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1 PRODUCT IDENTIFICATION

GHS Product identifier:	D-LIMONENE (D-OILER)
IUPAC Name:	1-methyl-4-prop-1-en-2-yl-cyclohexene
INCI Name:	D-LIMONENE
Other means of identification:	Not applicable.
Recommended use of the chemical and restrictions on use:	Used as a flavoring compound in foods, pharmaceuticals, cosmetics, fragrance ingredients, biodegradable solvents, cleaning products, adhesives, pesticides (repellents) and others.
CAS n°:	5989-27-5
EC n°:	227-813-5
FEMA:	2633
CoE n°:	491
FDA Gras List n°:	21 CFR 182-60
UN n°:	2319
EINECS n°:	227-813-5

2 SUPPLIER'S IDENTIFICATION


Supplier's details:	SUCORRICO CITRUS INDUSTRIAL E AGRÍCOLA LTDA.
Address:	Rodovia Anhanguera, Km 176,6 – CEP 13600-000 – Distrito Industrial – Araras/SP – Brazil
Phone number(s):	+55 (19) 3321-5150
Emergency phone number:	+55 (19) 3321-5150 (ext. 2054)

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixture

Ingredients or impurities contributing to the hazard:

Chemical Name	Concentration Range (%)	CAS n°	EC n°
d-Limonene	≥ 93.0	5989-27-5	227-813-5
other terpenes	≤ 7.0	-	-

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4 HAZARD IDENTIFICATION

4.1 Classification of the substance or mixture:

Flammable liquids – Category 3

Acute toxicity – Oral – Category 5

Skin corrosion/irritation – Category 2

Skin sensitization – Category 1

Hazardous to the aquatic environment, short-term (Acute) – Category 1

Hazardous to the aquatic environment, long-term (Chronic) – Category 1

4.2 Classification system adopted:

Globally Harmonized System of Classification and Labelling of Chemicals (GHS), United Nations.

4.3 GHS label elements, including precautionary statements

4.3.1 Pictograms:



4.3.2 Signal word:

WARNING

4.3.3 Hazard statement(s):

H226 Flammable liquid and vapour.

H303 May be harmful if swallowed.

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:

- 4.3.4 Precautionary statement(s):
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 - P233 Keep container tightly closed.
 - P240 Ground and bond container and receiving equipment.
 - P241 Use electrical, ventilating and lighting explosion-proof equipment.
 - P242 Use non-sparking tools.
 - P243 Take action to prevent static discharges.
 - P261 Avoid breathing mists and vapours.
 - P264 Wash the hands 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, protective clothing, eye protection, face protection and hearing protection.

RESPONSE:

- P301 + P312 IF SWALLOWED: Call a POISON CENTER or a doctor if you feel unwell.
- P302 + P352 IF ON SKIN: Wash with plenty water.
- P303 + 361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or take a shower.
- P321 Specific treatment (see on this label).
- P332 + P313 If skin irritation occurs: Get medical advice.
- P333 + P313 If skin irritation or rash occurs: Get medical advice.
- P362 + P364 Take off contaminated clothing and wash it before reuse.
- P370 + P378 In case of fire: Use dry chemical powder, carbon dioxide (CO₂), water fog or foam to extinguish. P391 Collect spillage.

STORAGE:


- P403 + P235 Store in a well-ventilated place. Keep cool.

DISPOSAL:

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

4.3.5 Other hazards which do not result in classification:

The product does not have other hazards.

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5 FIRST-AID MEASURES

Routes of exposure

- 5.1 Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or a doctor if you feel unwell. Take this SDS.
- 5.2 Skin: Wash exposed skin with enough water to remove the material. In case of skin irritation: Consult a doctor. Take this SDS.
- 5.3 Eye: Rinse thoroughly with water for several minutes. Remove contact lenses, if present and easy to do and rinse again. In case of eye irritation: Consult a doctor. Take this SDS.
- 5.4 Ingestion: Rinse the victim's mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a POISON CENTER or a doctor if you feel unwell. Take this SDS.
- 5.5 Most important symptoms/effects, acute and delayed: May be harmful if swallowed. Causes skin irritation with redness, pain and dryness. May cause an allergic skin reaction with dermatitis and pruritus.
- 5.6 Indication of immediate medical attention and special treatment needed, if necessary: Avoid contact with the product while helping the victim. If necessary, the symptomatic treatment should comprise, mainly, supportive measures such as correction of electrolyte and metabolic disturbances, besides respiratory assistance. In case of contact with the product, do not rub the affected site.

6 FIRE-FIGHTING MEASURES

- 6.1 Suitable extinguishing media: Suitable: Compatible with dry chemical powder, carbon dioxide (CO₂), water fog or foam.
Not recommended: Water directly on the burning liquid.
- 6.2 Special hazards arising from the chemical: Very dangerous when exposed to excessive heat or other ignition sources such as: Sparks, open flames or flames of matches and cigarettes, welding operations, pilot lights and electric motors. Can accumulate static charge by flow or agitation. Vapors from heated liquid can be ignited by static discharge. Vapors could be heavier than air and tend to accumulate in low or confined areas, such as sewers and basements. Can travel great distances causing retrogression of the flame or new fires both in open environments as in confined ones. Containers may explode if heated. The combustion of the chemical products or containers may form toxic and irritating gases such as carbon monoxide and dioxide.

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6.3 Special protective actions for fire-fighters:

Self-contained breathing apparatus (SCBA) with positive pressure mode and complete protective clothing. Containers and tanks involved in the fire should be cooled with water mist.

7 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

7.1 For non-emergency personnel:

Isolate the leakage from ignition sources. Prevent sparks or flames. Do not smoke. Evacuate the area. Keep unauthorized persons away from the area. Stop the leakage, if this can be done without risk. Do not touch damaged containers or spilled material without wearing suitable clothing. Avoid exposure to the product. Use personal protective equipment as described in section 8.

7.2 For emergency responders:

Use complete PPE with safety glasses with splash protection and nitrile safety gloves. The material used should be waterproof. In case of large leakage, where exposure is great, it is recommended the use of respiratory protection mask with filter against vapors.

7.3 Environmental precautions:

Avoid spilled material reaches waterways and sewers.

7.4 Methods and materials for containment and cleaning up:

Use water mist or vapor suppressing foam to reduce the dispersion of the vapors. Use natural barriers or containment of spillage. Collect spilled product and place in appropriate containers. Adsorb the remaining product with dry sand, earth, vermiculite or other inert material. Put the adsorbed material in suitable sealed containers and properly identified and remove them to a safe place. Use non-sparking tools to collect the absorbed material. For disposal, proceed according to section 13 of this SDS.

8 HANDLING AND STORAGE

8.1 Precautions for safe handling

Safe handling of the substance or mixture:

Handle in a well ventilated area or with general system of ventilation/local exhaust. Avoid vapors and mists formation. Avoid exposure to the product. Use personal protective equipment as described in section 8.

General hygiene:

Wash hands and face carefully after handling and before eating, drinking, smoking or going to the bathroom. Contaminated clothing should be changed and washed prior to reuse. Remove contaminated clothing and protective equipment before entering food areas.

8.2 Conditions for safe storage, including any incompatibilities

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Technical measures for prevention of fire and explosion: Keep away from heat, sparks, open flames and hot surfaces. – Do not smoke. Keep container tightly closed. Ground the container vessel and the receiver of the product during transfers. Only use anti-sparking tools. Avoid the accumulation of electrostatic charges. Use electrical, ventilation and lighting equipment explosion proof.

Adequate conditions: Store in a well ventilated place, away from sunlight. Keep container closed. Keep stored at room temperature. It is not necessary the addition of stabilizers and antioxidants to ensure the durability of the product.

Packaging compatibilities: Recommended: Fixed cover steel drum with specific coating for food grade. The internal coating should be of phenolic epoxy varnish approved for food contact.
Not recommended: Plastic container.

9 EXPOSURE CONTROLS/PERSONAL PROTECTION

9.1 Control parameters

9.1.1 Occupational exposure limit:

Chemical or common name: TLV-TWA (ACGIH, 2018):
Delta-3-carene and alpha-Pinene
(Turpentine and selected
monoterpenes) 20 ppm

9.1.2 Biological limit:

Not established.

9.1.3 Appropriate engineering controls:

Promote direct mechanical ventilation and direct exhaust system to the outside environment. These measures help reducing the exposure to the product. Keep the atmospheric concentrations, of the constituents of the product, below the indicated occupational exposure limits.

9.2 Individual protection measures, such as personal protective equipment (PPE)

9.2.1 Eye/face protection:

Safety glasses with splash protection.

9.2.2 Skin protection:

Nitrile safety gloves. The material used should be waterproof.

9.2.3 Respiratory protection:

In case of large leakage, where exposure is great, it is recommended the use of respiratory protection mask with filter against vapors.

9.2.4 Thermal hazards:

It is not necessary to use specific PPE, since the product does not present thermal hazards.


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10 PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid.
Colour:	Colourless.
Odour:	Pungent Orange Aroma.
Molecular weight:	136.238 g/mol
Melting point/freezing point:	-74 °C to -96.9 °C
Boiling point or initial boiling point and boiling range:	175.5 – 178 °C at 760 mmHg
Flash point:	43 – 49 °C (closed cup)
Auto-ignition temperature:	237 °C
Decomposition temperature:	When heated to decomp, it emits acrid smoke and fumes.
pH:	Not applicable.
Solubility:	In water, 13.8 mg/L at 25 °C. Miscible in ethanol and ether; soluble in carbon tetrachloride. Miscible in fixed oils; slightly soluble in glycerin; insoluble in propylene glycol.
Vapour pressure:	1 mmHg at 13.9 °C 1.98 mmHg at 25 °C 5 mmHg at 40.4 °C 10 mmHg at 53.8 °C
Density and/or relative density:	0.8400 – 0.8455 g/mL at 20 – 25 °C
Relative vapour density:	4.7 (air = 1)


11 STABILITY AND REACTIVITY

11.1 Reactivity:	Product not reactive.
11.2 Chemical stability:	Stable product under normal conditions of temperature and pressure.
11.3 Possibility of hazardous reactions:	There are not known hazardous reactions with the product.
11.4 Conditions to avoid:	High temperature and ignition sources.
11.5 Incompatible materials:	There are not known incompatible materials.
11.6 Hazardous decomposition products:	There are not known hazardous decomposition products.

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12 TOXICOLOGICAL INFORMATION

- 12.1 Acute toxicity: May be harmful if swallowed. Based on available information, the product has not been classified as an acute dermal toxicant, and the criteria for classification for acute inhalation toxicity were not met.
Estimate of Acute Toxicity of mixture (ETAm)
ETAm (oral): 4691.36 mg/kg
ETAm (dermal): > 5000.0 mg/kg
- Information relating to:
- d-Limonene:
LD₅₀ (oral, rats): 4400.0 mg/kg
- 12.2 Skin corrosion/irritation: Causes skin irritation with redness, pain and dryness.
- 12.3 Serious eye damage/irritation: Based on available information, the classification criteria were not met.
- 12.4 Respiratory or skin sensitization: May cause an allergic skin reaction with dermatitis and pruritus. Based on available information, the classification criteria for respiratory sensitization were not met.
- 12.5 Germ cell mutagenicity: Based on available information, the classification criteria were not met.
- 12.6 Carcinogenicity: Based on available information, the classification criteria were not met.
Information relating to:
- d-Limonene:
Not classifiable as to its carcinogenicity to humans (Group 3 – IARC).
- 12.7 Reproductive toxicity: Based on available information, the classification criteria were not met.
- 12.8 STOT – Single exposure: Based on available information, the classification criteria were not met.
- 12.9 Aspiration hazard: Based on available information, the classification criteria were not met.

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13 ECOLOGICAL INFORMATION

- 13.1 Toxicity: Very toxic to aquatic life with long lasting effects.
- Information relating to:
- d-Limoneno:
LC₅₀ (*Pimephales promelas*, 96h): 0.72 mg/L
EC₅₀ (*Daphnia magna*, 48h): 0.36 mg/L
- 13.2 Persistence and degradability: The product presents no persistence and is considered rapidly degradable.
- Information relating to:
- d-Limonene:
Degradability rate: 80% in 28 days.
It presents high bioaccumulative potential in aquatic organisms.
- 13.3 Bioaccumulative potential: Information relating to:
- d-Limonene:
Log kow: 4.5
- 13.4 Mobility in soil: It is expected moderate mobility in soil.
- Information relating to:
- d-Limonene:
Koc: 1300 (estimated)
- 13.5 Other adverse effects: There are not known other adverse environmental effects of this product.

14 DISPOSAL CONSIDERATIONS

14.1 Disposal methods

The treatment and disposal should be specifically evaluated for each product. Keep the product remains in its original and properly closed packaging. Disposal should be performed as established for the product. Do not reuse empty containers. These may contain product remains and should be kept closed and sent for proper disposal as established for the product.

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15 TRANSPORT INFORMATION

15.1 Road:	UN – United Nations Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations
UN Number:	2319
UN Proper shipping name:	TERPENE HYDROCARBONS, N.O.S.
Transport hazard class(es):	3
Packing group:	III
15.2 Rail:	Convention concerning International Carriage by Rail (COTIF) Appendix C – Regulations concerning the International Carriage of Dangerous Goods by Rail – RID
UN Number:	2319
UN Proper shipping name:	TERPENE HYDROCARBONS, N.O.S.
Transport hazard class(es):	3
Packing group:	III
15.3 Sea:	IMO – International Maritime Organization International Maritime Dangerous Goods Code (IMDG Code)
UN Number:	2319
UN Proper shipping name:	TERPENE HYDROCARBONS, N.O.S.
Transport hazard class(es):	3
Packing group:	III
Marine pollutant:	The product is considered a marine pollutant.
EmS:	F-E, S-D
15.4 Air:	IATA – International Air Transport Association Dangerous Goods Regulation (DGR)
UN Number:	2319
UN Proper shipping name:	TERPENE HYDROCARBONS, N.O.S.
Transport hazard class(es):	3
Packing group:	III
Environmentally hazardous:	The product is considered environmentally hazardous.
Special precautions for user:	There is no need of special precautions.

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Consult regulations:

- International Maritime Organization. MARPOL: Articles, protocols, annexes, unified interpretations of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, consolidated edition. IMO, London, 2006;
- International Maritime Organization. IBC code: International code for the construction and equipment of shipping carrying dangerous chemicals in bulk: With Standards and guidelines relevant to the code. IMO, London, 2007.

16 REGULATORY INFORMATION

Convention concerning Safety in the use of Chemicals at Work (Convention 170) – International Labour Organization, 1990.

17 OTHER INFORMATION

This SDS was prepared based on current knowledge about the proper product handling and under normal conditions of use, in accordance with the application specified on the packaging. Any other use of the product involving their combination with other materials, besides forms of use different from those indicated, are the responsibility of the user. Warns that the handling of any chemical substance requires the prior knowledge of its hazards by the user. In the workplace it is up to the user company's product promotes training of its collaborators about the possible risks arising from exposure to the chemical product.

SDS translated and adequate in september 2018.

Abbreviations:

ACGIH – American Conference of Governmental Industrial Hygienists

CAS – Chemical Abstracts Service

EC₅₀ – Effective Concentration 50%

ErC₅₀ – Effective concentration in terms of growth rate reduction

IARC – International Agency for Research on Cancer

LC₅₀ – Lethal Concentration 50%

LD₅₀ – Lethal Dose 50%

NA – Not Applicable

NOEC – No Observed Effect Concentration

TLV – Threshold Limit Value

TWA – Time Weighted Average

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SUCORRICO CITRUS INDUSTRIAL E AGRÍCOLA LTDA., FISPQ – *Ficha de Informações de Segurança de Produtos Químicos*: D-LIMONENO (D-OILER), Revision 00, september 06, 2018.

19 ATTACHMENT

ANNEX I – EMERGENCY SHEET D-LIMONENE (D-OILER) - FRONT SIDE



ANNEX I -
EMERGENCY SHEET I

ANNEX II – EMERGENCY SHEET D-LIMONENE (D-OILER) – BACK SIDE



ANNEX II-
EMERGENCY SHEET I

Elaborado por: <i>Elaborated by:</i> NATALIA COVRE DE MELO SANTOS	Revisado por: <i>Reviewed by:</i> CINTIA HARUMI OKATA KOBAYASHI, CAROLINE DOS SANTOS, PAULO SERGIO FERNANDES, LUCIA HELENA ALTOE	Aprovado por: <i>Approved by:</i> MAURO CESAR D' ANDREA
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