

D-Limonene

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SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label

: **D-Limonene**

Other means of identification : Not available.

Recommended use of the chemical and restrictions on use

: Cleaner / Degreaser; Solvent
Use pattern: Professional Use Only
Recommended restrictions: None Known.

Chemical family : Terpene

Name, address, and telephone number
of the supplier:

Comet Chemical Company Ltd.

3463 Thomas Street
Innisfill, ON, Canada
L9S 3W4

Supplier's Telephone # : (705) 436-5580

24 Hr. Emergency Tel # : GFL Environmental - 1-888-772-2543

Name, address, and telephone number of
the manufacturer:

Refer to supplier

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Water white liquid. Citrus odour.

Most important hazards: May be fatal if swallowed and enters airways. Causes skin irritation. Occupational exposure to the substance or mixture may cause adverse effects.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:

Flammable liquid - Category 3

Aspiration Toxicity - Category 1

Skin Irritation - Category 2

Skin sensitization - Category 1

Specific target organ toxicity, single exposure - Category 3

Label elements

Hazard pictogram(s)



Signal Word

DANGER!

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SAFETY DATA SHEET*Hazard statement(s)*

Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
May cause an allergic skin reaction.
Causes skin irritation.
May cause respiratory irritation.

Precautionary statement(s)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Smoking
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical and ventilating equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Avoid breathing mist or vapours.
Wash hands and face thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/clothing and eye/face protection.

IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water and soap.

If skin irritation occurs: Get medical advice/attention.

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Do NOT induce vomiting.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER or doctor/physician if you feel unwell.

In case of fire: Use carbon dioxide, dry chemical or foam to extinguish.

Store in a well-ventilated place. Keep cool.

Store locked up.

Dispose of contents/container in accordance with local regulation.

Other hazards

Other hazards which do not result in classification:

Burning produces obnoxious and toxic fumes. Direct eye contact may cause slight or mild, transient irritation. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Environmental precautions:

Very toxic to aquatic life with long lasting effects. Avoid release to the environment. See ECOLOGICAL INFORMATION, Section 12.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance

<u>Chemical name</u>	<u>Common name and synonyms</u>	<u>CAS #</u>	<u>Concentration (% by weight)</u>
d-Limonene	d-p-Mentha-1,8-diene 4-Isopropenyl-1-methylcyclohexene	5989-27-5	100.00

SECTION 4. FIRST-AID MEASURES**Description of first aid measures**

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- Ingestion* : IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.
- Inhalation* : If inhaled: Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing is irregular or stopped, administer artificial respiration. Call a POISON CENTRE or doctor/physician if you feel unwell.
- Skin contact* : For skin contact, wash with soap and water while removing contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
- Eye contact* : Rinse thoroughly with plenty of water, also under the eyelids. Remove contact lenses if present and easy to do. If irritation or symptoms develop, seek medical attention.

Most important symptoms and effects, both acute and delayed

- : May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal. Causes skin irritation. Symptoms may include redness, itching and swelling. May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
- : May cause respiratory irritation. May cause coughing and breathing difficulties.
- : Direct eye contact may cause slight or mild, transient irritation. Direct eye contact may cause temporary redness.
- : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
- : Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

Indication of any immediate medical attention and special treatment needed

- : Immediate medical attention is required. Aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.
- : Provide general supportive measures and treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

- : Carbon dioxide (CO₂); Dry chemical; Alcohol resistant foam; Water fog .

Unsuitable extinguishing media

- : Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture / Conditions of flammability

- : Flammable liquid and vapour. Product may ignite when exposed to heat, sparks and direct flame. Vapours are heavier than air and may spread along floors. Product may float, and be re-ignited at the water's surface. Toxic fumes, gases or vapours may evolve on burning. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Flammability classification (OSHA 29 CFR 1910.106)

- : Flammable liquid - Category 3

Hazardous combustion products

- : Carbon oxides; Other unidentified organic compounds

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

- : Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Do not enter without wearing specialized protective equipment suitable for the situation. Firefighter's normal protective clothing (Bunker Gear) will not provide adequate protection. A full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus (NIOSH approved or equivalent) may be necessary.

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Special fire-fighting procedures

- : Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- : All persons dealing with the clean-up should wear the appropriate chemically protective equipment. Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up. Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Do not allow material to contaminate ground water system. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

Methods and material for containment and cleaning up

- : Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. Use only non-sparking tools. For spilled liquids: absorb spill with inert, non-combustible material such as sand, then place into suitable containers. Do not use combustible absorbents, such as sawdust. Pick up and transfer to properly labeled containers. Contaminated absorbent material may pose the same hazards as the spilled product. Contact the proper local authorities.

Special spill response procedures

- : In Canada: For 24-hour emergency assistance, call: 1-613-996-6666 (CANUTEC).
US CERCLA Reportable quantity (RQ): See section 15.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

- : Persons with recurrent skin eczema or sensitization problems should be excluded from working with this product. Once a person is sensitized, no further exposure to the material that caused the sensitization should be permitted.
Use only outdoors or in a well-ventilated area. Wear suitable protective equipment during handling. Wear protective gloves and eye/face protection. Avoid breathing mist or vapours. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks and open flame - No smoking. Ground/Bond container and receiving equipment. Use explosion-proof electrical and ventilating equipment. Use only non-sparking tools with this material. Take precautionary measures against static discharges. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling. Empty containers retain residue (liquid and/or vapour) and can be dangerous. Contaminated work clothing must not be allowed out of the workplace.

Conditions for safe storage : Store in cool/well-ventilated place. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area.

Incompatible materials : Strong oxidizing agents; Strong acids; Strong alkalis

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SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:				
<u>Chemical Name</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
d-Limonene	30 ppm (AIHA WEEL)	N/Av	N/Av	N/Av

Exposure controls

Ventilation and engineering measures

- : Use only in well-ventilated areas. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Use explosion-proof equipment. In case of insufficient ventilation wear suitable respiratory equipment.

Respiratory protection

- : If airborne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02. Advice should be sought from respiratory protection specialists.

Skin protection

- : Wear protective gloves. Wear as appropriate: Nitrile rubber; polyvinyl alcohol; Viton; Barrier; Responder. Unsuitable material Butyl rubber; Natural Rubber; Neoprene gloves; Polyvinylchloride. Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye / face protection

- : Wear eye/face protection. Wear as appropriate: Tightly fitting safety goggles; Safety glasses with side shields.

Other protective equipment

- : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

General hygiene considerations

- : Avoid breathing mist or vapours. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing must not be allowed out of the workplace.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	: Liquid
Colour	: Clear or white
Odour	: Citrus odour.
Odour threshold	: N/Av
pH	: N/Av
Melting Point/Freezing point	: N/Av
Initial boiling point and boiling range	
	: 175 - 176°C (349 - 349°F)
Flash point	: 51°C (125°F)
Flashpoint (Method)	: Tag closed cup
Evaporation rate (BuAe = 1)	: 0.161 (butyl acetate = 1)
Flammability	: Not applicable.
Lower explosion or flammability limit (% by vol.)	: 1.0%

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Upper explosion or flammability limit (% by vol.)

: N/Av

Oxidizing properties

: None known.

Explosive properties

: Not explosive

Vapour pressure

: 2.5 mmHg @ 20°C (68°F)

Relative vapour density

: 4.7 (Air = 1)

Relative density / Specific gravity

: 0.841

Solubility in water

: Negligible.

Other solubility(ies)

: Soluble in ethanol and ether.

Partition coefficient: n-octanol/water or Coefficient of water/oil distribution

: N/Av

Auto-ignition temperature

: 260°C (500°F)

Decomposition temperature

: N/Av

Viscosity

: 1.1 - 1.11 cSt @ 25°C (77°F)

Particle characteristics

: N/Ap

Volatiles (% by weight)

: 100%

Volatile organic Compounds (VOC's)

: 841 g/L (7 lbs/gal)

Absolute pressure of container

: N/Ap

Flame projection length

: N/Ap

Other physical/chemical comments

: No additional information.

SECTION 10. STABILITY AND REACTIVITY

Reactivity

: Not normally reactive.

Chemical stability

: Stable under normal conditions.

Possibility of hazardous reactions

: Hazardous polymerization does not occur.

Conditions to avoid

: Direct sources of heat. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials.

Incompatible materials

: Strong oxidizing agents; Strong acids; Strong alkalis.

Hazardous decomposition products

: None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation

: YES

Routes of entry skin & eye

: YES

Routes of entry Ingestion

: YES

Routes of exposure skin absorption

: YES

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Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: May cause respiratory irritation. May cause coughing and breathing difficulties.

Sign and symptoms ingestion

: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

Sign and symptoms skin

: Causes moderate skin irritation. Contact may cause redness, swelling and a painful sensation. May be absorbed through the skin.

Sign and symptoms eyes

: Direct eye contact may cause slight or mild, transient irritation. Direct eye contact may cause temporary redness.

Potential Chronic Health Effects

: None known or reported by the manufacturer.

Mutagenicity

: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

: Not known to be carcinogenic. No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

Reproductive effects & Teratogenicity

: Not expected to cause reproductive effects.

Sensitization to material

: May cause an allergic skin reaction. May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.

No data available to indicate product or components may be respiratory sensitizers.

Specific target organ effects

: Eyes, skin, respiratory system and digestive system.

Specific target organ toxicity, single exposure - Category 3 (respiratory)
May cause respiratory irritation.

Medical conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

Synergistic materials

: None reported by the manufacturer.

Toxicological data

: See below for toxicological data on the substance.

<u>Chemical name</u>	<u>LC₅₀(4hr)</u>	<u>LD₅₀</u>	
	<u>inh, rat</u>	<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
d-Limonene	N/Av	4400 mg/kg	> 5000 mg/kg

Other important toxicological hazards

: None reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

: Very toxic to aquatic life with long lasting effects. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

See the following tables for individual ingredient ecotoxicity data.

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Ecotoxicity data:

<u>Ingredients</u>	CAS #	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
d-Limonene	5989-27-5	0.72 mg/L (Fathead minnow)	N/Av	1

<u>Ingredients</u>	CAS #	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
d-Limonene	5989-27-5	0.36 mg/L (Daphnia magna)	N/Av	1

<u>Ingredients</u>	CAS #	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
d-Limonene	5989-27-5	N/Av	N/Av	None.

Persistence and degradability

: Expected to be readily biodegradable.

Bioaccumulation potential

: The product itself has not been tested. See the following data for ingredient information.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
d-Limonene (CAS 5989-27-5)	4.57	660

Mobility in soil : The product itself has not been tested.

Other Adverse Environmental effects

: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal

: Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8.

Methods of Disposal

: Dispose in accordance with all applicable federal, state, provincial and local regulations.

RCRA

: If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.





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SECTION 14. TRANSPORT INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	UN2052	DIPENTENE	3	III	 
49CFR/DOT Additional information	May be shipped as a Limited Quantity when transported in containers no larger than 5 L (1.3 gallons); in packages not exceeding 30 kg (66 pounds) gross mass.				
TDG	UN2052	DIPENTENE	3	III	 
TDG Additional information	May be shipped as a Limited Quantity when transported in containers no larger than 5 L (1.3 gallons); in packages not exceeding 30 kg (66 pounds) gross mass.				

Special precautions for user : Appropriate advice on safety must accompany the package. Keep away from heat, sparks and open flame - No smoking.

Environmental hazards : This product meets the criteria for an environmentally hazardous material according to the IMDG Code. See ECOLOGICAL INFORMATION, Section 12.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

<u>Ingredients</u>	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de Minimis Concentration
d-Limonene	5989-27-5	Yes	None.	None.	No	No

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Flammable liquid; Aspiration toxicity; Skin sensitization; Skin irritation; Specific target organ toxicity, single exposure

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

<u>Ingredients</u>	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
d-Limonene	5989-27-5	No	N/Ap	No	No	Yes	No	No	No

Canadian Information:

All ingredients are present on the DSL.

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International Information:

Components listed below are present on the following International Inventory list:

<u>Ingredients</u>	<u>CAS #</u>	<u>European EINECS</u>	<u>Australia AICS</u>	<u>Philippines PICCS</u>	<u>Japan ENCS</u>	<u>Korea KECI/KECL</u>	<u>China IECSC</u>	<u>NewZealand IOC</u>
d-Limonene	5989-27-5	227-813-5	Present	Present	(3)-2245; (3)-2226	KE-24397	Present	HSR002725

SECTION 16. OTHER INFORMATION

Legend

: ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CNS: Central Nervous System
COC: Cleveland Open Cup
CSA: Canadian Standards Association
DOT: Department of Transportation
EPA: Environmental Protection Agency
IARC: International Agency for Research on Cancer
LC: Lethal Concentration
LD: Lethal Dose
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible exposure limit
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TLV: Threshold Limit Values
TWA: Time Weighted Average

References

- : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices
2. ECHA - European Chemical Agency
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases
4. Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists
6. California Proposition 65 List
7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal

Preparation Date (mm/dd/yyyy)

: 04/24/2016

Reviewed Date SDS (dd/mm/yyyy)

: 20/12/2023

Revision No.

: 2

Revision Information

: (M)SDS sections updated: 14. Transport information.
Updated SDS to the comply with new 2023 WHMIS format

Other special considerations for handling

: Provide adequate information, instruction and training for operators.



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<u>Prepared for:</u> Comet Chemical Company Ltd. 3463 Thomas Street Innisfill, ON L9S 3W4 Information (M-F 8:00-5:00): 705-436-5580 www.cometchemical.com	The logo for Comet Chemical Company Ltd. features a red circle with a white horizontal line through the center. To the right of the circle, the word "COMET" is written in large, bold, black capital letters, and "COMET CHEMICAL COMPANY LTD." is written in smaller, bold, black capital letters below it.
<u>Prepared by:</u> ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) http://www.thecompliancescenter.com	The logo for ICC The Compliance Center Inc. features a blue circle with the letters "icc" in white. To the right of the circle, the words "ComplianceCenter" are written in a blue, sans-serif font.

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