

MATERIAL SAFETY DATA SHEET

Medina Agriculture Products Co.
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CHEMTREC 24-HOUR EMERGENCY RESPONSE

TOLL FREE NUMBER: (800) 424-9300

INTERNATIONAL CALLS: COLLECT (202) 483-7616

CHEMTREC should only be contacted in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals.

1. PRODUCT IDENTIFICATION

(Produced in U.S.A., Brazil & Mexico)

Product Name	Synonyms	CAS No.	Use	
Medina Orange Oil	None	8008-57-9	Food and industrial applications	
Other Names	EINECS No.	UN No.	FEMA No.	FDA-GRAS List No.
Orange Peel Oil	232-433-8	2319	2633	21 CFR 182-20
Cold Pressed Orange Oil				

2. HAZARDOUS INGREDIENTS

Hazardous Components	%	OSHA PEL	ACGIH TLV	Other Limits
D-Limonene	>95	N/A	N/A	N/A
Terpene Hydrocarbons	<3	N/A	N/A	N/A
Oxygenated Terpenes	<2	N/A	N/A	N/A

3. HAZARD IDENTIFICATION

NFPA Codes: Health: 1 Fire: 2 Reactivity: 0

(Degree of Hazard: 4=Extreme 3=High 2=Moderate 1=Slight 0=Insignificant)

Health Effects:

On Skin:	Irritant, may cause temporary redness. Mild local irritation and sensitization. Intensive or continuous contact with skin may cause dermatitis.
On Eyes:	Irritant, may cause burning, redness, pain.
By Accidental Ingestion:	Harmful if ingested, gastrointestinal irritation. Abdominal pain, nausea, vomiting, dizziness.
By Inhalation:	Irritant to respiratory tract, sore throat, coughing, shortness of breath, dizziness, nausea.
By Pressure Injection:	Injection of all products will cause severe internal damage if not properly treated.
Other:	Kidney damage may occur (route of exposure not reported).

4. FIRST AID MEASURES

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact:	Wash affected area with copious amounts of soap and water.
Eye Contact:	Remove any contact lenses at once. Flush eyes well with large quantities of water for at least 15 min. See physician immediately.
Accidental Ingestion:	For small amounts, give milk of magnesia or a glass or two of water or milk. For large quantities, consult a physician.
Inhalation:	If symptoms of overexposure are experienced, evacuate to fresh air. If symptoms persist, seek medical attention.

5. FIRE & EXPLOSION HAZARD DATA

Flash Point: 113 to 121°F (45 to 49°C)

Identification No.: UN 2319

Extinguishing Media: Regular Foam, CO₂, Dry Chemical (Class B)

Flammable Limits (% by volume): Not Available

Special Fire Fighting Procedures and Equipment: Do NOT use water. As with any fire situation, full face, self-contained breathing apparatus and appropriate protective clothing should be worn. Under fire conditions, this product may release CO, CO₂, smoke, and other decomposition products of undetermined hazard, but it is NOT an oxygen donor. Water is unsuitable for use on burning material, but may be used to cool containers exposed to heat. Incompatible with strong oxidizing agents.

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(Degree of Hazard: 4=Extreme 3=High 2=Moderate 1=Slight 0=Insignificant)

6. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: Use protective solvent resistant gloves to avoid skin contact. Small spills can be wiped up with vermiculite or other suitable absorbent material and removed to an approved disposal container. Large spills should be absorbed by dirt, sand, or other suitable absorbents for disposal. Do not hose spills down drains. Move leaking containers to well ventilated area. No Smoking. Eliminate any source of ignition. Avoid inhalation. Use NIOSH-approved respiratory protection device.

7. SPECIAL PRECAUTIONS

Handling and Storage Precautions: Store in closed containers away from heat or sources of ignition and oxidizing materials. Protect against physical damage to containers. Avoid inhalation and contact with skin and eyes.

Other Precautions: Do not dispose of solvent or oil-soaked combustible materials (rags, paper, etc.) in an open container or trash can. Place rags in approved waste cans or soak with water.

8. OCCUPATIONAL PROTECTIVE MEASURES

Respiratory Protection: Not normally needed in well ventilated areas. If vapor concentration is high, use NIOSH-approved respiratory protection device.

Ventilation: General mechanical ventilation (to reduce fumes).

Protective Gloves: Neoprene or Rubber.

Eye Protection: OSHA-approved safety glasses with side shields.

Other Protective Equipment: Eye bath and safety shower.

Work/Hygienic Practices: Good personal hygiene practices should be used. Wash after any contact, before eating, and at the end of the work period.

9. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: (763 mm Hg)	347.9 to 352.4°F (175.5 to 178°C)	Odor:	Pungent Orange Aroma
Vapor Pressure (mm Hg @ 14°C)	1.0mmHg	Melting Point/Range:	-89°C to -96.9°C
Specific Gravity: (@ 20 to 25°C)	0.838 to 0.850 g/ml	Refractive Index: (@ 20°C)	1.472
Vapor Density: (Air = 1)	4.73	Evaporation Rate: (Ether = 1)	<1.0
Volatile fraction by weight:	100%	Solubility in Water:	Negligible
Viscosity @ 20°C:	1.28 cST	Heat of Combustion:	1.471 Kcal/mol
Aniline Point:	-15°C	Surface Tension: (@ 22°C)	25 mN m ⁻¹

10. REACTIVITY DATA

Stability:	Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:	Burning produces Carbon Monoxide and/or Carbon Dioxide.
Hazardous Polymerization:	Will not occur.
Incompatibilities:	Avoid strong oxidizing agents. Avoid exposure to sparks, heat and flames.

11. HEALTH HAZARD DATA

Carcinogenicity: N/A	NTP: TR347	OSHA: Combustible Liquid	IARC: N/A
Signs & Symptoms of Acute & Chronic Exposure:	Eye, skin and mucous membrane irritation		
Primary Routes of Entry:	Inhalation and Absorption		
Medical Conditions Aggravated:	Eye, skin and upper respiratory inflammation.		
Acute Effects:	LD ₅₀ , Oral (rat): 4,400 mg/kg. LD ₅₀ , Dermal (rabbit): >2,000 mg/kg. LD ₅₀ , Dermal (mice): 5,600 to 6,600 mg/kg.		
Permissible Exposure Concentration:	for d-Limonene Sax Quotes: LPR-Mus TD _{Lo} : 4800 mg/kg/8W-I: ETA ORL-Mus TD _{Lo} : 67 mg/kg/39W-I: ETA		

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12. ECOLOGICAL INFORMATION

"Marine Pollutant: Classified as slight hazard for water WGK-1 (self statement)"

Ecotoxicity: Fish Toxicity:	LC-0 = 26 mg/l LC-50 = 33 mg/l LC-100=43 mg/l Daphnia toxicity: not available Alga toxicity: not available Earthworm toxicity: not available Plant toxicity: not available
Ozone Depletion Potential:	Zero stratospheric
Global Warming Potential:	Zero
Photodegradability:	Atmospheric half-life = c.a. 1 hour. (Note: d-Limonene, in common with other terpenes, represent a major sink for the undesirable tropospheric ozone, removing the smog-forming catalyst nitrogen oxides and consuming ozone at an increased rate at night. While the material is photoreactive, the benefits of removing ozone and nitrogen oxides outweigh the negative with hydroxyl radical)
Biodegradability:	d-Limonene is a biodegradable solvent occurring in nature as the main component of peel oil. 100% in 28 days
Bio-Accumulation:	Not available
Other Data:	Chemical oxygen demand: 2.850 gO ₂ /l or 3.280 gO ₂ /kg

13. DISPOSAL CONSIDERATIONS

Waste Handling & Disposal Method: Dispose of in accordance with Federal, State and Local environmental regulations. In most cases land fill or incineration would apply. There are no uniform EC regulations for the disposal of chemicals or residues. Chemical residues generally are applied as "special waste." We recommend that you contact either the authorities in charge or approved waste companies which will advise you on how to dispose of special waste. Do not allow to enter drinking water supplier, waste water or soil without municipal authorization.

14. REGULATORY STATUS

- 1) FDA & FEMA list orange oil which is 95%+ d-Limonene as GRAS - Generally Regarded As Safe.
- 2) NTP, OSHA, and IARC do NOT list product as carcinogenic to humans.
- 3) Unused product is NOT listed by EPA as hazardous waste (40 CFR part 26 IQ).
- 4) d-Limonene is NOT listed on California's Prop. 65 toxic substance list.
- 5) d-Limonene is listed on EPA's Chemical Inventory, PL94-469; however, NOT on EPA's CORR (Chemicals or Regulatory Rules) list, which contains those materials which pose a health or environmental risk.
- 6) d-Limonene does NOT contain lead, cadmium, mercury, or hexavalent chromium or come into contact with these chemicals since it is a citrus derived by-product oil produced by steam distillation.
- 7) The components of this product are included on the EPA TSCA Chemical Substance Inventory.
- 8) The components of this product are included on Canada's Domestic Substance List (DSL).

15. OTHER INFORMATION

VOC INFORMATION: Since orange oil is categorized as an essential oil, it is excluded from VOC regulation. However, when it is categorized as a solvent, orange oil is reportable as 95% VOC (850 grams per liter, 6.81 lbs. per gallon).

ASTM D1364:	<0.1% Water
EPA 24 DENSITY:	0.8422 Kg/L Density

The information contained herein is based on data considered to be accurate and reliable. No warranty is expressed or implied regarding the accuracy or correctness of this data. It is the user's obligation to determine the safe use of the product since conditions of use, handling, storage and disposal are beyond our control.

16. REFERENCES

1. R.J. Braddock, F. Temell and K.R. Cadwallader, Citrus Essential Oils-1986
2. Citrus Essential Oils-A Dossier for Material Safety Data Sheets-Food Technology 40 (11) 114-116
3. Official Journal of the European Communities
4. Merck Index-Tenth Edition-1983
5. Citrus Florida Oils (156-157)
6. Different Customers
7. The Essential Oils-Ernest Guenter-1975
8. R.J. Braddock-Handbook of Citrus By-Products and Processing Technology-Chapter 12-1999