

Half & Half

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Version 2

Section 1. IDENTIFICATION

Product Identifier

Product Form: Substance
Substance Name: Pure Tung Oil/Technical Grade d-Limonene
SDS# HH
Synonyms: d-Limonene, Citrus Extractives, Citrus Terpenes, Tung Oil, China Wood Oil
Use of the substance/mixture: Finishing and Sealing of Porous Surfaces

Name, Address and Telephone of the Responsible Party

Supplier Address:

Real Milk Paint, LLC
126 Commerce Dr.
Hohenwald, TN 38462
www.realmilkpaint.com

Emergency Telephone Number

Chemtel 24 hours (within US only) 800-255-3924
Chemtel 24 hours (outside continental US) 813-248-0585

Section 2. HAZARDS IDENTIFICATION

This product is considered hazardous according to OSHA's Hazard Communication Standard as well as European Union Directives 67/548/EEC and 1999/45/EC and international GHS standards and was prepared using Regulations 1907/2006 and 1207/2008.

Per Regulation 67/548/EEC

DANGER!

Graphical Indications of Hazards

Indication of Principle Danger:

N – Dangerous to the Environment
Xn – Harmful



Most Important Hazards (R Phrases):

R10 – Flammable
R38 – Irritating Skin
R43 – May Cause sensitization by skin contact
R50/53 – Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment
R65 – Harmful: may cause lung damage if swallowed

Hazard Statements:

H226 – Flammable liquid and vapor
H304 – May be fatal if swallowed and enters airways
H315 – Causes skin irritation
H317 – May cause an allergic skin reaction

H400 – Very toxic to aquatic life

H410 – Very toxic to aquatic life with long lasting effects

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces. — No smoking

P233 – Keep container tightly closed

P240 – Ground/bond container and receiving equipment

P241 – Use explosion-proof electrical/ventilating/lighting/equipment

P242 – Use only non-sparking tools

P243 – Take precautionary measures against static discharge

P261 – Avoid breathing dust/fume/gas/mist/vapours/spray

P264 – Wash contaminated items 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

P301 + P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

P302 + P352 – IF ON SKIN: Wash with plenty of soap and water

P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P321 – Specific treatment. See first aid instructions.

P331 – Do NOT induce vomiting

P332 + P313 – If skin irritation occurs: Get medical advice/attention

P362 – Take off contaminated clothing and wash before reuse

P363 – Wash contaminated clothing before reuse

P370 + P378 – In case of fire: Use carbon dioxide, foam or dry chemical for extinction

P391 – Collect spillage

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

P405 – Store locked up

501 – Dispose of contents/container in accordance with local/regional/national/international regulations.

FDA – Food Additives Generally Recognized as Safe (GRAS): 182.20

Classification: Substance

Marine pollutant: Y

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.	Weight-%	Substance Presenting Health Hazards (R-phases)
Citrus, extractives ^{1,2}	94266-47-4	304-454-3	≈ 48	Xn; N; R10-38-43-50/53-65
Tung Oil	8001-20-5	232-272-3	≈ 50	None

ECHA Registration # N/A

¹ *d-Limonene is the primary chemical component of citrus extractives*

² *U.S. FDA – Food Additives Generally Recognized as Safe (GRAS) CFR 21 Part 182.20 Hydrocarbons %: 98 See Section 16 for the full text of the R phrases mentioned in this Section.*

Section 4. FIRST AID MEASURES

First Aid Measures

- General Advice:** As with any chemical, employees should thoroughly wash hands with soap and water after handling this material. If health disorder happens, call for medical help immediately. Immediately remove any clothing soiled by product.
- Eye Contact:** Remove any contact lenses at once. Flush eyes with water for at least 15 minutes. If irritation persists, seek medical attention.
- Skin Contact:** Wash affected area with copious amounts of soap and water. If irritation develops, seek medical attention.
- Inhalation:** If symptoms of overexposure are experienced, move to fresh air.
- Ingestion:** Seek medical attention immediately. **DO NOT** induce vomiting. Rinse mouth with water. **DO NOT** administer anything by mouth to an unconscious person. **DO NOT** leave victim unattended.

Most Important Symptoms and Effects, Both Acute and Delayed

- Symptoms:** Skin irritation and skin sensitization. The product may be fatal if swallowed and enters airways. Inhalation may cause irritation of the nose, throat, and respiratory tract.

Indication of any Immediate Medical Attention and Special Treatment Needed

- Notes to physician:** In case of ingestion do not induce vomiting. **DO NOT** administer anything by mouth to an unconscious person. **DO NOT** leave victim unattended.

Section 5. FIRE-FIGHTING MEASURES**Extinguishing Media**

- Suitable Extinguishing Media:** Carbon dioxide, foam or dry chemical. **Caution:** Carbon dioxide will displace air in confined spaces and may create an oxygen deficient atmosphere.

- Unsuitable Extinguishing Media:** Water

Special Hazards Arising from the Substance or Mixture

Do not use water with full jet to prevent fire spreading. In case of fire, the following can be released: acrid fumes, carbon monoxide (CO), carbon dioxide (CO₂) smoke, and soot.

Advice for Firefighters

Vapors may be irritating to the eyes, skin, and respiratory tract. Firefighters should wear self-contained breathing apparatus (SCBA) and full firefighting turnout gear.

Special Hazards

Product contains combustible organic ingredients. Fire may produce dense black smoke containing hazardous products of combustion.

Additional information

Cool endangered receptacles with water spray. Collect contaminated firefighting water separately. It must not enter the sewage system. Dispose of fire debris and contaminated firefighting water in accordance with official regulations.

Section 6. ACCIDENTAL RELEASE MEASURES**Personal Precautions, Protective Equipment and Emergency Procedures**

Use personal protective recommended in Section 8. Product is slippery when spilled. Isolate the hazard area. Deny entry to unnecessary and unprotected personnel.

Environmental Precautions

Prevent further leakage or spillage. Keep away from drains, surface and ground water and soil. Inform respective authorities in case of seepage into water course or sewage system. Do not allow to enter sewers, surface or ground water.

Methods and Material for Containment and Cleanup

Dike spill area and cap leaking containers as necessary to prevent further spreading of spilled material. Absorb spilled liquid with suitable material such as dirt or sand. Eliminate all ignition sources. Use equipment rated for use around combustible materials. Place in appropriate disposal container. Oil soaked rags may spontaneously combust; place in appropriate disposal container.

References to other sections: None

Section 7. HANDLING AND STORAGE**Precautions for Safe Handling**

Use personal protection equipment as mentioned under “exposure controls/personal protection. Keep away from heat, sparks and flames. Protect against electrostatic charges. Open container slowly to release pressure caused by temperature variations. Do not allow this material to come in contact with eyes. Avoid prolonged contact with skin. Use in well-ventilated areas. Do not breathe vapors. Drum lining may occasionally chip and fall to the bottom of container; product should be filtered or strained before blending or repackaging. As with any chemical, employees should thoroughly wash hands with soap and water after handling this material.

Conditions for Safe Storage, Including any Incompatibilities

Product may be packaged in phenolic lined steel containers or fluorinated plastic containers. Store in a well ventilated area with proper sprinkler/fire deterrent system. Storage temperature should not exceed the flash point for extended periods of time. Store away from oxidizing agents. Keep container closed when not in use. Air should be excluded from partially filled containers by displacing with nitrogen or carbon dioxide. Do not cut, drill, grind or weld on or near this container; residual vapors may ignite.

Specific End Use(s)

No further relevant information available.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

The following information is given as general guidance

General Guidelines

General protective and hygienic measures: Use personal protective equipment depending on concentration and amount of hazardous substance. Wash hands before breaks and at the end of the work. Avoid contact with eyes

and skin. Avoid prolonged exposure to fumes. Have eyewash and emergency shower facilities available. Launder contaminated clothing before reuse.

Exposure Guidelines

d-Limonene:	8h TWA=30 ppm (AIHA Standard) UK LT EXP (8hrs.): Not established UK ST EXP (15 min.): Not established
Engineering Controls:	Normal room ventilation is usually adequate. Provide exhaust ventilation or other engineering controls to keep the airborne concentration below any regulated limits. Keep away from sparks and flames.
Eye/Face Protection:	Wear safety glasses or goggles.
Skin Protection:	Nitrile gloves are recommended. Boots, apron, or bodysuit should be worn as necessary.
Respiratory Protection:	Not normally required. If adequate ventilation is unavailable, use NIOSH approved air-purifying respirator with organic vapor cartridge or canister.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State:	Liquid	Odor:	Mild Citrus Aroma
Appearance:	Yellowish Liquid	Odor Threshold:	Not Determined
Color:	Yellow to Amber		

Property	Values	Remarks / Methods
Physical State	Liquid	
pH	None	
Melting Point	-96° C, thickens at -78° C	
Boiling Point/Boiling Range	176° C / Not Determined	
Flash Point	>43° C (>109° F)	CC (Closed Cup)
Evaporation Rate	0.2 (BuAc = 1)	
Flammability (solid,gas)	Not Determined	
Upper Flammability Limits	UEL approx. 6.1%	
Lower Flammability Limits	LEL approx. 0.7%	
Vapor Pressure	<2mmHg at 20° C	
Specific Gravity	0.838 – 0.843 at 25° C (77° F)	
Refractive Index	1.471 – 1.474 at 20° C (68° F)	
Water Solubility	Insoluble	
Solubility in Other Solvents	Not Determined	
Partition Coefficient	Kow = 4.23 (d-limonene)	
Autoignition Temperature	Approx. 237° C	
Decomposition Temperature	Not Determined	
Kinematic Viscosity	Not Determined	
Dynamic Viscosity	Not Determined	
Explosive Properties	Not Determined	
Oxidizing Properties	Not Determined	
Density	0.937 g/cm ³ at 25° C (77° F)	

Volatile Organic Compound (VOC) >47.5% by volume

Other information: None listed.

Note: These properties represent a typical sample of the product, but actual values may vary. Certificates of Analysis and Specification Sheets are available upon request.

Section 10. STABILITY AND REACTIVITY

Reactivity: Minimal Hazard

Chemical Stability: Stable

Possibility of Hazardous Reactions: NHT, an antioxidant, can be added to prevent oxidation. Avoid long-term exposure to air. If storing partially-filled containers, fill headspace with an inert gas such as nitrogen or carbon dioxide.

Conditions to Avoid: Keep away from heat, sparks and flames. Keep away from children.

Incompatible Materials: Strong oxidizing agents and strong acids, including acidic clays, peroxides, halogens, vinyl chloride, and iodine pentafluoride.

Hazardous Decomposition Products: Oxides of d-limonene, which can result from improper storage and handling, are known to cause skin sensitization. No decomposition if stored properly.

Possibility of Hazardous Reaction: BHT, an antioxidant, can be added to prevent oxidization. Avoid long term exposure to air. If storing partially filled containers, fill headspace with an inert gas such as nitrogen or carbon dioxide.

Section 11. TOXICOLOGICAL INFORMATION

Information on likely Routes of Exposure

Likely Routes of Exposure: Inhalation, skin, and eye contact.

Acute effects: This blend has not been tested for its toxicity. D-Limonene have been shown to have a low oral toxicity ($LD_{50} > 5\text{g/kg}$) and low dermal toxicity ($LD_{50} > 5\text{g/kg}$) when tested on rabbits. D-Limonene have also shown low toxicity by inhalation ($HD_{50} > 1\text{g/kg}$) when tested on mice. Product may be a skin and eye irritant. Inhalation may cause irritation of the nose, throat, and respiratory tract LC_{50} : Not established.

Chronic effects This product is not classified for repeated dose toxicity. This product is not classified as a carcinogen by IARC or U.S. ACGIH, NTP or OSHA. This product has not been shown to produce genetic changes when tested on bacterial or animal cells. This product does not contain known reproductive or developmental toxins.

Symptoms: Skin irritation and skin sensitization. The product may be fatal if swallowed and enters airways. Inhalation may cause irritation of the nose, throat, and respiratory tract. Target organs: Eyes, respiratory system and skin.

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity

According to the official classification this product may be very toxic to aquatic life. However, due to the physical properties of the product (density and volatility) it will not remain in the environment for an extended period of time.

Persistence/Degradability

d-Limonene is classified as readily biodegradable.

Bioaccumulation potential

The octanol-water partition coefficient (K_{ow}) for d-Limonene is 4.23. The potential for bioaccumulation in the environment is possible. However, the metabolism of citrus extractives into non-accumulating metabolites greatly reduces the risk of bioaccumulation.

Mobility in Environment

Citrus extractives volatilize rapidly. Citrus extractives are expected to volatilize from soil or water to the air and oxidize to carbon dioxide in the presence of sunlight.

Section 13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Recycling is a strongly preferred to disposal or burning. If disposing, please do so in accordance with official regulations in your area. Keep in mind that this product should not be disposed along with household garbage. Do not allow this product to reach any sewage waste system, as it may be detrimental to aquatic life. *European waste catalogue: e.g. 02 03 03 wastes from solvent extraction.*

Recommendation: Empty contaminated packaging thoroughly. Packaging may be recycled or repurposed after thorough and proper cleaning. Note that this packaging may not be cleansed and disposed of in the same manner as the product.

Moistened solids (e.g. cloth, pulp, filter panels, binger) can be burnt after consulting with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations. *European waste catalogue: e.gh.15 02 02 Filter and absorption materials with hazardous agents.*

General Note: All disposal of substance or packaging should be in accordance with all national, state, and local regulations.

Section 14. TRANSPORT INFORMATION

This information is given as general guidance. Please refer to current shipping paper for most up to date shipping information, including exemptions and special circumstances.

The listed transportation classification does not address regulatory variations due to changes in package size, mode of shipment, or other regulatory descriptions.



Road – ADR

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.
Hazard Class: 3
UN Number: UN2319
Packing Group: III
Label/Placard: 3 Flammable Liquid

Rail – RID

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.
Hazard Class: 3
UN Number: UN2319
Packing Group: III
Label/Placard: 3 Flammable Liquid

Sea – IMDG

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.
Hazard Class: 3
UN Number: UN2319
Packing Group: III
Marine Pollutant: Yes
Label/Placard: 3 Flammable Liquid

Air – IATA

Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.
Hazard Class: 3
UN Number: UN2319
Packing Group: III
Label/Placard: 3 Flammable Liquid

Section 15. REGULATORY INFORMATION**Per Regulation 67/548/EEC*****Indication of principle danger*****Warning symbols:**

F – Flammable
N – Dangerous to the Environment
Xn – Harmful
R10-38-43-50/53-65
S24-37-61-62

Global Inventories

This product is included in the following inventories:

USA (TSCA)¹
Canada (DSL)¹
Europe (EINECS/ELINCS/Polymer/NLP)
Australia (AICS)¹
Korea (KECL)¹
Philippines (PICCS)
Japan (ENCS)¹

¹ Listed as CAS 5989-57-5 (*d*-Limonene)

United States Regulations

The U.S. FDA lists d-Limonene as GRAS in 21 CFR sections 182.20 and 182.60

Proposition 65: California Safe Drinking Water and Toxic Enforcement Act of 1986

This product is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels which would be subject to the proposition.

SARA Title III (Section 313)

This substance contains no materials subject to the reporting requirements of SARA Title III (Section 313)

Section 16. OTHER INFORMATION

This product was produced with Good Manufacturing Practices. It is a by-product of citrus, entirely of natural origin, and to the best of our knowledge contains no artificial flavors, sulfites, nitrites, or pesticide residue exceeding tolerances established by the U.S. FDA. It has not been adulterated or misbranded. It 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/vacuum distillation. Further, it is packaged in food grade containers with inert liners that do NOT contain lead, cadmium, mercury, or hexavalent chromium. It 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.

Full R-phrases

R10 – Flammable

R38 – Irritating to skin

R43 – May cause sensitisation by skin contact

R50/53 – Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment

R65 – Harmful: may cause lung damage if swallowed

Full S-phrases

S24 – Avoid contact with skin

S37 – Wear suitable gloves

S61 – Avoid release to the environment. Refer to special instructions/safety data sheets

S62 – If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Applicable CAS Numbers:

8028-48-6 Orange, sweet, extract

5989-27-5 d-Limonene, (R)-p-mentha-1,8-diene

94266-47-4 Citrus terpenes, citrus ext

68647-72-3 Terpenes and terpenes, sweet orange oil

68608-34-4 Terpenes and terpenes, citrus oil

Legend

ACGIH – American Conference of Governmental Industrial Hygienists

ADR – European Agreement concerning the International Carriage of Dangerous Goods by Road

AIHA – American Industrial Hygiene Association

BHT – Butylated Hydroxytoluene

CAS # - Chemical Abstracts Service

CFR – United States Code of Federal Regulations

DOT – United States Department of Transportation

EC# - European Commission (aka EINECS, European Inventory of Existing Commercial Chemical Substances.)

ECHA - European Chemicals Agency

FDA – United States Food and Drug Administration

GHS – Globally Harmonized System of Classification and Labeling of Chemicals

GRAS – Generally Recognized as Safe

IARC – International Agency for Research on Cancer

ICAO – International Civil Aviation Organization

IMDG – International Maritime Code for Dangerous Goods

NFPA – National Fire Protection Association

NIOSH – United States National Institute for Occupational Safety and Health

NTP – United States National Toxicology Program

OSHA – United States Occupational Health and Safety Administration

RID – Regulations Concerning the International Transport of Dangerous Goods by Rail

TWA – Time Weighted Average

Caution: The user should conduct his/her own experiments and establish proper procedures and control before attempting use on critical parts.

NFPA	Health Hazards	Flammability	Instability	Special Hazards
	1	2	0	Not Determined
HMIS	Health Hazards	Flammability	Physical Hazards	Personal Protection
	1	2	0	G



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Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of this publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The Real Milk Paint Co. assumes no responsibility for injury to vendee or third party person proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, The Real Milk Paint Co. assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Compliance with all applicable federal, state, and local laws and local regulations remains the responsibility of the user.

End of Safety Data Sheet