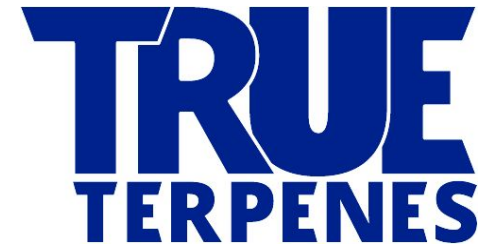


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1. Product and Company Information

Product Name	D-Limonene
CAS Number(s)	5989-27-5
Company	True Terpenes (888) 954-8550 TrueTerpenes.com
Emergency Contact	Poison Control Help Line: 1 (800) 222-1222

2. Hazard(s) Identification

Physical Hazards	Flammable liquids	Category 3
Health Hazards	Acute toxicity, oral	Category 5
	Acute toxicity, dermal	Category 5
	Skin corrosion / irritation	Category 2
	Sensitization, skin	Category 1
	Aspiration hazard	Category 1
Environmental Hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1

Label Elements



Signal Word DANGER

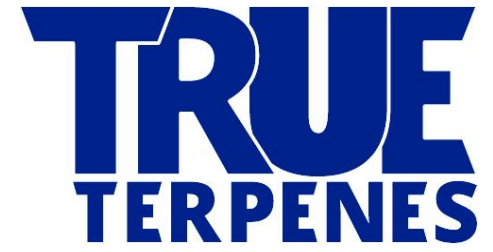
Hazard Statement(s)

H226	Flammable liquid and vapor.
H303 + H313	May be harmful if swallowed or in contact with skin.
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.

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H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s)

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 equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing mist or vapor.
P264 Wash 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 / eye protection / face protection.

Response

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER / doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower.
P312 Call a POISON CENTER / doctor if you feel unwell.
P321 Specific treatment (see this label).
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 appropriate media to extinguish.
P391 Collect spillage.

Storage

P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal

P501 Dispose of content / container in accordance with local / regional / national / international regulations.

3. Ingredient Composition and Classification



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Chemical Name	Common Name and Synonyms	CAS Number	Formula	Molecular Weight
CARVENE	DIPENTENE (+)-P-MENTHA-1,8-DIENE (R)-(+)-Limonene (R)-4-Isopropenyl-1-methyl-1-cyclohexene 1- methyl-4-prop-1-en-2-ylcyclohexene	5989-27-5	C ₁₀ H ₁₆	136.23 g/mol

4. First Aid Measures

Inhalation	If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.
Skin Contact	Take off immediately all contaminated clothing. Get medical attention if irritation develops and persists. Wash skin thoroughly with soap and water for several minutes.
Eye Contact	Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists. Promptly wash eyes with plenty of water while lifting the eyelids.
Ingestion	Call a physician or poison control center immediately. If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.
General Advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Firefighting Measures

Extinguishing Media	Water spray, fog, CO ₂ , dry chemical, or alcohol resistant foam.
Firefighting Procedures	In case of fire and / or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage. Ventilate closed spaces before entering them. Keep runoff water out of sewers and water sources. Dike for water control.
Hazards and Concerns	Static charges generated by emptying package in or near flammable vapor may cause flash fire. Fire may produce irritating, corrosive and / or toxic gases.

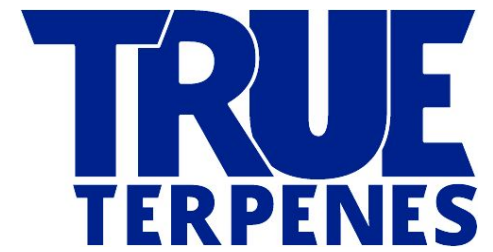
6. Accidental Release Measures

Precautions and Procedures	Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Eliminate all sources of ignition. Avoid contact with skin or inhalation of spillage, dust or vapor.
Containment and Cleaning	Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps. The product is immiscible with water and will spread on the water surface. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

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Cover with plastic sheet to prevent spreading. Prevent product from entering drains. Do not allow material to contaminate ground water system. Absorb in vermiculite, dry sand or earth and place into containers.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. This material and its container must be disposed of as hazardous waste. Collect and dispose of spillage as indicated in section 12 of the SDS.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water. Retain and dispose of contaminated wash water. Avoid release to the environment. Contact local authorities in case of spillage to drain / aquatic environment.

7. Handling, Storage, and Disposal

Precautions for Safe Handling

Do not handle or store near an open flame, heat or other sources of ignition. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wash thoroughly after handling.

Conditions for Safe Storage

Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area.

Disposal

-

8. Physical and Chemical Properties

Appearance	Liquid.
Odor	Characteristic.
Melting Point / Freezing Point	- 139.9°F (- 95.5°C)
Initial Boiling Point and Boiling Range	347.9 - 348.8°F (175.5 - 176°C) 101.725 kPa
Flash Point	113.0°F (45.0°C) - Closed Cup
Vapor Pressure	1.54 mmHg at 25°C
Auto-ignition Temperature	458°F (236.67°C)

9. Stability and Reactivity

Stability

Material is stable under normal conditions.

Incompatibility

Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials. Strong oxidizing agents.



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10. Toxicological Information

LD50 (Oral)	Rat, 4,400 mg/kg
LD50 (Dermal)	Rabbit, 5 g/kg
Skin Corrosion/Irritation	Causes skin irritation.
Serious Eye Damage/Eye Irritation	Direct contact with eyes may cause temporary irritation. Eyes - rabbit. Result: No eye irritation. (OECD Test Guideline 405)
Respiratory or Skin Sensitisation	May cause an allergic skin reaction. Mouse. Result: May cause sensitisation by skin contact. (OECD Test Guideline 429)
Germ Cell Mutagenicity	Mouse Lymphocyte Result: Negative Rat - Male Result: Negative
Reproductive Toxicity	This product is not expected to cause reproductive or developmental effects.
Specific Target Organ Toxicity - Single Exposure	Not Classified.
Specific Target Organ Toxicity - Repeated Exposure	Repeated dose toxicity - mouse - male and female - No observed adverse effect level - 1,650 mg/kg - Lowest observed adverse effect level - 3,300 mg/kg.
Carcinogenicity	IARC Overall Evaluation of Carcinogenicity - CARVENE (CAS 5989-27-5) 3 Not classifiable as to carcinogenicity to humans. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.

11. Ecological Information

Toxicity	Water Flea (Daphnia pulex)	EC50, 69.6 mg/l, 48 hours
	Fathead minnow (Pimephales promelas)	LC50, 0.619 - 0.796 mg/l, 96 hours
	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	LC50, 35 mg/l, 4 days
	Activated sludge	EC50, 3.94 mg/l
Persistence and Degradability	Biodegradability	Result: 71% - Readily biodegradable. (OECD Test Guideline 301B)
Bioaccumulative Potential	No data available.	
Mobility in Soil	No data available.	



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12. Disposal Considerations

Disposal Instructions	Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers / water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents / container in accordance with local / regional / national / international regulations.
Local Disposal Regulations	Dispose of in accordance with all applicable regulations.
Hazardous Waste Code	Not established.
Waste from Residues / Unused Products	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see disposal instructions).
Contaminated Packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

13. Transport Information

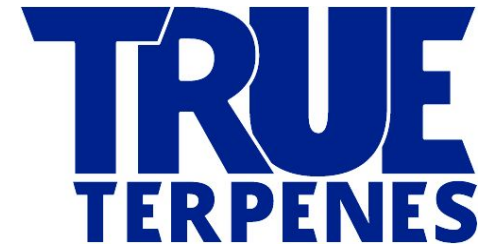
ADN	UN Number	2319
	UN Proper Shipping Name	TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
	Transport Hazard Class(es)	3
	Subsidiary Class(es)	-
	Packing Group	III
	Environmental Hazards	Yes
	Labels Required	3
ADR	UN Number	2319
	UN Proper Shipping Name	TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
	Transport Hazard Class(es)	3
	Subsidiary Class(es)	-
	Packing Group	III
	Environmental Hazards	Yes
	Labels Required	3
RID	UN Number	2319
	UN Proper Shipping Name	TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
	Transport Hazard Class(es)	3
	Subsidiary Class(es)	-
	Packing Group	III



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	Environmental Hazards	Yes
	Labels Required	3
DOT BULK	UN Number	2319
	UN Proper Shipping Name	TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
	Transport Hazard Class(es)	3
	Subsidiary Class(es)	-
	Packing Group	III
	Environmental Hazards, Marine Pollutant	Yes
	Packaging Exceptions	150
	Packaging Bulk	242
	Labels Required	3
DOT NON-BULK	Not regulated as dangerous goods.	
IATA	UN Number	2319
	UN Proper Shipping Name	TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
	Transport Hazard Class(es)	3
	Subsidiary Class(es)	-
	Packing Group	III
	Environmental Hazards	No
	Labels Required	3
IMDG	UN Number	2319
	UN Proper Shipping Name	TERPENE HYDROCARBONS, N.O.S. (D-LIMONENE)
	Transport Hazard Class(es)	3
	Subsidiary Class(es)	-
	Packing Group	III
	Environmental Hazards, Marine Pollutant	Yes
	Labels Required	3

14. Regulatory Information

US Federal Regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
CERCLA Hazardous Substance	Not listed.



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List (40 CFR 302.4)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.
SARA 304 Emergency Release Notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D)	Not regulated.
SARA Hazard Categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
SARA 302 Extremely Hazardous Substance	Not listed.
SARA 311 / 312 Hazardous Chemical	Yes
SARA 313 (TRI Reporting)	Not regulated.
CAA Section 112 HAPs List	Not regulated.
CAA Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
SDWA	Not regulated.
US. Massachusetts RTK - Substance List	Not regulated.
US. New Jersey Worker and Community Right-to-Know Act	CARVENE (CAS 5989-27-5)
US. Pennsylvania Worker and Community Right-to-Know Law	Not listed.
US. Rhode Island RTK	Not regulated.
US. California Proposition 65 CRT: Listed Substance	Not listed.

15. Other Information

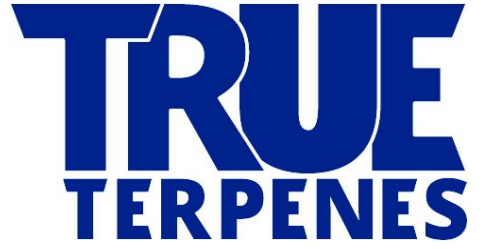
True Terpenes cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufactures, and technical groups and is considered to be accurate to the best of True Terpenes' knowledge as of the date of this



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document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the specific conditions and factors relating to such use in accordance with all applicable laws and regulations.

