Safety Data Sheet · OSHA HCS 2024

D-Limonene Technical Grade

Technical Grade · 95%

Standard	Revised	Emergency
OSHA HCS 2024 · GHS Rev. 7	2026-11-12	Chemtel 1-800-255-3924 (24/7)

1 Identification

Product Identifier	D-Limonene Technical Grade
Grade	Technical Grade
Concentration	95%
CAS Number	5989-27-5
Chemical Formula	C10H16
Molecular Weight	136.23 g/mol
Manufacturer	Alliance Chemical 204 South Edmond Street, Taylor, TX 76574
Emergency Phone	Chemtel 1-800-255-3924 (24/7)
Synonyms	(R)-(+)-Limonene; citrus terpene; orange terpene
Recommended Use	Citrus-based cleaning and degreasing solvent; adhesive and residue remover; fragrance and formulation ingredient (technical grade).
Restrictions on Use	Skin sensitizer, and stronger once oxidized by air: keep containers closed and use within shelf life. If swallowed, do NOT induce vomiting (aspiration hazard). Technical grade: not for food use.

2 Hazard Identification



Flammable



Irritant / harmful



Health hazard



Environmental hazard

Classification	Flammable liquids, Category 3 Aspiration hazard, Category 1 Skin corrosion/irritation, Category 2 Skin sensitization, Category 1 Hazardous to the aquatic environment, long-term hazard, Category 1 † † GHS environmental hazard class; not adopted under OSHA HCS (29 CFR 1910.1200).
Signal Word	**Danger**
Hazard Statements	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 H410 Very toxic to aquatic life with long lasting effects

Precautionary Statements

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, and lighting equipment.
P242 Use non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust, fume, gas, mist, vapors or spray.
P264 Wash hands and face 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, and eye/face protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P321 Specific treatment (see first-aid information on this label).
P331 Do NOT induce vomiting.
P332+P313 If skin irritation occurs: Get medical advice or attention.
P333+P313 If skin irritation or rash occurs: Get medical advice or attention.
P362 Take off contaminated clothing and wash before reuse.
P370+P378 In case of fire: Use alcohol-resistant foam, CO2 or dry chemical powder to extinguish.
P391 Collect spillage.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

Classification, hazard (H) and precautionary (P) statements and pictograms per OSHA HCS 2024 (29 CFR 1910.1200, Appendices A–C), aligned with GHS Rev. 7.

3 Composition / Information on Ingredients

Component	CAS No.	Formula	Concentration
D-Limonene	5989-27-5	C10H16	94.5-95.5% (w/w)

Concentrations are nominal; lot-specific values appear on the Certificate of Analysis. Components not contributing to classification are omitted.

4 First-Aid Measures

Eyes Rinse with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention immediately.

Skin Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing. Wash with soap. Get medical attention immediately.

Inhalation Move person to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.

Ingestion	Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.
Most Important Symptoms and Effects	Aspiration into the lungs, for example during vomiting, may cause chemical pneumonitis, which can be fatal. Skin contact causes irritation: redness, itching and pain; repeated contact may dry and crack the skin. May cause an allergic skin reaction (rash, itching), which can be delayed and recur on later exposure.
Immediate Medical Attention and Special Treatment	Aspiration hazard: if swallowed, do not induce vomiting and get medical attention immediately. Note to physician: observe for chemical pneumonitis; protect the airway before any gastric procedure.

5 Fire-Fighting Measures

Suitable Extinguishing Media	Alcohol-resistant foam, CO2, dry chemical powder. Water spray may be used to cool fire-exposed containers.
Unsuitable Extinguishing Media	Do not use a solid water stream — may scatter and spread fire.
Specific Hazards Arising from the Chemical	Vapors are heavier than air and may form explosive mixtures with air; they can travel to a source of ignition and flash back. Containers may rupture when heated.
Protective Equipment	Wear self-contained breathing apparatus and full protective clothing.
Hazardous Combustion Products	Carbon monoxide, carbon dioxide and acrid smoke on combustion; limonene oxides (skin sensitizers) on air oxidation.

6 Accidental Release Measures

Personal Precautions	Use PPE as described in Section 8. Ensure adequate ventilation. Evacuate personnel to safe areas.
Hazard-Specific Precautions	Eliminate all ignition sources. Use non-sparking tools and explosion-proof equipment; ground and bond containers during cleanup.
Environmental Precautions	Prevent leakage or spillage from entering drains, sewers, or waterways.
Containment & Cleanup	Absorb with inert material. Collect in appropriate waste container. Dispose per applicable regulations.

7 Handling and Storage

Safe Handling	Use with adequate ventilation. Avoid contact with skin, eyes, and clothing. Wash thoroughly after handling. Keep container closed when not in use.
Safe Storage	Store in a cool, dry, well-ventilated area away from heat, sparks, and open flame. Keep away from incompatible materials (see Section 10). Keep containers tightly closed. Ground and bond containers when transferring material.
Specific Storage Precautions	Keep tightly closed with minimal headspace, cool and out of light, away from oxidizers. Old or oxidized material is a stronger sensitizer.

8 Exposure Controls / Personal Protection

Occupational Exposure Limits

Limit	Value
Other Limits	AIHA WEEL 30 ppm TWA (no OSHA, NIOSH or ACGIH limit)

Engineering Controls	Use adequate ventilation. Provide eyewash stations and quick-drench showers accessible to areas of use.
Eye/Face Protection	Wear chemical safety goggles or face shield.
Skin Protection	Wear chemical-resistant gloves and protective clothing.
Respiratory Protection	Use a NIOSH-approved respirator with organic vapor cartridges. For confined spaces or exposures above the OEL, use supplied-air respiratory protection.

Exposure limits sourced from NIOSH Pocket Guide, OSHA 29 CFR 1910.1000 and ACGIH TLVs.

9 Physical & Chemical Properties

Appearance	Clear, Colorless to Slightly Yellow
Odor	Citrus (orange) odor
Odor Threshold	No data available
pH	No data available
Melting Point / Freezing Point	-96 °C (-141 °F); thickens near -74 to -78 °C
Boiling Point	175–176 °C (347–349 °F)
Flash Point	43–48 °C (110–118 °F), closed cup
Evaporation Rate	0.2 (n-butyl acetate = 1)
Flammability (solid, gas)	No data available
Upper/Lower Flammability or Explosive Limits	LEL 0.7% / UEL 6.1% (v/v in air)
Vapor Pressure	< 2 mmHg at 20 °C
Vapor Density	4.7 (air = 1)
Relative Density	0.84 at 20–25 °C (water = 1)
Solubility	Practically insoluble in water
Partition Coefficient (n-octanol/water)	No data available
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Particle Characteristics	Not applicable
Form	Liquid
Density	0.8411 g/cm^3 at 68 °F (NTP, 1992)
Refractive Index	1.461 - 1.481

Values shown reflect product-specific canonical data. Lot-specific ranges may vary; see the Certificate of Analysis for the shipped lot.

10 Stability and Reactivity

Reactivity	Not reactive under normal conditions of use and storage.
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing conditions.
Conditions to Avoid	Heat, sparks, open flame and static discharge; prolonged contact with air (forms sensitizing oxidation products).
Incompatible Materials	Strong oxidizing agents and peroxides; strong acids; halogens and iodine pentafluoride (violent reaction).
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide and acrid smoke on combustion; limonene oxides (skin sensitizers) on air oxidation.

11 Toxicological Information

See below for route-specific acute toxicity data.

Likely Routes of Exposure	Inhalation, skin contact, eye contact, ingestion.
Symptoms	Aspiration into the lungs, for example during vomiting, may cause chemical pneumonitis, which can be fatal. Skin contact causes irritation: redness, itching and pain; repeated contact may dry and crack the skin. May cause an allergic skin reaction (rash, itching), which can be delayed and recur on later exposure.
Delayed and Chronic Effects	Sensitization: once sensitized, later exposure to very low levels may cause a reaction. Repeated skin contact may cause dermatitis (dry, cracked skin).

Route	Value
LD50 Oral (rat)	4,400–5,200 mg/kg
LD50 Dermal (rabbit)	> 5,000 mg/kg

Carcinogen Classification

Agency	Status
IARC	Group 3 — not classifiable as to its carcinogenicity to humans (d-Limonene; IARC agent: d-Limonene, Vol. 56, 73).
NTP	Not listed as carcinogen.
OSHA	Not listed as carcinogen.

12 Ecological Information

Aquatic Hazard	H410 Very toxic to aquatic life with long lasting effects
Ecotoxicity	Daphnia EC50: 0.577 mg/L (48 h, Daphnia magna (flow-through); static EC50 7.85 mg/L also reported); Fish LC50: 0.702 mg/L (96 h, Pimephales promelas)

Persistence & Degradability	Resistant to hydrolysis; rapid atmospheric degradation — 73% ThBOD (activated sludge, MITI)
Bioaccumulative Potential	log Kow 4.57, BCF 480 (estimated; high)
Mobility in Soil	Very low mobility in soil (estimated Koc 1120)

13 Disposal Considerations

Dispose of contents/container in accordance with applicable federal, state, and local regulations. Do not dispose of into drains or waterways.

EPA RCRA Waste Codes	D001 (ignitable). d-Limonene is not a P-, U- or F-listed waste.

If discarded, this material may be an ignitable hazardous waste (EPA RCRA D001, 40 CFR 261.21(a)(1): flash point below 60 °C; aqueous solutions with less than 24% alcohol by volume are excluded). The waste generator must make the final hazardous-waste determination.

14 Transport Information

US DOT (49 CFR)

UN Number	UN2319
Proper Shipping Name	Terpene hydrocarbons, N.O.S.
Hazard Class	3
Packing Group	III

Packaging-dependent regulation: Non-bulk packaging (≤ 119 gal, e.g. drums, pails, cans) ships as NON-REGULATED under the combustible-liquid reclassification (49 CFR 173.150(f)). Bulk packaging (totes/IBC > 119 gal) ships fully regulated under the DOT profile shown above. The combustible-liquid reclassification does not apply to transportation by vessel or aircraft, except where other means of transportation is impracticable (49 CFR 173.120(b)(2)).

Environmental Hazards	Meets GHS aquatic-hazard criteria; may be a marine pollutant under the IMDG Code (vessel transport).

IMDG / IATA classifications may differ from US DOT. Verify current regulations before international shipment.

15 Regulatory Information

Inventory / List	Status
California Proposition 65	Not listed
US EPA TSCA Active Inventory	Listed
EPCRA SARA 313 (TRI)	Not listed

SARA 311/312 hazard categories correspond to the GHS classification in Section 2. Data retrieved as of: California Proposition 65 2026-11-02; US EPA TSCA Active Inventory 2026-11-02; EPCRA SARA 313 (TRI) 2026-11-02.

16 Other Information

Revision Date	2026-11-12
Format	16-section format per OSHA HCS 2024 (29 CFR 1910.1200, Appendix D), aligned with GHS Rev. 7.

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