

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name: D-Limonene

CAS number: 5989-27-5

Synonyms: (R)-(+)-Limonene, Natural orange oil, (+)-Carvene, (+)-p-Mentha-1,8 diene, (R)-4-Isopropenyl-1-methyl-1-cyclohexane

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified Uses : General purpose solvent.

1.3 Details of the supplier of the safety data sheet

Company : Lab Alley, LLC
12501 Paul's Valley Road Suite F
Austin, TX 78737
U.S.A.

Telephone : 512-668-9918

Fax : 512-886-4008

1.4 Emergency telephone

Emergency Phone # : US & Canada: 1-800-535-5053 INFOTRAC
International 1-352-323-3500 INFOTRAC

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 3)
Skin irritation (Category 2)
Skin sensitization (Category 1)
Aspiration hazard (Category 1)
Short-term (acute) aquatic hazard (Category 1)
Long-term (chronic) aquatic hazard (Category 1)

2.2 GHS Label elements, including precautionary statements

Pictogram:



Signal Word:

Danger

Hazard statement(s):

Flammable liquid and vapor. May be fatal if swallowed and enters airways. Causes skin irritation. May cause an allergic skin reaction. Very toxic to aquatic life with long-lasting effects.

Precautionary statement(s):

Prevention - Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapors. Wash skin thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/ eye protection/ face protection. **Response** - IF SWALLOWED: Immediately call a POISON CENTER/ doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. Do NOT induce vomiting. If skin irritation or rash occurs: Get medical advice/ attention. Take off contaminated clothing and wash before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. Collect spillage. Store in a well-ventilated place. Keep cool. Store locked up. Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified

None.

SECTION 3: Composition/information on ingredients

3.1 Components

Component	CAS Number	Percent
D-Limonene	5989-27-5	90-100

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice: Show this safety data sheet to the doctor in attendance.

In case of inhalation: After inhalation: fresh air.

In case of eye contact: Rinse out with plenty of water. Remove contact lenses.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Consult a physician immediately.

In case of ingestion: Caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

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

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable (and unsuitable) extinguishing media

Alcohol-resistant foam, Carbon dioxide (CO₂), Dry chemical. Do not use high volume water jet.

5.2 Specific hazards arising from the substance or mixture

Do not allow run-off from fire fighting to enter drains or water courses. Carbon oxides. Combustible. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures. Development of hazardous combustion gases or vapors possible in the event of fire.

5.3 Special protective equipment and precautions for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material ((e.g. sand, earth, diatomaceous earth, vermiculite). Dispose of properly. Clean up affected area.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

SECTION 8. Exposure controls/personal protection

8.1 Occupational exposure limits

Listed below for the product components that have regulatory occupational exposure limits (OEL's) established.

Component	Value	Control Parameters	Basis
D-Limonene (CAS 5989-27-5)	TWA	30 ppm	USA Workplace Environmental Exposure Levels (WEEL)

8.2 Exposure controls

Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses.

Skin and body protection

Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Flame retardant antistatic protective clothing.

Respiratory protection

Required when vapors/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical State	Liquid.
Appearance	Colorless, clear
Odor	Characteristic.
Odor Thresh	No information available.
pH	No information available.
Melting Point/Range	-73.97 °C (-101.15 °F) - OECD Test Guideline 102
Boiling Point/Range	176 - 177 °C 349 - 351 °F
Flash Point	51 °C (124 °F) - closed cup
Evaporation Rate	No information available.
Flammability (solid, gas)	No information available.
Flammability or explosive limit	
	Upper : 6.1%
	Lower : 0.7%
Vapor Pressure	2 hPa at 24.85 °C (76.73 °F)
Vapor Density	4.70 - (Air = 1.0)
Density	0.842 g/mL at 20 °C (68 °F)
Solubility	0.00569 g/l at 20 °C (68 °F) - OECD Test Guideline 105
Partition coefficient; n-octanol/water	log Pow: 4.38 at 37 °C (99 °F) - Potential bioaccumulation
Autoignition Temp	245 °C (473 °F) at 995.44 hPa
Decomposition Temp	No information available.
Viscosity	No information available.
Molecular Formula	C10H16
Molecular Weight	136.23
VOC Content(%)	No information available.
Oxidizing properties	Not oxidizing.

9.2 Other safety information

None.

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapor/air-mixtures are explosive at intense warming.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Violent reactions possible with: Strong oxidizing agents, acids.

10.4 Conditions to avoid

Keep away from heat, flame, sparks and other ignition sources.

10.5 Incompatible materials

Strong acids. Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
D-Limonene	>2000 mg/kg (Rat)	>5000 mg/kg	Not listed

Skin corrosion/irritation

Mild skin irritation.

Serious eye damage/eye irritation

No eye irritation.

Respiratory or skin sensitization

May cause sensitization by skin contact.

Germ cell mutagenicity

No information available.

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
D-Limonene	5989-27-5	Not listed.	Not listed	Not listed	Not listed.	Not listed

Reproductive toxicity

No information available.

Specific target organ toxicity - single exposure

No information available.

Specific target organ toxicity - repeated exposure

No information available.

Aspiration hazard

Aspiration may cause pulmonary edema and pneumonitis.

Chronic effects

No information available.

11.2 Additional information

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12. Ecological information

12.1 Toxicity

Ecotoxicity:

Component	Freshwater Algae	Freshwater Fish	Bacteria	Water Flea
D-Limonene	0.32 mg/L ErC50 = 72 h 0.174 mg/L EC10 = 72 h	0.72 mg/L LC50 = 96 h	3.94 mg/L EC50	Acute 0.307 mg/L EC50 = 48 h Chronic 0.08 mg/L NOEC = 21 days

12.2 Persistence and Degradability

Readily biodegradable.

12.3 Bioaccumulative Potential

No information available.

12.4 Mobility in Soil

No information available.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No information available.

12.7 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

13.1 Waste Disposal Methods

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT

UN-No	UN2052
Proper Shipping Name	Dipentene
Hazard Class	3
Subsidiary Hazard Class	
Packing Group	III

IATA

UN-No	UN2052
Proper Shipping Name	Dipentene
Hazard Class	3
Subsidiary Hazard Class	
Packing Group	III

IMDG/IMO

UN-No	UN2052
Proper Shipping Name	Dipentene
Hazard Class	3
Subsidiary Hazard Class	
Packing Group	III

TDG

UN-No	UN2052
Proper Shipping Name	Dipentene
Hazard Class	3
Subsidiary Hazard Class	
Packing Group	III

SECTION 15: Regulatory Information

WHMIS Classification : B3: Combustible Liquid
D2B: Toxic Material Causing Other Toxic Effects

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. Clean Water Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. Clean Water Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

5989-27-5	d-Limonene	90 - 100 %
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New Jersey Right To Know

5989-27-5	d-Limonene	90 - 100 %
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California Prop 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other re-productive harm.

The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

NZIoC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PHIL	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory

SECTION 16: Other information

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Disclaimer:

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.