

SDS no. 6J4SH8U1 • Version 1.0 • Date of issue: 2024-05-14

SECTION 1: Identification

GHS Product identifier

Product name	D-LIMONENE	
Other means of identification		
D Limonene (Citrus Oli) D Limonene LR	L1064 LL064	
Histopure	AHS	

Recommended use of the chemical and restrictions on use

Flavouring, fragrance and perfume materials, cosmetic products, odour agents, food/foodstuff additives, food manufacturing, solvent, wetting agent, resin manufacture, medicines, e.g., bitter alkaloids, intermediates, botanical insecticide, degreaser, dispersing agent, paint stripper, tar and asphalt remover, cleaning/washing agents and disinfectants, printing press cleaner, carpet stain cleaner, hand cleaner, floor cleaner, metal cleaner, electronics cleaning, graffiti remover, heat transfer medium, aerosol ingredient and replacement for toxic chlorinated solvents. Laboratory solvent.

Supplier's details

Name	ChemSupply Australia Pty Ltd 38-50 Bedford Street		
Address			
	5013 Gillman South Australia		
	Australia		
Telephone	08 8440 2000		
email	www.chemsupply.com.au		
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Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Flammable liquids, Cat. 3

- Aspiration hazard, Cat. 1
- Skin corrosion/irritation, Cat. 2
- Skin sensitizer, Cat. 1
- Hazardous to the aquatic environment, short-term (acute), Cat. 1
- Hazardous to the aquatic environment, long-term (chronic), Cat. 1

GHS label elements, including precautionary statements

Pictograms



Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapor
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting/] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physcian
P302+P352	IF ON SKIN: Wash with plenty of water/soap
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P331	Do NOT induce vomiting.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use agents recommended in Section 5 of SDS for extinction
P391	Collect spillage.

Store in a well-ventilated place. Keep cool.

Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

P403+P235

P501

Molecular weight: 136.26

Components

Component	CAS no.	Concentration
D-Limonene (EC no.: 227-813-5)	5989-27-5	90 - 100 % (weight)
CLASSIFICATIONS: Aspiration hazard, Cat. 1; Flammable liquids, Cat. 3; Hazardous to the aquatic environment, s	hort-term (acute), Cat. 1	; Hazardous to the aquatic
environment, long-term (chronic), Cat. 1; Skin sensitizer, Cat. 1; Skin corrosion/irritation, Cat. 2. HAZARDS: H220	5 - Flammable liquid and	vapor; H304 - May be fatal
if swallowed and enters airways; H315 - Causes skin irritation; H317 - May cause an allergic skin reaction; H40) - Very toxic to aquatic I	ife; H410 - Very toxic to
aguatic life with long lasting effects.		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain and drench facilities in work area.
If inhaled	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.
In case of skin contact	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. Seek medical attention if irritation develops or persists.
In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical attention.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical attention immedately.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Caution: Use of water spray when fighting fire may be inefficient. Small fire: Use foam, dry chemical, CO2 or water spray. Large fire: Use foam, fog or water spray - Do not use water jets. If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers.

Specific hazards arising from the chemical

Irritating and toxic fumes and gases, carbon monoxide, carbon dioxide.

HIGHLY FLAMMABLE: These products have a low flash point - Easily ignited by heat, sparks or flames at ambient temperatures. Vapours will form explosive mixtures with air. Vapours will travel to source of ignition and flash back. Fire may produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. Produce is lighter than water. Vapours is heavier than air and will collect in low or confined areas (drains, basements, tanks). Vapours from run-off may create an explosion hazard.

Special protective actions for fire-fighters

SCBA and structural firefighter's uniform may provide limited protection. Fully-encapsulating, gas-tight suits should be worn for maximum protection.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms. Evacuate the area of all non-essential personnel. Remove ignition sources.

Methods and materials for containment and cleaning up

ELIMINATE all ignition sources (no smoking, flares, sparks or flame) within at least 50m - All equipment used in handling the product must be earthed. Do not touch or walk through spilled material.

Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours. Absorb spill with earth, sand or other non-combustible material - Use clean, non-sparking tools to collect material and place it in loosely-covered metal or plastic containers for later disposal. Water spray may be used to knock down or divert vapour clouds. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

SECTION 7: Handling and storage

Precautions for safe handling

Avoid ingestion and inhalation of gas/fumes/vapour/spray mist. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Keep container tightly closed and sealed until ready for use. Ensure good ventilation at the workplace. Use only with adequate ventilation. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Flameproof equipment is necessary in areas where this product is used. Fumes can combine with air to form an explosive mixture. Keep away from heat and all sources of ignition. Do NOT smoke. Keep away from incompatibles such as oxidizing agents. Take precautionary measures against static discharges. All electrical equipment must be flameproofed. Ground all equipment containing material. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Conditions for safe storage, including any incompatibilities

Store in a segregated and approved Flammables area. Store small containers in suitable flammable liquid storage cabinets when not in use. Larger drums (200I) must be kept in purpose-built stores. Store in original, labelled, tightly sealed container, in cool, dry, well-ventilated area, away from incompatible substances. Store protected from direct sunlight and moisture. Store away from strong acids, chlorates, perchlorates, chromates and dichromates, nitrates and other oxidising agents. Store away from heat and sources of ignition. Do not weld or cut empty containers. Partially filled containers should be blanketed with nitrogen. Segregate from food, animal feed, or medical supplies. Store in an area without drain or sewer access. Do not store in places where flooding is possible or in places where spillage or leaking into wells, drains, ground water, or surface water is possible.

Corrosiveness: Not considered to be corrosive for metals and glass. Storage Regulations: Store at room temperature (15°C to 25°C recommended).

Handling Temperatures: Avoid temperatures above 48°C.

[84] Unsuitable Materials: As d-Limonene has a tendency to cause many polymeric materials to swell, certain plastics are unsuitable, these include ABS, urethane, styrofoam, etc.

[81] Additional information on precautions for use: Rags or other combustible material wet or soaked in limonene may autoxidise, generating heat and igniting spontaneously. Used oily rags should be collected regularly and either soaked in water or stored in closed metal containers.

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Ensure hand protection complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Footwear: Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection: Clean clothing or protective clothing should be worn, preferably with and apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Respiratory protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state Appearance Color Odor Odor threshold Melting point/freezing point Boiling point or initial boiling point and boiling range Flammability Lower and upper explosion limit/flammability limit

Flash point Explosive properties

Auto-ignition temperature Decomposition temperature Oxidizing properties pH Liquid Clear, colourless to vellow liquid. No data available. Strong, pleasant fruit-, citrus- or lemon-like odour. No data available. -74 °C 176 °C No data available. Flammable Limits - Lower: 0.7 %vol at 150 °C Flammable Limits - Upper: 6.1 %vol at 262 °C 48 °C (closed cup). Autoxidation facilitated by light and air. Rags or other combustible material wet or soaked in limonene may autoxidise, generating heat and igniting spontaneously. If limonene containing oxidation products is concentrated, e.g. by distillation, explosive levels of peroxide may be formed. Addition of stabilisers (antioxidants) should be considered. Containers may explode in the heat of a fire. Above 48 °C explosive vapour/air mixtures may be formed. Increased risk of fire and explosion with oxidizing agents. 237 °C No data available. No data available. No data available.

Kinematic viscosity Solubility

Partition coefficient n-octanol/water (log value) Vapor pressure Evaporation rate Density and/or relative density Relative vapor density Particle characteristics

Supplemental information regarding physical hazard classes Surface Tension: 25 mN/m at 22 °C

Further safety characteristics (supplemental) Saturated Vapour Concentration: <4000 ppm at 14 °C (calculated)

Other Information: Taste: Fresh, citrus taste. Index of refraction: 1.473 at 20 °C/D. Specific Optical Rotation: +123.8° at 20 °C. Conversion Factor: 1 ppm = 5.56 mg/m³; 1 mg/m³ = 0.18 ppm at 25 °C. Aniline point: -15 °C.

SECTION 10: Stability and reactivity

Reactivity

Stable under normal conditions of storage and handling.

Risk of ignition. Vapours may form explosive mixtures with air

Chemical stability

Stable under normal temperatures, pressures and conditions of use and storage. Slow autoxidation to form a film facilitated by light and air, oxidation behaviour similar to that of rubber or drying oils. Easily oxidised in moist air to carveol and carvone. Rags or other combustible material wet or soaked in limonene may autoxidise, generating heat and igniting spontaneously. Used oily rags should be collected regularly and either soaked in water or stored in closed metal containers. Addition of stabilisers (antioxidants) should be considered.

Possibility of hazardous reactions

Hazardous reactions with strong acids and polymerisation catalysts such as alumimium chloride and acidic clays. Reacts violently with a mixture of iodine pentafluoride or iodine tetrafluoride and tetrafluoroethylene, causing fire and explosion hazard. Reactive with oxidizing agents with increased risk of fire and explosion. Limonene reacts with dry hydrogen chloride or hydrogen bromide to form monohalides.

Hazardous Polymerization: Polymerization is not hazardous. May polymerize slowly in the presence of air.

Conditions to avoid

Distillation of limonene that may contain peroxides (if limonene containing oxidation products is concentrated, e.g. by distillation, explosive levels of peroxide may be formed), excess heat, ignition sources (flame, sparks, static discharge), prolonged exposure to air, moist air, soaking or wetting of rags in the substance, and incompatible materials.

Incompatible materials

Air, light, acids, and oxidising agents such as chlorates, perchlorates, nitrates, chromates and dichromates, combination of iodine tetrafluoride or iodine pentafluoride and tetrafluoroethylene, dry hydrogen chloride or hydrogen bromide, polymerisation catalysts such as alumimium chloride and acidic clays, sulfur with oxidation.

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Viscosity: 1.28 cST at 20 °C

Solubility in Water: Practically insoluble (13.8 mg/L at 25 °C). Solubility in Organic Solvents: Soluble in all proportions in alcohol. Easily soluble in diethyl ether. Soluble in carbon tetrachloride. Insoluble in propylene glycol. Log Kow = 4.57; Log P(o/w): 4.23. <3 mm Hg (0.40 kPa) at 14 °C <1 (ether=1); < 1 (butyl acetate =1). Specific Gravity: 0.84 4.7 No data available.

Hazardous decomposition products

Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, acrid smoke and fumes.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Acute Toxicity - Oral: LD50 (rat): 4400 - 5,200 mg/kg

Ingestion: Ingestion may cause vomiting, headache, diarrhoea, painful constrictions and proteinuria. Aspiration may cause lung damage. Symptoms after absorption of toxic quantities may include CNS disorders and/or cardiovascular disorders.

Inhalation: Vapour or mists may cause irritation of mucous membranes of the respiratory system, coughing, dyspnoea and headache. No nasal or pharyngeal irritation has been reported. Strong odour causes discomfort in some people. May cause dizziness and suffocation. Readily absorbed through inhalation. Aspiration of large doses may produce pulmonary oedema and chemical pneumonitis.

Skin corrosion/irritation

Causes skin irritation. Symptoms can include redness, itching, burning, aching, long-lasting purpuric rash, possible defatting and dermatitis. It can be absorbed through intact skin. However, it is generally regarded to have low toxicity by dermal route. Risk of sensitisation, an allergic reaction, which becomes evident upon re-exposure to this material.

Serious eye damage/irritation

Eye contact can cause slight irritation and reddening.

Respiratory or skin sensitization

Respiratory sensitisation: Not classified based on available information.

Skin Sensitisation: Sensitization - Skin: Category 1 H317 May cause an allergic skin reaction.

Germ cell mutagenicity

Germ cell mutagenicity: Not classified based on available information.

Mutagenicity: Not classified based on available information.

Carcinogenicity

d-Limonene [5989-27-5] is evaluated in the IARC Monographs (Vol. 73; 1999) as Group 3: Not classifiable as to carcinogenicity to humans. Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Specific target organ toxicity (STOT) - single exposure

Not classified based on available information.

Specific target organ toxicity (STOT) - repeated exposure

Not classified based on available information.

Aspiration hazard

Aspiration Hazard: Category 1 H304 May be fatal if swallowed and enters airways.

Additional information

Chronic Effects: Prolonged or repeated ingestion may produce nausea, lowered blood sugar and cholesterol, and kidney damage (hematuria, albuminuria, tubular necrosis), and may also affect the liver. Repeated or prolonged skin contact can cause drying, defatting of skin and can cause an allergic skin response (redness, swelling, itching). The allergic response is caused by oxidation products of d-limonene, which are formed upon exposure to air. d-Limonene of very high purity is not expected to produce an allergic response.

SECTION 12: Ecological information

Toxicity

Known Harmful Effects on the Environment: Highly toxic to aquatic life. May cause long-term adverse effects in the aquatic environment.

Acute Toxicity - Fish: Pimephales promeias - 0.619 - 0.796 mg/l - 96hr flow through test.

Acute Toxicity - Daphnia: EC50 - Daphnia magna - 0.577 mg/l -48hr

Persistence and degradability

This material is partically biodegradable.

Bioaccumulative potential

An appreciable bioaccumulation potential is to be expected (log P(o/w) > 3).

SECTION 13: Disposal considerations

Disposal methods

Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Sewage disposal

An appreciable bioaccumulation potential is to be expected (log P(o/w) > 3).

Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

UN Number: 2052 Class: 3 Packing Group: III Proper Shipping Name: DIPENTENE

Environmental Hazards: Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment. May bioaccumulate.

Hazchem emergency action code (EAC)

3Y

IMDG

UN Number: 2052 Class: 3 Packing Group: III Proper Shipping Name: DIPENTENE

IATA

UN Number: 2052 Class: 3 Packing Group: III Proper Shipping Name: DIPENTENE

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP Poison Schedule: NS

SECTION 16: Other information

Further information/disclaimer

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

Preparation information

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.' Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020. Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020. Safe Work Australia, Workplace Exposure Standards for Airbourne Contaminants, December 2019 Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au IATA, Dangerous Goods Regulations (DGR) IMO, International Maritime Dangerous Goods Code (IMDG)