



# TCI AMERICA

## SAFETY DATA SHEET

Revision number: 1  
Revision date: 07/06/2018

### 1. IDENTIFICATION

**Product name:** (+)-Limonene  
**Product code:** L0047

**Product use:** For laboratory research purposes.  
**Restrictions on use:** Not for drug or household use.

Company:  
TCI America  
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Portland, OR 97203 U.S.A.  
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**Emergency telephone number:**  
Chemical Emergencies:  
TCI America (8:00am - 5:00pm) PST  
+1-503-286-7624  
Transportation Emergencies:  
Chemtrec 24-Hour  
+1-800-424-9300 (U.S.A.)  
+1-703-527-3887 (International)  
**Responsible department:**  
TCI America  
Environmental Health Safety and Security  
+1- 503-286-7624

### 2. HAZARD(S) IDENTIFICATION

**OSHA Haz Com: CFR 1910.1200:** Skin Corrosion/Irritation [Category 2]  
**WHMIS 2015:** Eye Damage/Irritation [Category 2A]  
Sensitization - Skin [Category 1]  
Flammable Liquids [Category 3]  
Aquatic Hazard (Acute) [Category 1]  
Aquatic Hazard (Long-Term) [Category 1]

**Signal word:** Warning!

**Hazard Statement(s):** Flammable liquid and vapor  
Causes skin irritation  
Causes serious eye irritation  
May cause an allergic skin reaction  
Very toxic to aquatic life  
Very toxic to aquatic life with long lasting effects

**Pictogram(s) or Symbol(s):**



**Precautionary Statement(s):**  
[Prevention]

Keep away from heat, sparks, open flames and hot surfaces. – No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist, vapors or spray. Avoid release to the environment. Contaminated work clothing must not be allowed out of the workplace. Wash hands and face thoroughly after handling. Wear protective gloves, eye protection.

[Response]

If on skin: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice or attention. Wash contaminated clothing before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention. In case of fire: Use dry chemical, dry sand or foam to extinguish. Collect spillage.

[Storage]

Store in a well-ventilated place. Keep cool.

[Disposal]

Dispose of contents and container in accordance with local, regional, national regulations (e.g. US: 40 CFR Part 261, EU:91/156/EEC, JP: Waste Disposal and Cleaning Act, etc.).

**Hazards not otherwise classified:** May be harmful if swallowed.  
[HNOC]

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Substance/mixture:</b>	Substance
<b>Components:</b>	(+) -Limonene
<b>Percent:</b>	>95.0%(GC)
<b>CAS RN:</b>	5989-27-5
<b>Molecular Weight:</b>	136.24
<b>Chemical Formula:</b>	C <sub>10</sub> H <sub>16</sub>
<b>Synonyms:</b>	(+) -p-Mentha-1,8-diene

**4. FIRST-AID MEASURES****Description of first aid measures**

<b>Inhalation:</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
<b>Skin contact:</b>	Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
<b>Eye contact:</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
<b>Ingestion:</b>	Get medical advice/attention if you feel unwell. Rinse mouth.

**Symptoms/effects:**

<b>Acute:</b>	Redness.
<b>Delayed:</b>	May cause skin sensitization.

**Indication of any immediate medical attention:**

Not available.

**Notes to physician:**

No data available

**5. FIRE-FIGHTING MEASURES**

<b>Suitable extinguishing media:</b>	Dry chemical, foam, carbon dioxide.
<b>Unsuitable extinguishing media:</b>	Water (It may scatter and spread fire.)
<b>Hazardous combustion products:</b>	These products include: Carbon oxides
<b>Other specific hazards:</b>	Closed containers may explode from heat of a fire.
<b>Advice for firefighters:</b>	Wear self-contained breathing apparatus if possible.

**6. ACCIDENTAL RELEASE MEASURES**

<b>Personal precautions, protective equipment and emergency procedures:</b>	Use extra personal protective equipment (self-contained breathing apparatus). Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.
<b>Environmental precautions:</b>	Be careful not to let it flow into rivers, etc., since adverse effects on the environment are concerned.
<b>Methods and materials for containment and cleaning up:</b>	Absorb spilled material in dry sand or inert absorbent before recovering it into an airtight container. In case of large amount of spillage, contain a spill by bunding. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.
<b>Prevention of secondary hazards:</b>	Remove all sources of ignition. Fire-extinguishing devices should be prepared in case of a fire. Use spark-proof tools and explosion-proof equipment.

**7. HANDLING AND STORAGE**

<b>Precautions for safe handling:</b>	Handling is performed in a well ventilated place. Wear suitable protective equipment. Prevent generation of vapour or mist. Keep away from heat/sparks/open flame/hot surfaces. -No smoking. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Wash hands and face thoroughly after handling. Use a closed system if possible. Use a ventilation, local exhaust if vapour or aerosol will be generated. Avoid contact with skin, eyes and clothing.
<b>Conditions for safe storage, including any incompatibilities</b>	
<b>Storage conditions:</b>	Keep container tightly closed. Store in a cool, dark and well-ventilated place. Store under inert gas. Store away from incompatible materials such as oxidizing agents. Light-sensitive Air-sensitive
<b>Packaging material:</b>	Comply with laws.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Appropriate engineering controls:** Follow safe industrial engineering/laboratory practices when handling any chemical. Install a closed system or local exhaust. Also install safety shower and eye bath.

### Personal protective equipment

**Respiratory protection:** Vapor respirator. Follow local and national regulations.  
**Hand protection:** Protective gloves.  
**Eye protection:** Safety glasses. A face-shield, if the situation requires.  
**Skin and body protection:** Protective clothing. Protective boots, if the situation requires.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state (20°C):</b>	Liquid		
<b>Form:</b>	Clear		
<b>Colour:</b>	Colorless - Very pale yellow		
<b>Odour:</b>	Lemon-like		
<b>Odor threshold:</b>	No data available		
<b>Odour threshold:</b>	No data available		
<b>Melting point/freezing point:</b>	-75°C (-103°F)	<b>pH:</b>	No data available
<b>Boiling point/range:</b>	176°C (349°F)	<b>Vapour pressure:</b>	No data available.
<b>Decomposition temperature:</b>	No data available	<b>Vapour density:</b>	4.7
<b>Relative density:</b>	0.84	<b>Dynamic Viscosity:</b>	No data available
<b>Kinematic viscosity:</b>	No data available	<b>Evaporation rate(Butyl Acetate=1):</b>	No data available
<b>Log Pow:</b>	No data available	<b>Autoignition temperature:</b>	237°C (459°F)
<b>Flash point:</b>	51°C (124°F)	<b>Flammability or explosive limits:</b>	
<b>Flammability(solid, gas):</b>	No data available	<b>Lower:</b>	0.7%
		<b>Upper:</b>	6.1%
<b>Solubility(ies):</b>			
<b>[Water]</b>	Insoluble (13.8mg/L, 25°C)		
<b>[Other solvents]</b>			
<b>Miscible:</b>	Ether, Alcohols		
<b>Slightly soluble:</b>	Glycerol		
<b>Insoluble:</b>	Propylene glycol		

## 10. STABILITY AND REACTIVITY

**Reactivity:** No data available  
**Chemical stability:** Stable under proper conditions.  
**Possibility of hazardous reactions:** No special reactivity has been reported.  
**Conditions to avoid:** Spark, Open flame, Static discharge  
**Incompatible materials:** Oxidizing agents  
**Hazardous decomposition products:** Carbon dioxide, Carbon monoxide

11. TOXICOLOGICAL INFORMATION

RTECS Number: GW6360000

Acute Toxicity:

ipr-rat LD50:3600 mg/kg  
ivn-rat LD50:110 mg/kg

orl-rat LD50:4400 mg/kg  
skn-rbt LD50:>5 g/kg

Skin corrosion/irritation:

skn-rbt 10 %/24H MLD

Serious eye damage/irritation:

No data available

Respiratory or skin sensitization:

No data available

Germ cell mutagenicity:

cyt-rat-orl 0.5 ppb

mtr-mus-fbr 0.005 pph/21D(-S9)

Carcinogenicity:

orl-rat TDLo:38625 mg/kg/2Y-C

IARC: Group 3 (Not classifiable as carcinogenic to humans).

NTP: No data available

OSHA: No data available

Reproductive toxicity:

No data available

orl-mus TDLo:14178 mg/kg (7-12D preg)

Target organ(s):

No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: No data available

Crustacea: No data available

Algae: No data available

Persistence / degradability:

No data available

Bioaccumulative potential(BCF):

262

Mobility in soil

Log Pow: 4.2

Soil adsorption (Koc): 4780

Henry's Law (PaM<sup>3</sup>/mol): 3.8 x 10<sup>4</sup>

13. DISPOSAL CONSIDERATIONS

Disposal of product:

Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.

Disposal of container:

Dispose of as unused product. Do not re-use empty containers.

Other considerations:

Observe all federal, state and local regulations when disposing of the substance.

**14. TRANSPORT INFORMATION****DOT (US)**

<b>UN number:</b> UN2319	<b>Proper Shipping Name:</b> Terpene hydrocarbons, n.o.s	<b>Class or Division:</b> 3 Flammable liquid	<b>Packing Group:</b> III
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**IATA**

<b>UN number:</b> UN2319	<b>Proper Shipping Name:</b> Terpene hydrocarbons, n.o.s	<b>Class or Division:</b> 3 Flammable liquid	<b>Packing Group:</b> III
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**IMDG**

<b>UN number:</b> UN2319 numb er:	<b>Proper Shipping Name:</b> Terpene hydrocarbons, n.o.s	<b>Class or Division:</b> 3 Flammable liquid	<b>Packing Group:</b> III
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**EmS number:** F-E, S-D

**15. REGULATORY INFORMATION****Toxic Substance Control Act (TSCA 8b.):**

This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

**US Federal Regulations****CERCLA Hazardous substance and Reportable Quantity:**

<b>SARA 313:</b>	Not Listed
<b>SARA 302:</b>	Not Listed

**State Regulations****State Right-to-Know**

<b>Massachusetts</b>	Not Listed
<b>New Jersey</b>	Not Listed
<b>Pennsylvania</b>	Not Listed

**California Proposition 65:** Not Listed

**Other Information****NFPA Rating:**

<b>Health:</b>	1
<b>Flammability:</b>	2
<b>Instability:</b>	0

**HMIS Classification:**

<b>Health:</b>	1
<b>Flammability:</b>	2
<b>Physical:</b>	0

**International Inventories**

<b>Canada: DSL</b>	On DSL
<b>EC-No:</b>	227-813-5

**16. OTHER INFORMATION**

**Revision date:** 07/06/2018

**Revision number:** 1

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.