

433C

D-LIMONENE—INDUSTRIAL STRENGTH

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 433C**Other Means of Identification:** D-Limonene—Industrial Strength**Related Part #** 433C-1L, 433C-4L, 433C-20L, 433C-205L

Recommended Use and Restriction on Use

Use: Solvent**Uses Advised Against:** Not applicable

Details of Manufacturer or Importer

Manufacturer

MG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADA

☎ +1-800-340-0772
FAX +1-800-340-0773
E-MAIL support@mgchemicals.com
WEB www.mgchemicals.com

☎ +1-905-331-1396
FAX +1-905-331-2682

E-MAIL (Competent Person): sds@mgchemicals.com

Emergency Phone Number

For hazardous material incidents ONLY (leaks, spills, fires, exposures or accidents)
USA or CANADA—Call Verisk 3E at **+1-866-519-4752** or **+1-760-476-3962**
(Service access code: 335388)





For emergencies involving the transport of dangerous goods; 24/7 service
CANADA—Call CANUTEC collect at **+1-613-996-6666** or ***666** on cellular phones

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Section 2: Hazard(s) Identification
Classification of Hazardous Chemical
GHS Categories

Criteria	Category	Signal Word	Pictograms
Aspiration Hazard	1	Danger	Health
Flammable Liquid	3	Warning	Flame
Sensitization	1	Warning	Exclamation
Skin Irritation	2	Warning	Exclamation
Hazardous to the Aquatic Environment Chronic	1	Warning	Environment

Note: The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity). Severity categories rankings do not allow comparisons between classes.

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	H304: May be fatal if swallowed and enters airways
	H226: Flammable liquid and vapor
	H315: Causes skin irritation H317: May cause an allergic skin reaction
	H410: Very toxic to aquatic life with long lasting effects

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Prevention	Precautionary Statements
P210	Keep away from heat, hot surfaces, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof equipment.
P243	Take action to prevent static discharges.
P261	Avoid breathing mist, spray, and vapors.
P272	Contaminated work clothing should not be allowed out of the workplace.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves, protective clothing, and eye protection.
P273	Avoid release to the environment.
Response	Precautionary Statements
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P331	Do NOT induce vomiting.
P303 + P362 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water or shower.
P333 + P313	If skin irritation or rash occurs: Get medical advice or attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P361	Collect spillage.
Storage	Precautionary Statements
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
Disposal	Precautionary Statements
P501	Dispose of contents in accordance to local, regional, national, and international regulations.

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Hazards Not Otherwise Classified

Other Criteria	Hazard Statements/Precautionary Statement	Signal Word	Pictograms
None	None	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
5989-27-5	d-limonene	74%
99-85-4	p-mentha-1,4-diene	9%
127-91-3	pin-2(10)-ene	5%
586-62-9	p-mentha-1,4(8)-diene	4%
123-35-3	myrcene	4%
80-56-8	pin-2(3)-ene	3%
99-86-5	p-mentha-1,3-diene	2%

Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code: Precautionary Statement</i>
IF SWALLOWED	P301 + P310, P331
Immediate Symptoms	<i>irritation</i>
Response	Immediately call a POISON CENTER or doctor. Do NOT induce vomiting.
IF ON SKIN (or hair)	P303 + P361 + P352, P333 + P313, P363
Immediate Symptoms	<i>irritation, redness</i>
Response	Take off immediately all contaminated clothing. Wash with plenty of water or shower. If skin irritation or rash occurs: Get medical advice or attention. Wash contaminated clothing before reuse.

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IF INHALED	P304 + P340
Immediate Symptoms	<i>irritation of the nose, throat, lungs</i>
Response	Remove person to fresh air and keep comfortable for breathing.
IF IN EYES	P305 + P351 + P338
Immediate Symptoms	<i>mild irritation</i>
Response	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Section 5: Fire-Fighting Measures

Extinguishing Media	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.
Specific Hazards	The vapors are heavier than air and may accumulate in low-lying areas. Vapors may travel long distances and ignite at an ignition source, which can cause a flashback or an explosion.
Combustion Products	Produces carbon oxides (CO, CO ₂).
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

Section 6: Accidental Release Measures

Personal Protection	See personal protection equipment in Section 8.
Precautions for Response	Avoid breathing the mist, spray, or vapors. Remove or keep away all sources of ignition or extreme heat.
Environmental Precautions	Prevent spill from entering drains and waterways.
Containment	Contain with inert absorbent (such as soil, sand, vermiculite).
Cleaning	Collect the liquid in a sealable, chemical-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Use soap and water to remove the last traces of residue. RECOMMENDATION: Use a grounded stainless steel or carbon steel container.
Disposal Methods	Dispose of spill waste according to Section 13.

433C**D-LIMONENE—INDUSTRIAL STRENGTH****Section 7: Handling and Storage****Prevention**

Keep out of reach of children.

Keep away from heat, hot surfaces, sparks, open flames and other sources of ignition. No smoking.

Ground and bond container and receiving equipment. Take action to prevent static discharges. Use explosion-proof equipment.

Keep container tightly closed. Avoid breathing vapors, mist, or spray.

Contaminated work clothing should not be allowed out of the workplace.

Avoid release to the environment.

Handling

Wear protective gloves, protective clothing, and eye protection.

Wash hands thoroughly after handling.

Collect spillage.

Storage

Store in a well-ventilated area. Keep cool.

Store locked up.

Section 8: Exposure Controls/Personal Protection**Substances with Occupational Exposure Limit Values**

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
d-limonene	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	U.S.A. WEEL	30 ppm	Not established
	Canada AB	Not established	Not established
	Canada BC	Not established	Not established
	Canada ON	Not established	Not established
	Canada QC	Not established	Not established

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Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
turpentine and selected monoterpenes (CAS# 127-91-3 and 80-56-8)	ACGIH	20 ppm (TWA)	Not established
	U.S.A. OSHA PEL	Not established	Not established
	U.S.A. WEEL	Not established	Not established
	Canada AB	20 ppm	Not established
	Canada BC	Not established	Not established
	Canada ON	Not established	Not established
	Canada QC	Not established	Not established

Note: The ACGIH¹, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from RTECS² database and data from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

Engineering Controls
Ventilation

Keep airborne concentrations below the occupational exposure limits (OEL).

Personal Protective Equipment
Eye protection

Wear appropriate protective eyeglasses or chemical safety goggles.

RECOMMENDATION: Use safety glasses with lateral protection (side shields).

Skin Protection

For likely contacts, use of protective butyl rubber, fluorinated rubber, or other chemically resistant gloves.

For incidental contacts, use neoprene, natural latex rubber, or other chemically resistant gloves.

Respiratory Protection

For over-exposures up to 10 x OEL of mist, vapors, or spray, wear respirator such as a half-mask respirator with organic vapor cartridges.

Above 10 x OEL, use a positive-pressure, air-supplied respirator or a self-contained breathing apparatus.

RECOMMENDATION: Consult your local safety supply store to ensure that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

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General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

Section 9: Physical and Chemical Properties

Physical State	Liquid	Lower Flammability Limit	Not available
Appearance	Colorless	Upper Flammability Limit	Not available
Odor	Citrus	Vapor Pressure @20 °C	2 hPa [1.5 mmHg]
Odor Threshold	Not available	Vapor Density	4.7 (Air =1)
pH	Not available	Relative Density @25 °C	0.85
Freezing/Melting Point	Not available	Solubility in Water	Slightly soluble
Initial Boiling Point ^{a)}	≥155 °C [≥311 °F]	Partition Coefficient ^{b)} n-octanol/water	4.23
Flash Point ^{a)}	31 °C [88 °F]	Auto-ignition Temperature	237 °C [459 °F]
Evaporation Rate	Not available	Decomposition Temperature	Not available
Flammability	Flammable	Viscosity @40 °C	<20.5 mm ² /s

a) Values based on lowest components

b) Value for d-limonene

433C**D-LIMONENE—INDUSTRIAL STRENGTH****Section 10: Stability and Reactivity**

Reactivity	d-Limonene can oxidize slowly in contact with air.
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Avoid heat, hot surfaces, open flames, sparks, other ignition sources and incompatible substances.
Incompatibilities	Strong oxidizing agents
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

Section 11: Toxicological Information**Summary of Effects and Symptoms by Routes of Exposure**

Eyes	May cause irritation.
Skin	Causes irritation and redness. Overexposure may cause a burning sensation and swelling, erythema and itching.
Inhalation	May cause irritation of the nose, throat, and lungs.
Ingestion	May cause irritation.
Chronic	Long-term exposure by inhalation or skin contact may cause an allergic skin and respiratory reaction in some people.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
d-limonene	4 400 mg/kg Rat	>5 000 mg/kg Rabbit	Not available
p-mentha-1,4-diene	3 650 mg/kg Rat	Not available	Not available
pin-2(10)-ene	4 700 mg/kg Rat	>5 000 mg/kg Rabbit	20 mg/L Rat
p-mentha-1,4(8)-diene	3 740 mg/kg Rat	>4 300 mg/kg Rabbit	Not available

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Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
myrcene	>2 000 mg/kg Rat	>5 000 mg/kg Rabbit	Not available
pin-2(3)-ene	3 700 mg/kg Rat	>5 000 mg/kg Rabbit	Not available
p-mentha-1,3-diene	1 680 mg/kg Rat	Not available	Not available

Note: Toxicity data from the RTECS² and ECHA were consulted. The data from supplier SDS were also consulted.

Other Toxicological Effects
Skin corrosion/irritation

Moderate skin irritant.

Serious eye damage/irritation

Based on available data, the classification criteria are not met.

Sensitization

(allergic reactions)

In its pure form, d-Limonene is not a sensitizer, but its oxidized form is a known skin sensitizer. People already sensitized to turpentine or terpenes may also be allergic to d-limonene.

Carcinogenicity

(risk of cancer)

Based on available data, the classification criteria are not met.

Myrcene [CAS# 100-41-4]

IARC Group 2B: Not listed

ACGIH A3: Not listed

CA Prop 65: Listed as a carcinogen

NTP: Clear evidence of carcinogenic activity exists; however, NTP declined to list it in the NTP Report on Carcinogens, 14th edition

Mutagenicity

(risk of heritable genetic effects)

Based on available data, the classification criteria are not met.

Reproductive Toxicity

(risk to sex functions)

Based on available data, the classification criteria are not met.

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433C**D-LIMONENE—INDUSTRIAL STRENGTH****Teratogenicity**

(risk of fetus malformation)

Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

The liquid content is classified as Cat 1 aspiration hazards.

Section 12: Ecological Information

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (<http://echa.europa.eu>), and other reliable sources.

The d-limonene component is an acute category 1 environmental toxicant (with minimal LC50 of 0.702 mg/L 96 h for *Pimephales promelas* (fathead minnow); EC50 69.6 mg/L 48 h *Daphnia pulex* (water flea)).

Acute Ecotoxicity

Category 1

Very toxic to aquatic life

Chronic Ecotoxicity

Category 1

Very toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

Biodegradability

Not available

Other Effects

Volatile Organic Compound (VOC) content = 100% [846 g/L]

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Section 13: Disposal Information

Dispose of contents in accordance with all local, regional, national, and international regulations.

Section 14: Transport Information
Ground

Refer to TDG regulations (Canadian Transportation of Dangerous Goods regulations); **USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Sizes 5 L and under
Cat. No. 433C-1L, 433C-4L
Limited Quantity



Sizes greater than 5 L
433C-20L

UN number: UN2319

Shipping Name:

TERPENE HYDROCARBONS, N.O.S.
(Lime oil)

Class: 3

Packing Group: III

Marine Pollutant: Yes


Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes 5 L and under
Cat. No. 433C-1L, 433C-4L
Limited Quantity



Total net per
Package = 10 L

Sizes up to 60 L (passenger), 220 L (cargo)
433C-20L

UN number: UN2319

Shipping Name:

TERPENE HYDROCARBONS, N.O.S. (Lime oil)

Class: 3

Packing Group: III

Marine Pollutant: Yes



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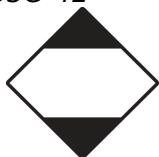
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Sea

Refer to IMDG Regulations.

Sizes 5 L and under
Cat. No. 433C-1L, 433C-4L
Limited Quantity



Sizes greater than 5 L
433C-20L

UN number: UN2319

Shipping Name:

TERPENE HYDROCARBONS, N.O.S. (Lime oil)

Class: 3

Packing Group: III

Marine Pollutant: Yes



Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.

433C**D-LIMONENE—INDUSTRIAL STRENGTH****Section 15: Regulatory Information****Canada****Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

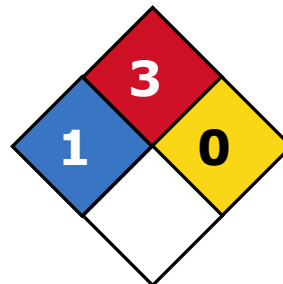
All hazardous ingredients are listed on the DSL.

Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

USA**Other Classifications****HMIS[®] RATING**

HEALTH:	* 1
FLAMMABILITY:	3
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	

NFPA[®] 704 CODES

Approximate HMIS and NFPA Risk Ratings Legend:

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

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433C**D-LIMONENE—INDUSTRIAL STRENGTH****CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product does not contain substances that are subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

California Proposition 65

(Chemicals known to cause cancer or reproductive toxicity, USA).

This product contains myrcene, which is listed as a carcinogen in California. However, it is a naturally occurring botanical constituent (chemical in food) that is exempted from warning for consumer products in accordance to 27 CCR §25501(b).

Europe**RoHS** (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

WEEE (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronic equipment and is therefore not governed by this regulation.

433C**D-LIMONENE—INDUSTRIAL STRENGTH****Section 16: Other Information**

Prepared by the	Regulatory Affairs Department
Date of Revision	20 November 2024
Supersedes	09 May 2024
Reason for Changes:	Addition of new Part Number.

Reference

1) ACGIH 2024 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2024).

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
ECHA	European Chemicals Agency
EU	European Union
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
IARC	International Agency for Research on Cancer
NOELR	No observable effect loading ratio
NTP	National Toxicology Program
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
SDS	Safety Data Sheet
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

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433C**D-LIMONENE—INDUSTRIAL STRENGTH**

Technical Queries Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemicals.com.

Email: support@mgchemicals.com

Phone: +1-905-331-1396

Mailing Addresses *Manufacturing & Support*

1210 Corporate Drive
Burlington, Ontario, Canada
L7L 5R6

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This safety data sheet is provided as an information resource only. *M.G. Chemicals, Ltd.* believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to query and verify any information seeming suspect where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, regional, national, and international regulations.