

# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form OSHA-20)  
Complies with U.S. Hazard Communication Standard and Canadian WHMIS Regulations

## SHIPP CHEMICAL CO., INC.

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REVISION DATE 1/30/06

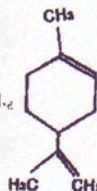
Emergency Phone Number 800-962-1723 - CHEMTREC 24 Hour Number 1-800-424-9300 (in Canada, CANUTEC 613-996-6666)

## Section I - IDENTIFICATION

TRADE NAME: **CITRO-technical grade**

### CLASSIFICATIONS:

Chemical Name & Formula (TSCA Inventory): Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R) --- C<sub>10</sub>H<sub>16</sub>  
Common Names: citrus terpenes, orange terpenes, menthadiene  
CAS Number: 5989-27-5  
WHMIS Class: Class B - Division 3; Combustible Liquid  
Class D - Division 2B



HMIS	
Health	1
Flammability	2
Reactivity	0
Protection	G

### SHIPPING CLASSIFICATIONS:

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.  
Hazard Class: 3 (3.3 for Canada)  
Identification No.: UN2319  
Packing Group: III

Label / Placard [exemption §173.150(f) applies]:

Highway / Rail : per requirements for COMBUSTIBLE LIQUIDS  
Air / Ship: per requirements for FLAMMABLE LIQUIDS

## Section II - IMPORTANT COMPONENTS

VOLATILE INGREDIENTS: D-limonene (solvent) is the major component (technical grade 95%) with balance other terpene hydrocarbons and oxygenated compounds - octanal, nonanal, decanal, linalool predominant. Product is a by-product of citrus, entirely of natural origin, and to the best of our knowledge and belief 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 a citrus derived essential oil produced by steam distillation. Further,  $\alpha$ -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.

## Section III - PHYSICAL DATA

	Technical Grade
Boiling Point	310°F
Specific Gravity @ 25°C	0.838-0.843
Refractive Index @ 20°C	1.471-1.474
Optical Rotation	+96° - +104°
Vapor Pressure @ 20°C	2mmHg
Percent Volatile by Volume	95+%
Evaporation Rate (Ether=1)	less than 1
Solubility in Water	negligible
PH	not applicable for oils
Viscosity @ 25°C	water thin
Appearance and Odor	clear liquid, variable colorless to yellow cast with strong citrus odor

## Section IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (TCC):	115°F, 113°F, 119°F
Flammable Limits (@ 302°F):	Lel 0.7%, Uel 6.1% (identified for technical grade only)
Extinguishing Media:	CO <sub>2</sub> , foam and dry chemical
Special Fire Fighting Procedures:	SCBA recommended. Smother to exclude air. Do not use water. Handle as an oil fire, Class B fire procedures. Firefighters should wear self-contained breathing apparatus.
Unusual Fire and Explosive Hazards:	Combustible liquid. Keep away from heat, sparks, and open flame. Guard against spontaneous combustion of improperly discarded oily rags.



## Section V - HEALTH HAZARD DATA

Route of Exposure: Eye, Skin Contact, Inhalation, Ingestion  
Health Hazard from Acute Exposure: 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. Contains a potential skin sensitizer. Eye contact can cause moderate to high irritation. Inhalation can cause nose, throat, and respiratory tract irritation, coughing and headache.  
Health Hazard from Chronic Exposure: Prolonged or repeated exposure can cause drying, defatting, and dermatitis of skin. D-limonene is NOT listed as a carcinogen by NTP, OSHA, or IARC. FDA and WHMIS list d-limonene as GRAS - "generally recognized as safe."  
Medical Conditions Generally Recognized as Being Aggravated by Exposure: None known.

### EMERGENCY & FIRST AID PROCEDURES:

EYES: Remove contact lenses at once. Flush with water for at least 15 minutes. If irritation persists, see a physician.  
SKIN: Wash affected area with copious amounts of soap and water. Call a doctor if irritation develops. Completely decontaminate clothing, shoes, and leather goods before re-use or discard.  
INGESTION: Do not induce vomiting. Rinse mouth with water, then drink one glass of water. Contact physician immediately. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness, or is convulsing.  
INHALATION: If symptoms of overexposure are experienced, evacuate to fresh air. If symptoms persist, seek medical attention.  
TLVs: Undetermined by ACGIH  
PELs: Undetermined by OSHA  
Toxicity Data: RIFM lists acute oral LD<sub>50</sub> (rat) > 5 g/kg; acute dermal LD<sub>50</sub> (rabbit) > 5 g/kg.  
Tumorigenic Data: IPR-Mus TD<sub>01</sub>: 4800 mg/kg/8w-I:ETA  
ORL-Mus TD<sub>01</sub>: 67 gm/kg/39w-I:ETA

### SARA TITLE III

Not listed as reportable substance  
No reportable quantity (RQ) limit

## Section VI - REACTIVITY DATA

Stability: Stable  
Conditions to Avoid: Excessive heat  
Incompatibility: Strong oxidizing agents and acidic agents, including acidic clays, peroxides, halogens, vinyl chloride, and iodine pentafluoride.  
Hazardous Polymerization: None described.  
Conditions to Avoid for Polymerization: Polymerization catalysts such as aluminum chloride and acidic clays.  
Hazardous Decomposition Products: Smoke may be acrid and fume irritating. Burning generates CO, CO<sub>2</sub>, and smoke. Product is not an oxygen donor.

## 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 hose 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. CAUTION: slippery on floor.

Waste Disposal Method: INCINERATE OR DISPOSE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

## Section VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: Not normally required, but if vapor concentration becomes high, use self-contained air mask (NIOSH approved).  
Ventilation: Local exhaust should be adequate. Mechanical ventilation otherwise recommended if necessary.  
Other Protective Equipment: Emergency eye wash and shower stations.  
Appropriate Hygienic Practices: Wash thoroughly after handling.  
Personal Protective Equipment: Chemically resistant gloves such as neoprene, PVC, or butyl. Chemical splash goggles or face shield for eye protection.

## Section IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing: Usual precautions for combustible liquids.  
Handling and Storage Precautions: Store in sprinklered warehouse. Avoid contact with incompatible chemicals listed in Section VI. Store in tightly sealed, full containers. Best to store in glass, tin-lined, stainless steel, or epoxy-lined containers to preserve quality.  
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).

## DETAILED TOXICOLOGY AND BIODEGRADATION REPORT AVAILABLE UPON REQUEST

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