

# SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:**.....KNFR Resin  
**APPLICABLE PRODUCT CODES:** .....KNFR, KNFR-6  
**CHEMICAL FAMILY:**.....Epoxy resin adhesive mixture  
**INTENDED PRODUCT USES:**.....Epoxy adhesive.  
**PRODUCT RESTRICTIONS:**.....None identified.  
**SDS VERSION:** .....KNFR-2020a

**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  
Skin sensitizer, Category 1  
Eye damage/irritation, Category 2A  
Chronic aquatic toxicity, Category 2

### Label Elements

#### **Hazard Pictogram(s):**



**Signal Word:**  
WARNING

#### **Hazard Statements:**

H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic 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.  
P 280 Wear protective gloves/protective clothing/eye protection.

##### Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P333 + P313 If skin irritation or rash occurs: Get medical attention/advice.  
P337 + P313 If eye irritation persists: Get medical attention/advice.  
P362 + P364 Take off contaminated clothing and wash it before re-use.  
P391 Collect spillage

##### Disposal

P501 Dispose of contents/container in accordance with local, regional and international regulations.

### Other Hazards

None known.

## 3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

INGREDIENT NAME	CAS #	CONCENTRATION (%)
44,4'-Isopropylenediphenol, oligomeric reactions products with 1-chloro-2,3-epoxypropane (number average molecular weight <=700)	25068-38-6	65 - 85
Oxirane, Mono[(C12-14-alkyloxy)methyl] Derivs.	68609-97-2	7 - 13

Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	1 - 5
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The exact chemical identity and/or exact concentration of each ingredient may be held as a trade secret. Any ingredient ranges provided may be a result of batch variation. Any ingredients not listed in this section may not pose an environmental or health hazard as present in this product or may be present below reporting thresholds. Refer to Section 15 for any additional regulatory information.

**4. FIRST AID MEASURES**

**FIRST AID FOR EYES:**..... SYMPTOMS: Causes serious irritation and redness. RESPONSE: Flush immediately with water for at least 15 minutes. Remove contact lenses if present and easy to do. Consult a physician as precautionary measure. If exposed or concerned, get medical attention or advice.

**FIRST AID FOR SKIN:**..... SYMPTOMS: Causes skin irritation. May cause allergic skin reaction and sensitization. RESPONSE: Remove contaminated clothing. Wipe excess from skin. Apply waterless skin cleaner and then wash with soap and water. Consult a physician if effects occur. If exposed or concerned, get medical attention or advice.

**FIRST AID FOR INHALATION:**..... SYMPTOMS: Excessive inhalation may cause lightheadedness or dizziness and irritation to the respiratory tract. RESPONSE: Remove to fresh air if respiratory irritation occurs and keep comfortable for breathing. If exposed or concerned, get medical attention or advice.

**FIRST AID FOR INGESTION:**..... SYMPTOMS: May be harmful if significant amounts are ingested. If conscious, dilute with 1-2 glasses of water. Do not induce vomiting unless directed by a physician. RESPONSE: Seek medical attention if ingested. If exposed or concerned, get medical attention or advice.

**5. FIRE FIGHTING MEASURES**

**EXTINGUISHING MEDIA:** ..... SUITABLE: Foam, carbon dioxide (CO<sub>2</sub>), dry chemical. 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 and carbon dioxide, and traces of nitrogen oxides, silicone compounds and formaldehyde.

**SPECIAL FIRE FIGHTING PROCEDURES:** ..... Wear a self-contained breathing apparatus and complete full-body personal protective equipment. Closed containers may rupture (due to buildup of pressure) when exposed to extreme heat.

**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. Provide adequate dilution ventilation to the area. Remove all ignition sources and use non-sparking collection equipment. Warm, soapy water or non-flammable, safe solvent may be used to clean residual.

**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) / 120°F (49°C)

**STORAGE:**..... Store in cool, dry place. Store in tightly sealed containers to prevent moisture absorption and loss of volatiles.

**HANDLING PRECAUTIONS:** ..... Avoid all skin and eye contact. Wash thoroughly after handling. Launder contaminated clothing before reuse. Avoid inhalation of vapors from heated product. Precautionary steps should be taken when curing product in large quantities. When mixed with epoxy curing agents this product causes an exothermic, which in large masses, can produce enough heat to damage or ignite surrounding materials and emit fumes and vapors that vary widely in composition and toxicity.

**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:** ..... Safety glasses with side shields or chemical splash goggles.

**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 cartridge, or organic vapor cartridge + P100 particulate filter, or

multi-contaminate 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 to the guidelines established in OSHA 1910.134 or other applicable respiratory protection standard.

**ADDITIONAL PROTECTIVE MEASURES:** ..... Practice good caution and personal cleanliness to avoid skin and eye contact. Avoid skin contact when removing gloves and other protective equipment. Wash thoroughly after handling. 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
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	No data available.
Oxirane, Mono[(C12-14-alkyloxy)methyl] Derivs.	68609-97-2	No data available.
Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	Amorphous silica: OSHA PEL 6 mg/m3  Dust and PNOS: ACGIH 10mg/m3, TWA, Inhalable; 3 mg/m3, TWA, Respirable; OSHA PEL 15 mg/m3, TWA, total dust; 5 mg/m3, TWA, Respirable

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL FORM:** ..... Gel-Paste.  
**COLOR:** ..... Cloudy-off white.  
**ODOR:** ..... Mild.  
**ODOR THRESHOLD:** ..... No data available  
**pH:** ..... No data available  
**MELTING POINT / FREEZING POINT** ..... No data available  
**BOILING POINT (760mm/Hg):** ..... > 400°F. Estimated based on ingredient data.  
**FLASH POINT:** ..... >200°F (93°C). Estimated based on ingredient data.  
**AUTO IGNITION TEMPERATURE** ..... No data available  
**LOWER EXPLOSIVE LIMIT (LEL)** ..... No data available  
**UPPER EXPLOSIVE LIMIT (UEL)** ..... No data available  
**VAPOR PRESSURE** ..... No data available  
**SPECIFIC GRAVITY/DENSITY (water = 1)** ..... 1.12  
**BULK DENSITY** ..... 9.33 lbs./gal. (1.12 kg/L)  
**VAPOR DENSITY (air = 1)** ..... No data available  
**EVAPORATION RATE (Butyl Acetate = 1)** ..... No data available  
**WATER SOLUBILITY (% BY WT.)** ..... No data available  
**PARTITION COEFFICIENT, n-OCTANOL/WATER (log Pow)** ..... No data available  
**KINEMATIC VISCOSITY:** ..... Gel-paste  
**DECOMPOSITION TEMPERATURE:** ..... No data available.  
**% VOLATILE BY WEIGHT:** ..... ASTM D 2369-07 was used to determine the Volatile Content of mixed epoxy resin and hardener. Refer to the hardener SDS for information about the total volatile content of the resin/hardener system.

**10. STABILITY AND REACTIVITY**

**STABILITY:** ..... Product is stable at normal temperatures and pressures.  
**REACTIVITY/HAZARDOUS REACTIONS:** ..... Product will not react by itself. A mass of more than one pound of product plus an amine may cause irreversible polymerization with significant heat buildup. Strong acids, bases, amines and mercaptans can cause polymerization.  
**INCOMPATIBILITIES:** ..... Strong acids, bases, amines and mercaptans can cause polymerization. External heating or self-heating could result in rapid temperature increase and pressure build up. If such a condition were to occur in a drum, the drum could expand and rupture violently.  
**CONDITIONS TO AVOID:** ..... Avoid excessive heat.  
**DECOMPOSITION PRODUCTS:** ..... Carbon monoxide, carbon dioxide and oxides of nitrogen, and traces of nitrogen oxides, silicone compounds and formaldehyde.

**11. TOXICOLOGICAL AND HAZARD ENDPOINT INFORMATION**

Component Name	CAS#	LD <sub>50</sub> Oral	LD <sub>50</sub> Dermal	LC <sub>50</sub> Inhalation
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	>5000 mg/kg	2200 mg/kg	No data available
Oxirane, Mono[(C12-14-alkyloxy)methyl] Derivs.	68609-97-2	17,000 mg/kg (rat)	>4,500 mg/kg (rabbit)	No data available
Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	>5000 mg/kg	>2000 mg/kg	No data

**ACUTE TOXICITY:**..... No specific toxicity data exists for this mixture. Classification is based on acute toxicity estimation methods using ingredient data.  
 Oral:..... Not classified. Based on available data does not meet acute oral toxicity criteria.  
 Dermal:..... Not classified. Based on available data does not meet acute dermal toxicity criteria.  
 Inhalation:..... Not classified. Based on available data does not meet acute inhalation toxicity criteria. If product is heated, vapors generated can cause headache, nausea, dizziness and possible respiratory irritation if inhaled in high concentrations.

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

**SERIOUS EYE DAMAGE / IRRITATION:**..... Causes serious eye irritation. Category 2A.

**RESPIRATORY SENSITIZATION:**..... Not classified. Does not meet criteria for respiratory sensitizer. Repeated exposure to high vapor concentrations may cause irritation of pre-existing lung allergies and increase the chance of developing allergy symptoms to this product.

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

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

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

**CARCINOGENICITY:**..... Not classified. Based on available data does not meet classification criteria. No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA, NTP or IARC.

Epichlorohydrin, an impurity in this product (<5 ppm) has been reported to produce cancer in laboratory animals and to produce mutagenic changes in bacteria and cultured human cells. It has been established by the International Agency for Research on Cancer (IARC) as a probable human carcinogen (Group 2A) based on the following conclusions: human evidence – inadequate; animal evidence – sufficient. It has been classified as an anticipated human carcinogen by the National Toxicology Program (NTP). Note: It is unlikely that normal use of this product would result in measurable exposure concentrations to this substance.

**SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):**..... Not classified. Based on available data does not meet STOT SE criteria.

**SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure):**..... Not classified. Based on available data does not meet STOT RE criteria.

**ASPIRATION HAZARD:**..... Not classified. Based on available data does not meet aspiration toxicity criteria.

**OTHER HEALTH HAZARD INFORMATION:**..... None known.

**12. ECOLOGICAL INFORMATION**

**ACUTE AQUATIC TOXICITY:**..... No specific test data available for the mixture. Calculated Estimate: Not classified. Based on available data does not meet acute aquatic classification criteria.

**CHRONIC AQUATIC TOXICITY:**..... Chronic aquatic - Category 2. Calculated estimate. No specific test data available for the mixture.

**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. Prevent release to the environment, sewers and natural waters.

Ingredient	CAS#	Ecotoxicity Classification Information
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	Aquatic Chronic Cat. 2
Oxirane, Mono[(C12-14-alkyloxy)methyl] Derivs.	68609-97-2	Not Classified
Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	Not Classified

**13. DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHOD:**..... Evaluation of this product using RCRA criteria shows that it is not a hazardous waste, either by listing or characteristics, in its purchased form. It is the responsibility of the user to determine proper disposal methods.

Incinerate, recycle (fuel blending) or reclaim may be preferred methods when conducted in accordance with federal, state and local regulations.

**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.

**CANADA TDG**

UN NUMBER: ..... Not regulated.  
 SHIPPING NAME: ..... Not applicable.  
 TECHNICAL SHIPPING NAME: ..... Not applicable.  
 HAZARD CLASS: ..... Not applicable.  
 PACKING GROUP: ..... Not applicable.

**ICAO/IATA**

UN NUMBER: ..... UN 3077.  
 SHIPPING NAME: ..... Environmentally hazardous substance, solid, n.o.s.  
 TECHNICAL SHIPPING NAME: ..... Epoxy Resin.  
 HAZARD CLASS: ..... Class 9.  
 PACKING GROUP: ..... PG III.  
 MARINE POLLUTANT: ..... Yes

**IMDG**

UN NUMBER: ..... UN 3077.  
 SHIPPING NAME: ..... Environmentally hazardous substance, solid, n.o.s.  
 TECHNICAL SHIPPING NAME: ..... Epoxy Resin.  
 HAZARD CLASS: ..... Class 9.  
 PACKING GROUP: ..... PG III.  
 EmS Number: ..... F-A, S-F  
 MARINE POLLUTANT ..... Yes

**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/NDSL)	All ingredients are listed or otherwise compliant.
Australia	AICS	All ingredients are listed or otherwise compliant.
Japan	ENCS	All ingredients are listed or otherwise compliant.
South Korea	KECI	All ingredients are listed or otherwise compliant.
China	IECSC	All ingredients are listed or otherwise compliant.
Philippines	PICCS	All ingredients are listed or otherwise compliant.
New Zealand	NZIoC	All ingredients are listed or otherwise compliant.

**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)..... No data available.  
 Subject to Section 311 or 312 ..... Refer to Section 2 for health and physical hazard classifications.  
 Subject to Section 313 ..... No data available.

**STATE REGULATORY INFORMATION:**

Chemicals listed below may be specifically regulated by individual states. For details on state regulatory requirements you should contact the appropriate state agency.

**COMPONENT NAME**

**/CAS NUMBER**

Epichlorohydrin  
 106-89-8

< 5ppm

**STATE CODE**

<sup>1</sup>CA

<sup>1</sup>: These substances are known to the state of California to cause cancer or reproductive harm, or both.

**16. OTHER INFORMATION**

**REASON FOR ISSUE:**..... Changes in to Section 1.  
**PREPARED BY:** ..... Gougeon Brothers, Inc.  
**SDS CONTACT:** ..... safety@entropyresins.com

TITLE: ..... Health, Safety & Environmental Manager  
APPROVAL DATE: ..... January 30, 2020  
SUPERSEDES DATE: ..... May 14, 2019  
SDS VERSION: ..... KNFR-2020a

**OTHER HAZARD INFORMATION AND RATING SYSTEMS:**

**HMIS® RATING**

HEALTH:	2
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

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