



PRODUCT: D-LIMONENE

ORDER NO: 761469

PROD NO : 247502

Product Codes: 301000-Technical Grade 301000 2 Citrus Terpenes 302000-Orange Terpenes 302000-Food Grade 302001 2 High Purity grade 302002 2 Ultra High Purity grade 303000-Lemon-Lime Grade CAS Number: 94266-47-4 - Technical grade, Citrus Terpenes, Lemon-Lime grade CAS Number: 8028-48-6 2 Food grade, Orange Terpenes, High Purity grades

INECS Nos: 304-454-3 2 Technical, Lemon-Lime, Citrus Terpenes

232-433-8 2 Food grade, Orange Terpenes, High Purity grades

Synonyms: Citrus Stripper Oil, Terpene Hydrocarbons

## Section II - HAZARDOUS COMPONENTS

Volatile Ingredients: d-Limonene (solvent) is the major component (technical grade 93%, food grade 95%, high purity grades 98%, lemon-lime 70%) with the balance consisting of other terpene hydrocarbons and oxygenated compounds - citral, myrcene, alpha-pinene, linalool predominant. Product is a by-product of citrus, entirely of natural origin, and to the best of our knowledge contains no artificial flavors, sulfites, nitrites, or pesticide residue exceeding tolerances established by the FDA. d-Limonene does NOT contain lead, cadmium, mercury, or hexavalent chromium or come in contact with these chemicals since it is an citrus-derived essential oil produced by steam/vacuum distillation. Further, d-Limonene is packaged in food grade containers with inert liners that do NOT contain lead, cadmium, mercury, or hexavalent chromium. d-Limonene does NOT contain and is NOT manufactured with any of the Class I or II ozone-depleting substances listed under the United States Clean Air Act of 1990.

### Hazardous Materials Identification System - HMIS:

Health Hazard - Mild skin irritant

Flammability - Flashpoint above 110 deg F (43 deg C)

Reactivity - Stable

Protection - Safety glasses, gloves

This substance contains no materials subject to the reporting requirements of RCRA TITLE III SECTION 313.

## Section III - PHYSICAL DATA

1) Technical Grade; 2) Food Grade & High Purity; 3) Lemon-Lime Grade

### Appearance:

Yellow to water-white oil

Water-white oil

Water-white oil

### Color:

Orange aroma

Orange aroma

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Lemon-lime aroma

Specific Gravity (25 deg C):

0.838 - 0.843

0.839 2 0.843

0.841 2 0.848

Refractive Index (20 deg C):

1.4710 - 1.4740

1.4710 2 1.4740

1.470 2 1.4770

Optical Rotation (25 deg C)

+96 deg - +104 deg

+96 deg - + 104 deg

+70 deg - +75 deg

Flashpoint (CCFP)

>110 deg F (43 deg C)

>110 deg F (43 deg C)

>110 deg F (43 deg C)

Boiling Point

349 deg F (176 deg C)

349 deg F (176 deg C)

349 deg F (176 deg C)

Evaporation Rate

0.2 (BuAc=1)

0.2 (BuAc=1)

0.2 (BuAc=1)

Water Solubility

Insoluble

Insoluble

Insoluble

Vapor Pressure (20 deg C)

<2mmHg

<2mmHg

<2mmHg

Boiling Point Info: The published melting point of d-Limonene is approximately -140 deg F (-96 deg C). But, testing has shown that below -9 deg F (-73 deg C), it becomes a thick, white, gel-like substance that is impossible to pump.

Section IV - FIRE AND EXPLOSION HAZARD DATA

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Flash Point (CCCFP): >110 deg F (43 deg C)

Flammable Limits: LEL = 0.7% UFL = 6.1% (Identified for Technical Grade only)

Extinguishing Media: Carbon dioxide, foam or dry chemical

Special Fire Fighting Procedures: SCBA recommended. Smother to exclude air. Do not use water. Handle as an oil fire.

Unusual Fire and Explosive Hazards: Combustible liquid. Keep away from heat, sparks, and open flame. Guard against spontaneous combustion of improperly discarded oily rags.

Incompatibility (Materials to avoid): Strong oxidizing agents and acidic agents including acidic clays, peroxides, halogens, vinyl chloride, and sulfine pentafluoride.

Hazardous Decomposition Materials: Smoke may be acrid and the fumes may be irritating. Burning generates CO, CO2, and smoke.

Hazardous Polymerization: None described

Conditions to Avoid for Polymerization: Polymerization catalysts such as aluminum chloride and acidic clays. Stability Considerations: Stable

Conditions to Avoid for Stability: Avoid temperatures over 110 deg F (43 deg C)

#### Section V - HEALTH HAZARD DATA

Health Hazards (Acute and Chronic): Product is harmful if swallowed. Ingestion may cause vomiting, headache, and other medical problems. May be irritating to skin and eyes. Skin contact may cause slight redness. Eye contact can cause moderate to high irritation. Inhalation can cause nose, throat, and respiratory tract irritation, coughing and headache. Prolonged or repeated exposure can cause drying, defatting, and dermatitis of skin.

Signs and Symptoms of Exposure: Product may be irritating to the skin, eyes, nose and throat.

Medical Conditions Generally Aggravated by Exposure: Persons with allergies or pre-existing skin conditions should avoid contact with this product.

#### Emergency & First Aid Procedures :

Eyes: Remove contact lenses at once. Flush with water for at least 15 minutes. If irritation persists, seek medical attention.

Skin: Wash affected area with copious amounts of soap and water. If

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irritation develops, seek medical attention.

estion: Seek medical attention immediately. Do not induce vomiting. Rinse mouth with water, then drink one glass of water. Do not leave victim unattended. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness, or is convulsing.

halation: If symptoms of overexposure are experienced, evacuate to fresh air. If symptoms persist, seek medical attention.

#### Section VI - TOXICOLOGICAL DATA/ACUTE TOXICOLOGY

Limonene is not acutely toxic.

al: LD50 >5 g/kg, rabbit

ermal: LD50 >5 g/kg, rabbit

in: The skin irritancy of limonene in guinea pigs and rabbits is considered moderate and low, respectively. Sensitization: d-Limonene is not a sensitizer. Improper storage and handling can lead to oxidation. The oxidized forms of d-Limonene have been shown to be a skin sensitizer.

halation: RfD50 >1000 ppm

ronic Toxicity: Not listed as a carcinogen (OSHA, NTP, IARC, or ACGIH)

otoxicological Information: Product may be toxic to aquatic organisms.

#### Section VII - SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled: Use protective gloves to avoid skin contact. Small spills can be wiped up. Large spills should be absorbed by dirt, sand, or other suitable absorbents for disposal. Do not use spills down drains, sewers, or waterways. d-Limonene may be toxic to aquatic organisms. Move leaking containers to well ventilated area. No smoking. Eliminate any source of ignition. Minimize inhalation. Use NIOSH approved respiratory protection device in areas of high vapor concentration. CAUTION: slippery on floor.

Best Disposal Method: Incinerate or Dispose in Accordance with Local, State, and Federal Regulations. Taking regulations into consideration, waste may be incinerated or handled through EPA spill control plan via landfill or incineration.

#### Section VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: Not normally required. If vapor concentration becomes high, use NIOSH approved respirators.

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entilation: Local exhaust should be adequate. Mechanical ventilation recommended as necessary.

Eye Protection: Safety goggles or glasses suggested.

Skin Protection: Oil resistant gloves.

Other Protective Equipment: Oil resistant apron, emergency eye wash and shower stations.

Appropriate Hygienic Practices: Wash thoroughly after handling. Launder contaminated clothing before re-use.

#### Section IX 2 SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing: Usual precautions for combustible liquids.

Handling and Storage Precautions: Store in a warehouse with proper sprinkler/fire deterrent system. Avoid contact with incompatible chemicals listed in Section IV. Store in tightly sealed, full containers in well-ventilated controlled warehouse conditions. Partially filled containers should be blanketed with nitrogen.

Other Precautions: Product may expand slightly in storage causing pressure to build in container. Open container carefully if product appears to be under pressure. Drum lining may occasionally chip and fall to bottom of container after long storage or excessive handling. As a precaution, pour liquid through filter/strainer to catch small pieces of liner before blending or repackaging. Commercially clean empty containers before re-use. CAUTION: Do not weld or cut empty containers (Vapors May Ignite).

#### Section X - REGULATORY INFORMATION

Inventory	Status
United States (TSCA)	Listed on the inventory.
Canada (DSL)	Listed on the inventory.
European Union (EINECS)	Listed on the inventory.
Australia (AICS)	Listed on the inventory.
Japan (MITI)	Listed on the inventory.
South Korea (KECL)	Listed on the inventory.
Philippines (PICCS)	Listed on the inventory.

#### Section XI - TRANSPORTATION INFORMATION

DOT Status: Hazardous DOT Label/Placard Exemption 173.150(f) applies;

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UNIVAR USA INC.

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LOG NO: P12355V/S

MATERIAL SAFETY DATA SHEET

INFRAME UPLOAD DATE: 11/11/05

VERSION: 011

PRODUCT: D-LIMONENE

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DOT Status: Hazardous Highway/Trail: per requirements for Combustible Liquids

DOT Status: Hazardous

DOT Ship: per requirements for Flammable Liquids

SHIPPING CLASSIFICATION:

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.

Hazard Class: 3

Identification No.: UN2319

Packing Group: III

The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

SECTION XII - ADDITIONAL INFORMATION

Additional Fire Protection Association Hazard Ratings - NFPA(R):

Health Hazard - Slight

Flammability - Moderate

Reactivity - Minimal

Key Legend Information:

AICHH American Conference of Governmental Industrial Hygienists

MSHA Occupational Safety and Health Administration

NTP National Toxicology Program

NIH International Agency for Research on Cancer

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EIS NO: P12355V5

MATERIAL SAFETY DATA SHEET

MINIFRAME UPLOAD DATE: 11/11/05

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REV 10 - 2/2002

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FOR ADDITIONAL INFORMATION

CONTACT: VEND COORDINATOR UNIVAR USA INC.  
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400

07/10/06 12:31 PRODUCT: 247502 CUST NO: 379233 ORDER NO: 761469

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