Safe Work Australia)" the ingredients in this material do not have a Biological Limit Allocated.

Engineering measures: Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use only in well ventilated areas. Use with local exhaust ventilation or while wearing appropriate respirator. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use.

Personal protection equipment: OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, RESPIRATOR.

Wear overalls, safety glasses and impervious gloves. Use with adequate ventilation. If inhalation risk exists wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from butyl rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

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Hygiene measures: Keep away from food, drink and animal feeding stuffs. When using do not eat, drink or smoke. Wash hands prior to eating, drinking or smoking. Avoid skin and eye contact and inhalation of vapour, mist or aerosols. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9: Physical and chemical properties

Appearance:	Clear colourless liquid with a sweet pungent odour
Odour:	Detectable at 0.6 ppm
pH, at stated concentration:	Not available
Vapour Pressure:	12.7 kPa @ 20°C
Vapour Density (air=1):	2.9
Boiling Point/range (°C):	79 - 81
Freezing/Melting Point (°C):	5.0 – 6.5
Solubility:	Insoluble
Specific Gravity:	0.779
FLAMMABLE MATERIALS	
<input type="checkbox"/> Flash Point (°C):	-18
<input type="checkbox"/> Flash Point Method:	Not available
<input type="checkbox"/> Flammable (Explosive) Limit - Upper:	8.4%
<input type="checkbox"/> Flammable (Explosive) Limit - Lower:	1.3%
<input type="checkbox"/> Autoignition Temperature (°C):	245
ADDITIONAL PROPERTIES	
<input type="checkbox"/> Evaporation Rate:	6.1 (n-Butyl Acetate = 1)
<input type="checkbox"/> Molecular Weight:	84.16
<input type="checkbox"/> Volatile Organic Compounds Content (VOC): (as specified by the Green Building Council of Australia)	100%
<input type="checkbox"/> % Volatiles:	100%

Section 10: Stability and reactivity

Reactivity: No reactivity hazards are known for the material.

Chemical stability: This material is thermally stable when stored and used as directed.

Hazardous reactions: Reacts with oxidising agents.

Conditions to avoid: Elevated temperatures and sources of ignition.

Incompatible materials: Oxidising agents, such as perchlorates, peroxides, permanganates, chlorates, nitrates, chlorine, bromine and fluorine. Nitrogen dioxide.

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Hazardous decomposition products: Carbon monoxide and carbon dioxide.

Section 11: Toxicological information

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Acute Effects

Inhalation: Material may be an irritant to mucous membranes and respiratory tract. Inhalation of high concentrations can produce central nervous system depression, which can lead to loss of co-ordination, impaired judgement and if exposure is prolonged, unconsciousness.

Skin contact: Contact with skin will result in irritation.

Ingestion: May cause lung damage if swallowed. Small amounts of liquid aspirated into the respiratory system during ingestion or vomiting may cause bronchopneumonia or pulmonary oedema.

Eye contact: May be an eye irritant.

Acute toxicity

Inhalation: This material has been classified as non-hazardous.
Acute toxicity estimate (based on ingredients): >20 mg/L

Skin contact: This material has been classified as non-hazardous.
Acute toxicity estimate (based on ingredients): >2,000 mg/Kg

Ingestion: This material has been classified as non-hazardous.
Acute toxicity estimate (based on ingredients): >2,000 mg/Kg

Corrosion/Irritancy: Eye: this material has been classified as not corrosive or irritating to eyes.
Skin: this material has been classified as a Category 2 Hazard (irritant to skin).

Sensitisation: Inhalation: this material has been classified as not a respiratory sensitiser.
Skin: this material has been classified as not a skin sensitiser.

Aspiration hazard: This material has been classified as a Category 1 Hazard.

Specific target organ toxicity (single exposure): This material has been classified as a Category 3 Hazard. Exposure via inhalation may result in depression of the central nervous system.

Chronic Toxicity

Mutagenicity: This material has been classified as non-hazardous.

Carcinogenicity: This material has been classified as non-hazardous.

Reproductive toxicity (including via lactation): This material has been classified as non-hazardous.

Specific target organ toxicity (repeat exposure): This material has been classified as non-hazardous.

Section 12: Ecological information

Avoid contaminating waterways.

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Acute aquatic hazard: This material has been classified as a Category Acute 1 Hazard.
Acute toxicity estimate (based on ingredients): <1 mg/L

Long-term aquatic hazard: No information is available to complete an assessment.

Ecotoxicity: No information available.

Persistence and degradability: The product is readily biodegradable.

Bioaccumulative potential: No information available.

Mobility: No information available.

Section 13: Disposal considerations

Persons conducting disposal, recycling or reclamation activities should ensure that appropriate personal protection equipment is used, see "Section 8. Exposure Controls and Personal Protection" of this SDS.

If possible material and its container should be recycled. If material or container cannot be recycled, dispose in accordance with local, regional, national and international Regulations.

Section 14: Transport information

ROAD AND RAIL TRANSPORT

Classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

UN No: 1145
Dangerous Goods Class: 3 Flammable Liquid
Packing Group: II
Hazchem Code: 3YE
Emergency Response Guide No: 14

Proper Shipping Name: CYCLOHEXANE

Segregation Dangerous Goods: Not to be loaded with explosives (Class 1), flammable gases (Class 2.1), if both are in bulk, toxic gases (Class 2.3), spontaneously combustible substances (Class 4.2), oxidising agents (Class 5.1), organic peroxides (Class 5.2) or radioactive substances (Class 7), however exemptions may apply.

MARINE TRANSPORT

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

This material is classified as a Marine Pollutant (P) according to the International Maritime Dangerous Goods Code.

UN No: 1145
Dangerous Goods Class: 3 Flammable Liquid
Packing Group: II

Proper Shipping Name: CYCLOHEXANE

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AIR TRANSPORT

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN No: 1145
Dangerous Goods Class: 3 Flammable Liquid
Packing Group: II

Proper Shipping Name: CYCLOHEXANE

Section 15: Regulatory information

HSNO Approval Number and/or Group Standard: Solvents (Flammable) Group Standard 2006; HSR002650

This material is not subject to the following international agreements:

Montreal Protocol (Ozone depleting substances)
The Stockholm Convention (Persistent Organic Pollutants)
The Rotterdam Convention (Prior Informed Consent)

This material is subject to the following international agreements:

Basel Convention (Hazardous Waste)

- Organic solvents excluding halogenated solvents

International Convention for the Prevention of Pollution from Ships (MARPOL)

- Annex II - Noxious Liquid Substances carried in Bulk
- Annex III - Harmful Substances carried in Packaged Form

This material/constituent(s) is covered by the following requirements:

- All the constituents of this material are listed on the *Australian Inventory of Chemical Substances (AICS)*.
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Section 16: Other information

For further information on this product, please contact:

Wilmar BioEthanol (Australia) Pty Ltd (ABN 85 009 660 191)
265 Whitehall St, Yarraville, Victoria, 3013

Phone: 1800 819 618 (applicable in Australia only)

Fax: 1800 647 260 (applicable in Australia only)

Additional Information

Australian Standards References:

AS 1020	The Control of Undesirable Static Electricity.
AS 1076	Code of Practice for selection, installation and maintenance of electrical apparatus and associated equipment for use in explosive atmospheres (other than mining applications) – Parts 1 to 13
AS/NZS 1336	Recommended Practices for Occupational Eye Protection
AS/NZS 1715	Selection, Use and Maintenance of Respiratory Protective Devices

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AS/NZS 1716	Respiratory Protective Devices
AS 1940	The Storage and Handling of Flammable and Combustible Liquids
AS 2161	Industrial Safety Gloves and Mittens (excluding electrical and medical gloves)
AS 2380	Electrical equipment for explosive atmospheres – Explosion Protection Techniques (Parts 1 to 9)
AS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules).

Other References:

Safe Work Australia. 10 August 2011.	Preparation of Safety Data Sheets for Hazardous Material, Code of Practice.
Safe Work Australia. 10 August 2011.	Labelling of Workplace Hazardous Chemicals, Code of Practice.
WES	Workplace Exposure Standards for Airborne Contaminants, December 2011, Safe Work Australia.
ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th edition, National Transport Commission.
European Chemicals Agency	http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances

Authorisation

Reason for Issue: Revised. Format change.
Authorised by: Chemical Data Services Pty Ltd

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END OF SDS