

SAFETY DATA SHEET

PRODUCT NAME: D-LIMONENE

Issue Date: September 22

IDENTIFICATION

Product Name: D-Limonene
Other Names: Limonene-D; Orange oil, terpenes; Orange, sweet, extract; Sweet orange, peel, tincture; Terpene Hydrocarbons NOS; Terpenes and terpenoids, orange oil
Product Code: ZDLIMO
Uses: Used to formulate cleaners and as flavour and fragrance ingredient.
Supplier: HamChem Hamilton Chemicals Ltd, 75 Ruffell Rd, Hamilton
 Phone: 07 974 4971 Web: www.hamchem.nz Email: info@hamchem.nz

- In emergency dial 111, and then ask for Fire, Ambulance or Police as necessary.
- In case of poisoning phone National Poisons Centre – 0800 764 766

HAZARD IDENTIFICATION



GHS Classifications

Flammable Liquid – Category 3
 Eye Irritation – Category 2
 Skin Sensitiser – Category 1
 Hazardous to Soil Organisms – Category 3
 Hazardous to the Aquatic Environment (Acute & Chronic) – Category 1

Signal Word: WARNING

Hazard statements

H226 Flammable liquid and vapour.
 H319 Cause serious eye irritation
 H317 May cause an allergic skin reaction.
 H410 Very toxic to aquatic life with long lasting effects.

Prevention

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 mist/vapours/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/clothing and eye/face protection.

Response

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice.

P370 + P378 In case of fire: Use alcohol-resistant foam to extinguish.

P391 Collect spillage.

Storage

P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal

P501 Dispose of contents/container to approved waste facility in accordance with local regulations.

COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Entity	CAS No.	Proportion (%)
D-Limonene (Terpene Hydrocarbons)	5989-27-5	>95

FIRST AID MEASURES

If swallowed: DO NOT INDUCE VOMITING (to avoid aspiration). Rinse mouth with water. For small amounts give milk of magnesia or a glass or two of water or milk. For large quantities, get medical attention.

If on skin: If skin or hair contact occurs, immediately remove any contaminated clothing and wash skin and hair thoroughly with soap and running water. If swelling, redness, blistering or irritation occurs seek medical assistance.

If inhaled: Remove victim from exposure to fresh air - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm and at rest until fully recovered. Seek medical advice if effects persist.

If in eyes: If in eyes, wash out immediately with water, flushing continuously for at least 15 minutes with fresh running water.

Ensure irrigation under eyelids by occasionally lifting upper and lower lids. In all cases of eye contamination, it is a sensible precaution to seek medical advice.

Note to Physician: Treat symptomatically. Delayed pulmonary oedema may result.

FIRE FIGHTING MEASURES

General Measures: Flame-proof equipment is necessary in all areas where this chemical is being used. Nearby equipment must be earthed. Move fire exposed containers from fire area if it can be done without risk.

Flammability Conditions: Product is a flammable liquid. May form flammable vapour mixtures with air.

Extinguishing Media: Foam. Dry Chemical Powder. BCF (where regulations permit). Carbon Dioxide.

Fire and Explosion Hazard: Combustible. Vapours heavier than air. Formation of explosive mixtures possible with air. Keep away from sources of ignition.

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Hazardous Products of Combustion: Burning generates, CO, CO₂ and smoke. It is not an oxygen donor. Incompatibility with strong oxidizing agents.

Special Fire Fighting Instructions: Do NOT allow firefighting water to reach waterways, drains or sewers. Store firefighting water for treatment. Personal Protective Equipment Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots and gloves) or chemical splash suit.

Flash Point:	43 - 49 °C Closed Cup
Lower Explosion Limit:	0.7 %
Upper Explosion Limit:	6.1 %
Auto Ignition Temperature:	237°C
Hazchem Code:	3Y

ACCIDENTAL RELEASE MEASURES

General Response: Procedure Shut off all possible sources of ignition and do not smoke. Avoid accidents, clean up immediately. Increase ventilation. Avoid walking through spilled product as it is slippery when spilled. Use clean, non-sparking tools and equipment.

Clean Up Procedures: Small spills can be wiped up; rags or other combustible material wet or soaked in limonene may autoxidise, generating heat and igniting spontaneously. Use absorbent (soil, sand or other inert material) for larger spills. When saturated collect material, transfer to suitable, labelled, dry chemical-waste containers and dispose of promptly as hazardous waste.

Containment: Stop leak if safe to do so. Isolate the area.

Decontamination: Soap (detergent) and Water.

Environmental Precautionary Measures: Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.

Evacuation Criteria: Evacuate all unnecessary personnel.

Personal Precautionary Measures: Personnel involved in the clean-up should wear full protective clothing as listed in Exposure Controls & Personal Protection section of this SDS.

HANDLING & STORAGE

Handling: Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure.

Storage: Citrus Terpene can be stored at ambient temperature. Store the product tightly closed, protected from light, in a dry area and away from heat, flame and strong oxidizing agents. Ensure adequate air circulation and fume extraction in storage and working area avoiding the risk of spontaneous combustion.

Container: Store in original packaging as approved by manufacturer.

EXPOSURE CONTROLS & PERSONAL PROTECTION

General: Citrus Terpene – 8h - TWA = 30 ppm (AIHA Standard)

Exposure Limits: No Data Available

Engineering Measures: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Vapour heavier than air – prevent concentration in hollows and sumps. Do NOT enter confined spaces where vapour may have collected.

Personal Protection Equipment: RESPIRATOR: Use with local exhaust ventilation or while wearing organic vapour respirator. (AS/NZS 1715/1716). EYES: Chemical goggles to prevent splashing in the eyes (AS/NZS 1336/1337). HANDS: Elbow length impervious gloves (AS/NZS 2161). CLOTHING: Chemical-resistant coveralls, splash apron and safety footwear (AS/NZS 3765/2210).

Work Hygienic Practices: Change contaminated clothing. Application of skin-protective barrier cream recommended. Wash hands after working with substance. Establish good personal washing routines, particularly before handling foodstuffs. Smoking forbidden.

PHYSICAL & CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Liquid
Odour:	Pleasant lemon-like odour
Colour:	Colourless to very pale yellow
pH:	No Data Available
Vapour Pressure (kPa):	0.13 @ 14°C
Relative Vapour Density:	4.66
Boiling Point:	175.5 - 178 °C
Freezing Point:	-98°C
Specific Gravity:	0.84
Flash Point:	46°C Closed Cup
Bulk Density:	No Data Available
Corrosion Rate:	No Data Available
Decomposition Temperature:	No Data Available
Specific Heat:	No Data Available
Molecular Weight:	136.23
Octanol Water Coefficient:	No Data Available
Saturated Vapour Concentration:	No Data Available
Melting Point:	-98 °C
Evaporation Rate:	<1 BuAc=1
Particle Size:	No Data Available
Net Propellant Weight:	No Data Available
Auto Ignition Temp:	237°C
Solubility:	Immiscible in water
Viscosity:	No Data Available
Volatile Percent:	No Data Available
VOC Volume:	No Data Available

Additional Characteristics:

Reactivity: Autoxidation facilitated by light and air.

Photodegradability: Atmospheric half-life = c.a. 0.884 to 0.64 hours

Other Data: Chemical Oxygen Demand: 2,850 gO₂/l or 3,280 gO₂/kg

Ozone depletion potential: Zero stratospheric

Potential for Dust Explosion: Product is a liquid.

Fast or Intensely Burning Characteristics: No Data Available

Flame Propagation or Burning Rate of Solid Materials: No Data Available

Non-Flammables That Could Contribute Unusual Hazards to a Fire: No Data Available

Properties That May Initiate or Contribute to Fire Intensity: Vapour may travel a considerable distance to source of ignition and flash back. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding. Combustible material wet or soaked in limonene may autoxidise, generating heat and igniting spontaneously.

PRODUCT NAME:**D-LIMONENE****STABILITY & REACTIVITY**

General Information: Flammable Liquid. To prevent oxidation, avoid long-term exposure to air. If storing partially filled container, fill headspace with an inert gas such as nitrogen or carbon dioxide.

Chemical Stability: Autoxidation facilitated by light and air. Combustible material that has been soaked with d- Limonene may spontaneously combust. Peroxides formed by oxidation may present an explosion hazard if they become highly concentrated through distillation.

Conditions to Avoid: Avoid heat, sparks, flames, direct sunlight, moisture, freezing, static charges, mechanical shock, high temperatures and other high energy ignition sources. Also avoid enclosed spaces.

Materials to Avoid: Strong oxidizing agents, acid clays and mineral acids. Highly exothermic reaction noted when blended approx. 50/50 with Alkylbenzene Sulphonic Acid with possible boil over danger. Similar reaction not noted at lower levels. Keep away from heat, sparks, open flames, hot surfaces.

Hazardous Decomposition Products: If the product is heated, it emits acrid smoke and fumes as well as CO and CO₂.

Hazardous Polymerisation: No Data Available

TOXICOLOGICAL INFORMATION**General Information:**

Dermal (rabbit) LD₅₀: >5000 mg/kg

Oral (Rat) LD₅₀: >2000 mg/kg

Skin Irritant: Irritant, may occur temporary redness (sort of burning). Mild local irritation and sensitization. Intensive contact with the skin may cause dermatitis.

Eye Irritant: Irritant, may cause burning, redness, pain.

Ingestion: Harmful if ingested, gastrointestinal irritation. Abdominal pain, nausea, vomiting, diarrhoea, and dizziness.

Inhalation: Irritant to respiratory tract, sore throat, coughing, shortness of breath, dizziness, and nausea.

Carcinogenicity: No Data Available

ECOLOGICAL INFORMATION

Ecotoxicity: LC₅₀ (96hr) Fish 0.199mg/L; EC₅₀ (48hr), Crustacea 0.307mg/L; EC₅₀ (96hr) Algae 0.212mg/L; NOEC (504hr) Crustacea 0.05mg/L

Persistence/Degradability: Citrus Terpene is a biodegradable solvent occurring in nature as the main component of citrus peel oil. 100% in 28 days.

Mobility in Soil: Low (KOC = 1324)

Environmental Fate: Do NOT let product reach waterways, drains and sewers. Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Bioaccumulation: Potential Risk of bioaccumulation in an aquatic species is high.(LogKOW = 4.8275)

Environmental Impact: No Data Available

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DISPOSAL CONSIDERATIONS

General Information: Dispose of in accordance with all local, regional and national regulations. All empty packaging should be disposed of in accordance with local, regional and national regulations or recycled/reconditioned at an approved facility.

Special Precautions for Land Fill: Contact a specialist disposal company or the local waste regulator for advice. Advise flammable nature. Incinerate at an approved site following all local regulations. Empty containers must be decontaminated and destroyed.

TRANSPORT INFORMATION

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
Class: 3 Flammable Liquids
Subsidiary Risk(s): No Data Available
UN Number: 2319
Hazchem: 3Y
Packing Group: III

REGULATORY INFORMATION

HSNO Classifications: 3.1C, 6.4A, 6.5B, 9.2C, 9.1A
EPA Approval Code: HSR002495 – Additives, Process Chemicals & Raw Materials Group Standard 2020

OTHER INFORMATION

End of SDS.