

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:..... LND Hardener
APPLICABLE PRODUCT CODES: LND, LND-8
CHEMICAL FAMILY:..... Anhydride mixture.
INTENDED PRODUCT USES:..... Curing agent for epoxy resins.
PRODUCT RESTRICTIONS: None identified.
SDS VERSION: LND-2019a

MANUFACTURER:
Gougeon Brothers, Inc.
100 Patterson Ave.
Bay City, MI 48706, U.S.A.
Phone: 310-882-2120 or 989-684-7286
www.entropyresins.com

EMERGENCY TELEPHONE NUMBERS (24 HRS):
Transportation
CHEMTREC: 800-424-9300 (U.S.)
703-527-3887 (International)
Non-transportation
Poison Hotline: 800-222-1222

2. HAZARDS IDENTIFICATION

Classification of Substance or Mixture

Skin corrosion/irritation, Category 2
Eye damage/irritation, Category 1
Respiratory sensitizer, Category 1
Skin sensitizer, Category 1
Chronic aquatic toxicity, Category 3

Label Elements

Hazard Pictogram(s):



Signal Word:
DANGER

Hazard Statements:
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H318 Causes serious eye damage
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H412 Harmful to aquatic life with long lasting effects

Precautionary Statements:

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P264 Wash 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
P284 In case of inadequate ventilation wear respiratory protection

Response

P303 + P331 + P353 IF ON SKIN: Wash with plenty of soap and water (or shower).
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor
P313 + P333 If irritation or rash occurs: Get medical attention/advice
P342 + P 311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor
P362 + P364 Take off contaminated clothing and wash it before reuse

Disposal

P501 Dispose of contents and container according to local, state, national and international regulations

Other Hazards

None known.

3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

LND Hardener

INGREDIENT NAME	CAS #	CONCENTRATION (%)
Tetrahydro-4-methylphthalic anhydride	34090-76-1	30-60
Hexahydro-4-methylphthalic anhydride	19438-60-9	10-30
1,2,3,6-tetrahydrophthalic anhydride	85-43-8	10-30
Benzyltriethylammonium chloride	56-37-1	1-10
Phthalic anhydride	85-44-9	1-5

The exact chemical identity and/or exact percentage (concentration) of each ingredient may be held as a trade secret. Any ingredient not disclosed may have been determined not to pose a hazard, or may only be present in concentrations that do not require disclosure. Refer to Section 15 for any additional information regarding a CBI claim.

4. FIRST AID MEASURES

FIRST AID FOR EYES:..... SYMPTOMS: Causes serious eye damage. RESPONSE: Flush immediately with water for at least 15 minutes. Remove contact lenses if present and easy to do. Immediately call a POISON CONTROL CENTER or doctor.

FIRST AID FOR SKIN:..... SYMPTOMS: Causes skin irritation. May cause allergic skin reaction and sensitization. RESPONSE: Immediately wash skin with soap and water. Call a physician or doctor if symptoms develop or persist.

FIRST AID FOR INHALATION:..... SYMPTOMS: May cause allergy or asthma symptoms or breathing difficulties. Can cause respiratory irritation, shortness of breath or cough. Exposure to concentrated vapors, fumes or mist can cause damage to lung tissue. RESPONSE: Remove to fresh air if effects occur and keep comfortable for breathing. Immediately call POISON CONTROL CENTER or doctor if symptoms develop and persist.

FIRST AID FOR INGESTION:..... SYMPTOMS: May cause gastrointestinal irritation or discomfort. Consider consulting with a physician or doctor if appreciable amounts are ingested or if you feel unwell.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:..... SUITABLE: Carbon dioxide (CO₂), dry chemical, water fog. NON-SUITABLE: Direct water stream.

FIRE AND EXPLOSION HAZARDS:..... During a fire, smoke may contain the original materials in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include, but are not limited to: carbon monoxide, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES:..... Use full-body protective gear and a self-contained breathing apparatus. Use of water may generate toxic aqueous solutions. Do not allow water run-off from fighting fire to enter drains or other water courses.

6. ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES:..... Keep unnecessary and unprotected personnel from entering area. Use appropriate safety and personal protective equipment as indicated in Section 8.

MITIGATION AND CLEAN UP PROCEDURES:..... Stop leak without additional risk. Isolate area. Dike and absorb with inert material (e.g., sand) and collect in a suitable, closed container. Flush area with water and soda ash. Flush area with water and soda ash.

ENVIRONMENTAL PRECAUTIONS:..... Prevent from entering into soil, ditches, sewers, waterways and groundwater. See Section 12 for environmental impact information.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE (min./max.):..... 40°F (4°C) / 90°F (32°C).

STORAGE:..... Store in cool, dry place away from high temperatures and moisture. Keep container tightly closed. Store above 32°F (0°C) to prevent crystalizing.

HANDLING PRECAUTIONS:..... Use only with adequate ventilation. Avoid breathing fumes or vapors. Avoid skin and eye contact. Wash thoroughly after handling. Fumes and vapors released as a result of thermal decomposition can vary widely in composition and toxicity. Do not transfer to unlabeled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:..... Use with adequate general ventilation and/or local ventilation to keep exposures below established limits.

EYE PROTECTION GUIDELINES:..... Chemical splash-proof goggles or face shield.

SKIN PROTECTION GUIDELINES:..... Wear liquid-proof, chemical resistant gloves (nitrile-butyl rubber, neoprene, butyl rubber or natural rubber) and full body-covering clothing.

RESPIRATORY PROTECTION GUIDELINES:..... When ventilation cannot be made adequate enough to keep exposures below established limits, use a NIOSH approved respirator with an organic vapor/acid gas cartridge + P100 or a multi-contaminant cartridge, depending on specific workplace conditions. Consult with your respirator and cartridge supplier to ensure proper selection of respirator and cartridge based on ingredients listed in Section 3 and specific workplace conditions. Use and select a respirator according the guidelines established in OSHA 1910.134 or other applicable respiratory protection standard.

ADDITIONAL PROTECTIVE MEASURES:..... Use where there is immediate access to safety shower and emergency eye wash. Wash thoroughly after use. Generally speaking, working cleanly and following basic precautionary measures will greatly minimize the potential for harmful exposure to this product under normal use conditions.

OCCUPATIONAL EXPOSURE LIMITS:..... Exposure limits may not be established for this product as a whole. For established exposure limits of specific ingredients in this product, or other available exposure limit information, refer to the table below.

Ingredient Name	CAS#	Exposure Limit Information
Tetrahydro-4-methylphthalic anhydride	34090-76-1	ACGIH TLV TWA: 0.0005mg/m3; STEL: 0.002mg/m3; Surface Limit: 0.07mg/100cm2; Upper respiratory tract irritation.
Hexahydro-4-methylphthalic anhydride	19438-60-9	No data available
1,2,3,6-tetrahydrophthalic anhydride	85-43-8	No data available
Benzyltriethylammonium chloride	56-37-1	No data available
Phthalic anhydride	85-44-9	OSHA PEL TWA: 2ppm, 12mg/m3, Table Z-1; ACGIH TLV TWA: 1ppm SENS; NIOSH REL TWA: 1ppm, 6 mg/m3

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM:..... Liquid.
COLOR:..... Amber
ODOR:..... Characteristic of anhydrides
ODOR THRESHOLD:..... No data available
pH:..... No data available
MELTING POINT / FREEZING POINT..... No data available
BOILING POINT (760mm/Hg):..... >300°F (93.3°C)
FLASH POINT:..... >135°F (60.0°C) Pensky-Martens Closed Cup
AUTO IGNITION TEMPERATURE..... No data.
LOWER EXPLOSIVE LIMIT (LEL)..... No data.
UPPER EXPLOSIVE LIMIT (UEL)..... No data.
VAPOR PRESSURE..... < 1 mmHg @ 20°C estimated based on ingredient data.
SPECIFIC GRAVITY/DENSITY (water = 1)..... 1.21
BULK DENSITY..... 10.08 lbs./gal. (1.21 kg/L)
VAPOR DENSITY (air = 1)..... 5.7
EVAPORATION RATE (Butyl Acetate = 1)..... No data.
WATER SOLUBILITY (% BY WT.)..... Negligible.
PARTITION COEFFICIENT, n-OCTANOL/WATER (log Pow)..... No data.
KINEMATIC VISCOSITY:..... No data available.
DECOMPOSITION TEMPERATURE:..... No data available.
% VOLATILE BY WEIGHT:..... ASTM 2369-07 was used to determine the Volatile Matter Content of mixed epoxy resin and hardener. The combined VOC content for the resin and hardener system is listed below.

<u>Resin/Hardener</u>	<u>VOC Content</u>	
	<u>(g/L)</u>	<u>(lb/gal)</u>
ECCW / LND	9.89	0.08

10. STABILITY AND REACTIVITY

STABILITY:..... Product is stable at normal temperatures and pressures.
REACTIVITY/HAZARDOUS REACTIONS:..... There are no known reactivity hazards associated with this product. Product will not react by itself under normal operating temperatures.
INCOMPATIBILITIES:..... Avoid alcohols, alkalis, water, amines.
CONDITIONS TO AVOID:..... Avoid excessive heat. Exposure to water. Slowly hydrolyzed by water, forming methyltetrahydrophthalic acid.
DECOMPOSITION PRODUCTS:..... Potentially toxic and irritating fumes and gases when burned or otherwise heated to thermal decomposition. Decomposition products may include, but not limited to: oxides of carbon.

11. TOXICOLOGICAL INFORMATION

LND Hardener

Ingredient Name	CAS#	LD ₅₀ Oral	LD ₅₀ Dermal	LC ₅₀ Inhalation
Tetrahydro-4-methylphthalic anhydride	34090-76-1	2140 mg/kg	2980 mg/kg	>0.74 mg/L 8h mist
Hexahydro-4-methylphthalic anhydride	19438-60-9	No data available	1555 mg/kg	>0.74 mg/L 8h mist
1,2,3,6-tetrahydrophthalic anhydride	85-43-8	5410 mg/kg	>22,000 mg/kg	No data available
Benzyltriethylammonium chloride	56-37-1	2219 mg/kg	8300 mg/kg	No data available
Phthalic anhydride	85-44-9	1530 mg/kg	>10000 mg/kg	No data available

ACUTE TOXICITY: No specific in vivo toxicity data exists for this mixture. Classification is based on acute toxicity estimation methods using ingredient data.
 Oral: ATE >2000 mg/kg. Not Classified.
 Dermal: Not classified. Based on available data the product does not meet classification criteria.
 Inhalation: Not classified. Based on available data the product does not meet classification criteria.

SKIN CORROSION / IRRITATION: Category 2. Causes skin irritation.

SERIOUS EYE DAMAGE / IRRITATION: Category 1. Causes serious eye damage. May cause blurred vision and corneal damage resulting in vision impairment.

RESPIRATORY SENSITIZATION: Category 1. May cause allergy or asthma symptoms or breathing difficulties. Can cause respiratory irritation, shortness of breath or cough.

SKIN SENSITIZATION: Category 1. May cause allergic skin reaction.

REPRODUCTIVE TOXICITY: Not classified. Based on available data the product does not meet classification criteria.

MUTAGENICITY: Not classified. Based on available data the product does not meet classification criteria.

CARCINOGENICITY: Not classified. Based on available data the product does not meet classification criteria.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure): Not classified. Based on available data the product does not meet classification criteria.

SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure): Not classified. Based on available data the product does not meet classification criteria.

ASPIRATION HAZARD: Not classified. Based on available data the product does not meet classification criteria.

OTHER HEALTH HAZARD INFORMATION: None known.

12. ECOLOGICAL INFORMATION

ACUTE AQUATIC TOXICITY: Not classified. Based on available data does not meet classification criteria.

CHRONIC AQUATIC TOXICITY: Category 3. Harmful to aquatic life with long lasting effects. Calculated Estimate. No specific test data available for the mixture. Avoid release to the environment.

PERSISTANCE AND BIODEGRADABILITY: No specific test data available for the mixture.

MOBILITY IN SOIL: No specific test data available for the mixture.

ADDITIONAL ECOTOXICITY INFORMATION: In the liquid, uncured state, this product may be harmful to aquatic life with long lasting effects. Prevent release to the environment, sewers and natural waters.

Ingredient	CAS#	Ecotoxicity Classification Information
Tetrahydro-4-methylphthalic anhydride	34090-76-1	Not classified
Hexahydro-4-methylphthalic anhydride	19438-60-9	Not classified
1,2,3,6-tetrahydrophthalic anhydride	85-43-8	Chronic Aquatic Cat. 3
Benzyltriethylammonium chloride	56-37-1	Chronic Aquatic Cat. 3
Phthalic anhydride	85-44-9	Not classified

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Evaluation of this product using RCRA criteria shows that may be listed as a hazardous waste based on listing criteria in its purchased form. It is the responsibility of the user to determine proper disposal methods.

Chemical Name	RCRA Code	RCRA Criteria for Listing

LND Hardener

Phthalic anhydride CAS# 85-44-9	U1901	Included in waste streams: F039, K023, K024, K093, K094
------------------------------------	-------	--

14. TRANSPORTATION INFORMATION

US DOT
 UN NUMBER: Not regulated
 SHIPPING NAME: Not applicable
 TECHNICAL SHIPPING NAME: Not applicable
 HAZARD CLASS: Not applicable
 PACKING GROUP: Not applicable
 MARINE POLLUTANT: Not applicable

CANADA TDG
 UN NUMBER: Not regulated
 SHIPPING NAME: Not applicable
 TECHNICAL SHIPPING NAME: Not applicable
 HAZARD CLASS: Not applicable
 PACKING GROUP: Not applicable
 MARINE POLLUTANT: Not applicable

IMDG
 UN NUMBER: Not regulated
 SHIPPING NAME: Not applicable
 TECHNICAL SHIPPING NAME: Not applicable
 HAZARD CLASS: Not applicable
 PACKING GROUP: Not applicable
 EmS Number: Not applicable
 MARINE POLLUTANT: Not applicable

ICAO/IATA
 UN NUMBER: Not regulated
 SHIPPING NAME: Not applicable
 TECHNICAL SHIPPING NAME: Not applicable
 HAZARD CLASS: Not applicable
 PACKING GROUP: Not applicable
 MARINE POLLUTANT: Not applicable

15. REGULATORY INFORMATION

COUNTRY	INVENTORY LIST	STATUS
United States	TSCA	All ingredients are listed or otherwise compliant.
Europe	EINECS or ELINCS	All ingredients are listed or otherwise compliant.
Canada	CEPA (DSL/NDL)	All ingredients are listed or otherwise compliant.
Australia	AICS	No data available.
Japan	ENCS	No data available.
South Korea	KECI	No data available.
China	IECSC	No data available.
Philippines	PICCS	No data available.

US EPA TSCA Requirements: No data available.

Canada WHMIS Confidential Business Information (CBI): No data available.

US EPA SARA TITLE III Reporting and Notification Requirements:
 Subject to Section 302 (TPQ) No data available.
 Subject to Section 304 (RQ) Phthalic anhydride (CAS# 85-44-9) = 5000 lbs.
 Subject to Section 311 or 312 Refer to the health and physical classifications in Section 2.
 Subject to Section 313 No data available.

US STATE REGULATORY INFORMATION:
 The following chemicals may be specifically regulated by individual states. For details on state regulatory requirements you should contact the appropriate state agency.

<u>COMPONENT NAME</u> <u>/CAS NUMBER</u>	<u>STATE CODE</u>
Benzyltriethylammonium chloride 56-37-1	PA, NJ
Phthalic anhydride 85-44-9	MA, PA, NJ
Hexahydro-4-methylphthalic anhydride	

16. OTHER INFORMATION

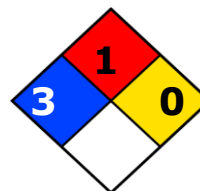
REASON FOR ISSUE:..... Updates to all sections.
PREPARED BY:..... Gougeon Brothers, Inc.
SDS CONTACT:..... safety@gougeon.com
TITLE:..... Health, Safety & Environmental Manager
APPROVAL DATE:..... May 14, 2019
SUPERSEDES DATE:..... October 4, 2018
SDS VERSION:..... LND-2019a

OTHER HAZARD INFORMATION AND RATING SYSTEMS:

HMIS® RATING

HEALTH:	3
FLAMMABILITY:	1
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

Information in this document is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Gougeon Brothers, Inc. The data on this sheet is related only to the specific material designated herein. Gougeon Brothers, Inc. assumes no legal responsibility for use or reliance upon these data.