



SAFETY DATA SHEET Technical Grade d-Limonene



SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product Name: Technical Grade d-Limonene

Product Codes(s): TGDL

Synonym(s): Citrus stripper oil; Fractions derived from distillation of cold pressed orange oil; Terpene hydrocarbons

REACH Registration Number: Data not available

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

General use: General purpose cleaner/degreaser

Uses advised against: None known

1.3 Details of the supplier and of the safety data sheet

Manufacturer/Distributor

Suncoast Research Labs, Inc./dba Citrus Depot

2901 Anvil Street North

St. Petersburg, FL 33710 USA

+1-800-424-8045; +1 -727-344-7627

1.4 Emergency telephone number: ChemTel Inc (24 hours) +1-800-255-3924; International: +1-813-248-0585

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Product definition: Substance

Classification in accordance with 28 CFR 1910 (OSHA HCS)

Flammable, Liquid - Category 3 [226]

Skin Irritation - Category 2 [315]

Skin Sensitizer - Category 1 [H317]

Chronic Aquatic - Category 1 [H410]

2.2 Label Elements

Hazard Symbol(s):



GHS02

GHS07

GHS09

Signal Word:

Warning

Hazard Statement(s):

H226 - Flammable liquid and vapor

H315 - Causes skin irritation

H317 - May cause allergic skin reaction

H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements:

[Prevention]

P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.

P233 - Keep container tightly closed.

P240 - Ground and bond container and receiving equipment.

P241 - Use explosion-proof electrical, ventilating, lighting and mixing equipment.

P242 - Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P261 - Avoid breathing mists, vapors and spray.

P264 - Wash hands or other skin areas contacting this product 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 and eye protection.

[Response]

P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide for extinction.

P303 + P361 + P353 - IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or shower.

P321 - Specific treatment: Refer to Section 4.2 of this SDS and seek medical attention.

P333 + P313 - If skin irritation or rash occurs: Get medical attention.

P362 - Take off contaminated clothing and wash before reuse.

P391 - Collect spillage.

[Storage]

P403 + P233 + P235 - Store in well-ventilated place. Keep container tightly closed. Keep cool.

[Disposal]

P501 - Dispose of contents and container in accordance with national and local regulations.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
93 - 95	Terpene Hydrocarbons	5989-27-5	227-813-5	601-029-00-7	H226, H315, H317, H410

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to the health or the environment and hence require reporting in this section.

3.2 Mixtures

Chemical characterization

Not applicable

SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: If product mist or vapor causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. If symptoms persist or if you feel unwell, seek medical attention.

Eyes: Immediately flush eyes with large amounts of water for 15 minutes, occasionally lifting upper and lower lids. Remove contact lenses, if present and easy to do, after first 2 minutes and continue rinsing. Obtain immediate medical attention, preferably from an ophthalmologist.

Skin: Remove contaminated clothing. Flush skin with lukewarm water for 15 minutes. Wash affected area with soap and water. Thoroughly clean contaminated clothing and shoes before reuse. If irritation persists or if rash develops, seek medical attention.

Ingestion: Rinse mouth with water if victim is conscious. Remove dentures, if present. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration of material into the lungs. This material can get into the lungs during swallowing or vomiting, resulting in lung inflammation or lung damage. Do not leave victim unattended. Never give anything by mouth to an unconscious or convulsing person. Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

Potential health symptoms and effects

Eyes: May cause eye irritation with redness, swelling, stinging and tearing.

Skin: Causes skin irritation with redness, itching and discomfort. May cause an allergic skin reaction in susceptible individuals. Repeated exposure to unprotected skin may cause drying and cracking of the skin.

Inhalation: Mist or vapor may cause irritation of the nose, throat and lungs. May cause an allergic, asthma-like response in some individuals.

Ingestion: May cause digestive upset including gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic: Pre-existing disorders of the skin and respiratory system may be aggravated by exposure to this product. Prolonged and repeated skin exposure may result in defatting of skin and dermatitis. May cause an allergic skin reaction. May cause an allergic respiratory reaction with asthma-like symptoms. Terpene Hydrocarbons are known animal carcinogens. Refer to Section 11.2.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishable media

Suitable methods of extinction: Use media such as foam, dry chemical or carbon dioxide.

Unsuitable methods of extinction: Water spray may be ineffective. Water jets and high pressure streams may spread the fire.

5.2 Special hazards arising from the substance or mixture

Combustible liquid. Vapors are heavier than air and can travel along the ground to a source of ignition and flash back. Closed containers may explode due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

Rags soaked with any solvent can present a fire hazard and should be stored in UL listed or Factory Mutual approved, covered containers. Improperly stored rags, under certain conditions, can lead to spontaneous combustion.

Explosion hazards: Vapors may form explosive mixtures with air, especially in confined areas.

5.3 Advice for firefighters

Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. Firefighters should control runoff water to prevent environmental contamination.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear appropriate protective clothing designated in Section 8. Remove all sources of ignition. Ventilate the area.

6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers and waterways.

6.3 Methods and materials for containment and cleaning up

Cover drains and contain spill. Cover with a large quantity of inert absorbent. Do not use combustible absorbents such as sawdust. Collect product using non-sparking tools and place into approved container for proper disposal. Observe possible material restrictions (Sections 7.1 and 10.5). Do not flush spilled material down the drain. Clean contaminated area with soap and water.

In the USA spills of material which could reach surface waters must be reported to the United States Coast Guard National Response Center at (800) 424-8802 or (202) 426-2675.

6.4 Reference to other sections

For indications about waste treatment, see Section 13.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling

Observe label precautions. Wear all appropriate protective equipment specified in Section 8. Keep containers closed when not in use.

Advice on protection against fire and explosion

Keep away from heat, sparks, open flames and hot surfaces. No smoking. To avoid fire or explosion, dissipate static electricity by grounding and bonding containers and equipment before transferring material.

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10.5), food and drink. Transfer only to approved containers having correct labeling. Keep containers tightly closed. Protect container against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent spillage. Containers of this material may be hazardous when empty as they may retain product residues. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Do not take internally. Keep out of reach of children.

7.3 Specific end uses

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure values.

8.2 Exposure controls

Engineering Measures: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable. Refer to Section 7.1.

Individual protection measures: Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking or using the lavatory.

Eye/face protection: Wear protective goggles or safety glasses with unperforated side shields during use. Refer to 29 CFR 1910.133, ANSI Z87.1 or European Standard EN 166.

Hand Protection: Wear gloves recommended by glove supplier for protection against materials in section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period.

Other protective equipment: Protective clothing. Protective boots, if the situation requires.

Respiratory Protection: None required with normal use. Always use an approved respirator when vapor/aerosols are generated. Where risk assessment shows air-purifying respirators are appropriate use a full-faced respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Environmental exposure controls: Do not empty into drains.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear, colorless liquid
Odor	Citrus
Odor Threshold	200 ppb
Molecular Weight	Not applicable
Chemical Formula	Not applicable
pH	Not determined
Melting Point, Range	-96 °C (-140.8 °F)
Initial Boiling Point	154.4 - 166.7 °C (310 - 332 °F)
Evaporation Rate	0.2 (n-BuAc =1)
Flammability (solid, gas)	Not applicable
Flash Point	46 °C (115 °F) TCC
Autoignition Temperature	237 °C (458 °F)
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	0.7%
Upper Explosive Limit (UEL)	6.1%
Vapor Pressure	<2 mm Hg @ 22° C
Vapor Density	No data available
Specific Gravity	0.838 - 0.843
Viscosity	0.923 cp @ 25° C
Solubility in Water	<1g/100 ml
Partition Coefficient: n-octanol/water	4 - 5
Volatiles by Volume @ 21° C	>95%

9.2 Other data

No data available

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity

No special reactivity has been reported.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

None known

Hazardous polymerization does not occur.

10.4 Conditions to avoid

Extreme temperatures. Contact with incompatible materials.

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

Thermal decomposition products include oxides of carbon.

SECTION 11 - TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Oral Toxicity

LD50, Rat: 5,300 mg/kg

Acute inhalation toxicity

LC50, Mouse: 67,500 mg/m³

Acute dermal toxicity

LD50, Rabbit: >5,000 mg/kg

Skin irritation

Causes skin irritation

Eye irritation

May cause eye irritation

Sensitization

Can cause allergic reaction and sensitization; may cause allergic respiratory reaction

Genotoxicity

No data available

Mutagenicity

No data available

Specific organ toxicity - single exposure

No data available.

Specific organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Further information

Terpene Hydrocarbons (CAS #5989-27-5): IARC, Group 3 carcinogen - Not classifiable as to its carcinogenicity to humans. Not listed as a carcinogen by ACGIH, NTP or OSHA.

No data is available regarding the mutagenicity or teratogenicity of this material in humans, nor is there available data that indicated that it causes adverse developmental or fertility effects in humans.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

Terpene Hydrocarbons are very toxic to aquatic life with long term effects in the environment.

Acute and prolonged toxicity to fish: LC50 - Pimephales promelas (Fathead minnow) 96 h: 0.72 mg/l

Acute toxicity to aquatic invertebrates: EC50 - Daphnia pulex (Water flea), 48 h: 69.6 mg/l

12.2 Persistence and degradability

Material is expected to be readily biodegradable.

12.3 Bioaccumulation potential

This material has the potential to bioaccumulate.

12.4 Mobility in soil

Terpene Hydrocarbons absorb to soil and have low mobility.

12.5 Results of PBT and vPvB assessment

This material is not identified as a PBT substance.

12.6 Other adverse effects

Additional ecological information

Do not allow material to run into surface waters, wastewater or soil.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste: The classification of this product may meet the criteria for a hazardous waste.

SECTION 14 - TRANSPORT INFORMATION

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

U.S. DOT

Proper Shipping Name: Terpene Hydrocarbons, n.o.s.
Hazard Class: 3
UN/NA: 2319
Packing Group: III
NAERG: Guide #128
Packaging Authorization: Non-Bulk: 49 CFR 173.203; Bulk: 173.242
Packaging Exceptions: 49 CFR 173.150

IMO/IMDG

Proper Shipping Name: Terpene Hydrocarbons, n.o.s.
Hazard Class: 3
UN/NA: 2319
Packing Group: III
Marine Pollutant: YES
EMS Number: F-E, S-D

ICAO/IATA

Proper Shipping Name: Terpene Hydrocarbons, n.o.s.
Hazard Class: 3
UN/NA: 2319
Packing Group: III
Quantity Limitations: 49 CFR 175.27 and 175.75 - Cargo Aircraft Only: 220 l; Passenger Aircraft/rail: 60 l

RID/ADR

Proper Shipping Name: Terpene Hydrocarbons, n.o.s.
Hazard Class: 3
UN/NA: 2319
Packing Group: III



SECTION 15 - REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for substance or mixture

U. S. Federal Regulations

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

OSHA Process Safety Management Standard: This material is not regulated under OSHA PSM Standard 29 CFR 1910.119.

EPA Risk Management Planning Standard: This material is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

TSCA Status: This material is listed on the TSCA Inventory. This product is not subject to TSCA 12(b) Export Notification.

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories: This product does not contain any chemical components which are subject to the reporting requirements of Section 311/312 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 313 Information: None of the chemicals in this product exceed the threshold (de minimis) reporting levels established by Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: No components of the product are subject to the reporting requirements of these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification: No components of the product are subject to the reporting requirements of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): No components of the product exceed the threshold (de minimis) reporting levels for hazardous wastes established by CERCLA.

Clean Air Act (CAA)

This product does not contain any chemicals listed as a Hazardous Air Pollutant (HAP) designated in CAA Section 112 (b).
This product does not contain any Class 1 Ozone depleters.
This product does not contain any Class 2 Ozone depleters.

Clean Water Act (CWA)

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
Terpene Hydrocarbons are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986:

This product contains no chemical(s) known to the State of California to cause cancer, birth defects or other reproductive harm.

Other U.S. State Inventories

This product is not listed on any State Hazardous Substance Inventories, Right-to-Know lists or Air Quality/Air Pollutants lists.

Canada

WHMIS Hazard Symbol and Classification



B-3 - Flammable liquid with flash points greater than 38 °C (100 °F) but inferior to 93 °C (199.4 °F).



D2B - Toxic material causing other toxic effects - skin irritation; skin sensitization

Canadian National Pollutant Release Inventory (NPRI): Terpenes (all isomers) are listed on the NPRI.

European Economic Community

Labeling (67/548/EEC to 1999/45/EC)



Xi - Irritant



N - Dangerous for the environment

Risk Phrases: R10 - Flammable.
R38 - Irritating to skin.
R43 - May cause sensitization by contact.
R50/53 - Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Safety Phrases: S2 - Keep out of the reach of children.
S24 - Avoid contact with skin.
S37 - Wear suitable gloves.
S60 - This material and its container must be disposed of as hazardous waste.

WGK, Germany (Water danger/protection): 3

Global Chemical Inventory Lists

Country	Inventory Name	Inventory Listing*
Canada:	Domestic Substance List (DSL).	Yes
Canada:	Non-Domestic Substance List (NDSL).	No
Europe:	Inventory of New and Existing Chemicals (EINECS)	Yes
United States:	Toxic Substance Control Act (TSCA)	Yes
Australia:	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand:	New Zealand Inventory of Chemicals (NZIoC)	Yes
China:	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan:	Inventory of Existing and New Chemical Substances (ENCs)	Yes
Korea:	Existing Chemicals List (ECL)	Yes
Philippines:	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*"Yes" indicates that all components of this product are in compliance with the inventory requirements administered by the governing country.

*"No" indicates that one or more components of this product are not on the inventory or are exempt from listing.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16 - OTHER INFORMATION

Hazardous Material Information System (HMIS)

Health	1
Flammability	2
Physical Hazard	0
Personal Protection	C

HMIS and NFPA Hazard Rating Legend

* = Chronic Health Hazard 2 = MODERATE
0 = INSIGNIFICANT 3 = HIGH
1 = SLIGHT 4 = EXTREME



National Fire Protection Association (NFPA)

Flammability



Health

Instability

Special

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