

Material Safety Data Sheet (MSDS)

D-Limonene

Revision Date: 24-September-2025

Version: 1.0

Section 1: Product Identification

- **Product Name:** D-Limonene
- **Chemical Formula:** C₁₀H₁₆
- **CAS No:** 5989-27-5
- **Synonyms:** (+)-Limonene; Dipentene
- **Recommended Use:** Used in flavorings, fragrances, cleaning agents, and as a solvent.

Section 2: Hazards Identification

- **Classification (GHS):** Flammable Liquid (Category 3); Skin Irritant (Category 2); Skin Sensitizer (Category 1); Aquatic Acute Hazard (Category 1); Aquatic Chronic Hazard (Category 1)
- **Signal Word:** Warning
- **Hazard Statements:**
 - Flammable liquid and vapor
 - Causes skin irritation
 - May cause allergic skin reaction
 - Very toxic to aquatic life with long lasting effects
- **Precautionary Statements:**

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- Keep away from heat, sparks, open flames, and hot surfaces
- Wear protective gloves/eye protection
- Avoid release to the environment
- Wash thoroughly after handling

Section 3: Composition / Information on Ingredients

- **Concentration:** $\geq 95\%$

Section 4: First Aid Measures

- **Inhalation:** Move to fresh air. If symptoms occur, seek medical attention.
- **Skin Contact:** Wash with plenty of soap and water. Remove contaminated clothing. Seek medical advice if irritation persists.
- **Eye Contact:** Rinse cautiously with water for several minutes. Remove contact lenses if present. Seek medical advice if irritation continues.
- **Ingestion:** Rinse mouth. Do not induce vomiting. Seek immediate medical attention.

Section 5: Fire-Fighting Measures

- **Suitable Extinguishing Media:** Foam, dry chemical, carbon dioxide (CO₂).
- **Specific Hazards:** Flammable liquid and vapor; combustion may produce carbon oxides.
- **Protective Equipment:** Firefighters should wear self-contained breathing apparatus and protective clothing.

Section 6: Accidental Release Measures

- **Personal Precautions:** Use protective equipment. Avoid inhalation and skin/eye contact. Eliminate all ignition sources.
- **Environmental Precautions:** Prevent entry into drains and waterways. Toxic to aquatic organisms.
- **Cleanup Methods:** Absorb with inert material (sand, earth). Collect in suitable container for proper disposal.

Section 7: Handling and Storage

- **Handling:** Avoid inhalation of vapors. Avoid skin/eye contact. Use in well-ventilated areas. Keep away from ignition sources.
- **Storage:** Store in tightly closed containers in a cool, dry, well-ventilated place away from heat and direct sunlight.

Section 8: Exposure Controls / Personal Protection

- **Exposure Limits:** Not specifically established.
- **Engineering Controls:** Ensure adequate ventilation.
- **Personal Protective Equipment:** Gloves, goggles, protective clothing; respirator if ventilation is inadequate.

Section 9: Physical and Chemical Properties

- **Appearance:** Colorless to pale yellow liquid
- **Odor:** Citrus-like odor
- **Boiling Point:** 176 °C
- **Flash Point:** 48 °C (closed cup)
- **Solubility:** Insoluble in water; soluble in ethanol and organic solvents
- **Molecular Weight:** 136.23 g/mol

Section 10: Stability and Reactivity

- **Stability:** Stable under normal conditions.
- **Incompatible Materials:** Strong oxidizing agents.
- **Hazardous Decomposition Products:** Carbon oxides under fire conditions.

Section 11: Toxicological Information

- **Routes of Exposure:** Inhalation, ingestion, skin and eye contact.
- **Acute Effects:** Flammable liquid; causes skin and eye irritation; may cause allergic reaction in sensitive individuals. Oral LD50 (rat) ~4400 mg/kg.
- **Chronic Effects:** Prolonged or repeated exposure may cause dermatitis or sensitization.

Section 12: Ecological Information

- **Ecotoxicity:** Very toxic to aquatic life with long lasting effects.
- **Persistence and Degradability:** Expected to be biodegradable.
- **Bioaccumulative Potential:** May bioaccumulate in aquatic organisms.

Section 13: Disposal Considerations

- Dispose of contents/container in accordance with local/regional/national regulations. Do not release into the environment.

Section 14: Transport Information

- **UN Number:** UN2319
- **Proper Shipping Name:** Terpene hydrocarbons, n.o.s. (D-Limonene)
- **Hazard Class:** 3 (Flammable liquid)
- **Packing Group:** III

Section 15: Regulatory Information

- Complies with Indian chemical safety regulations and listed under international chemical inventories.
- Classified as hazardous substance as per GHS.

Section 16: Other Information

Disclaimer: The above information is believed to be correct but does not claim to be exhaustive. Users are responsible for verifying suitability under actual conditions of use. Triveni Chemicals disclaims liability for damage resulting from handling or contact.

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