

# SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:**.....KNFH Hardener  
**APPLICABLE PRODUCT CODES:** .....KNFH, KNFH-1, KNFH-2, KNFH-3, KNFH-4, KNFH-5, KNFH-6, KNFH-7, KNFH-8.  
**CHEMICAL FAMILY:**.....Polyamine mixture.  
**INTENDED PRODUCT USES:**.....Curing agent for epoxy resins.  
**PRODUCT RESTRICTIONS:**.....None identified.  
**SDS VERSION:** .....KNFH-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

Acute toxicity, Oral, Category 4  
Skin corrosion/irritation, Category 1C  
Eye damage/irritation, Category 1  
Skin sensitizer, Category 1  
Reproductive toxicity, Category 2  
Acute aquatic toxicity, Category 1  
Chronic aquatic toxicity, Category 1

### Label Elements

#### Hazard Pictogram(s):



**Signal Word:**  
DANGER

**Hazard Statements:**  
H302 Harmful if swallowed  
H314 Causes severe skin burns and eye damage  
H317 May cause an allergic skin reaction  
H361 Suspected of damaging fertility or the unborn child  
H410 Very toxic to aquatic life with long lasting effects

#### **Precautionary Statements:**

##### Prevention

P201 Obtain special instructions before use  
P202 Do not handle until all safety precautions have been read and understood  
P260 Do not breathe dust/fume/gas/mist/vapors/spray  
P264 Wash hands thoroughly after handling  
P270 Do not eat, drink or smoke when using this product  
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

##### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse or wash skin with 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.  
P308 + P313 IF exposed or concerned: Get medical attention/advice  
P310 Immediately call a POISON CENTER or doctor  
P313 + P333 If irritation or rash occurs: Get medical attention/advice  
P362 + P364 Take off contaminated clothing and wash it before reuse  
P391 Collect spillage

##### Storage

P405 Store locked up.

# KNFH Hardener

## 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

INGREDIENT NAME	CAS #	CONCENTRATION (%)
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer	68609-08-5	9.6-48
1,3-cyclohexanedimethanamine	2579-20-6	10-30
Benzyl alcohol	100-51-6	1-24
Isophoronediamine	2855-13-2	1-24
Nonyphenol	84852-15-3	10-30
2,2',2"-Nitrilotriethanol	102-71-6	1-5
Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	1-5

The exact chemical identity and/or exact concentration of each ingredient may be held as a trade secret. Any ingredient not disclosed may have been determined not to pose a health or physical 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 eye burns and 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 burns, redness and irritation. May cause allergic skin reaction and sensitization. RESPONSE: Immediately wash skin with soap and water. Immediately call a POISON CONTROL CENTER or doctor.

**FIRST AID FOR INHALATION:**..... SYMPTOMS: 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 ulceration. May cause burns of the mouth and throat. RESPONSE: Rinse mouth with water. DO NOT induce vomiting. If vomiting should occur, keep airway clear. Immediately call POISON CONTROL CENTER or doctor.

### 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: oxides of nitrogen, carbon monoxide, carbon dioxide, volatile amines, ammonia, nitric acid, aldehydes. When mixed with sawdust, wood chips, or other cellulosic material, spontaneous combustion can occur under certain conditions. Heat is generated as the air oxidizes the amine. If the heat is not dissipated quickly enough, it can ignite the sawdust.

**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. Do not use sawdust, wood chips or other cellulosic materials to absorb the spill, as the possibility for spontaneous combustion exists. Warm, soapy water 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) / 90°F (32°C).

**STORAGE:** ..... Store in cool, dry place away from high temperatures and moisture. Keep container tightly closed. Avoid direct sunlight. Store in a secure location with restricted access or store locked up.

**HANDLING PRECAUTIONS:** ..... Use with adequate ventilation. Do not breathe vapors or mists from heated material. Avoid exposure to concentrated vapors. Avoid skin and eye contact. Wash thoroughly after handling. When mixed with epoxy resin this product causes an exothermic reaction, which in large masses, can produce enough heat to undergo thermal decomposition damage or ignite surrounding materials. Fumes and vapors released as a result of thermal decomposition can 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:** ..... 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 cartridge, organic vapor 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. Contact lens should not be worn when working with this material. 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
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer	68609-08-5	No data available
1,3-cyclohexanedimethanamine	2579-20-6	No data available
Benzyl alcohol	100-51-6	10 ppm (AIHA-WEEL)
Isophoronediamine	2855-13-2	No data available
Nonyphenol	84852-15-3	No data available
2,2',2"-Nitrilotriethanol	102-71-6	ACGIH TLV TWA: 5.0mg/m <sup>3</sup>
		Amorphous silica: OSHA PEL 6 mg/m <sup>3</sup>
Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	Dust and PNOS: ACGIH 10mg/m <sup>3</sup> , TWA, Inhalable; 3 mg/m <sup>3</sup> , TWA, Respirable; OSHA PEL 15 mg/m <sup>3</sup> , TWA, total dust; 5 mg/m <sup>3</sup> , TWA, Respirable

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL FORM:** ..... Gel-paste.  
**COLOR:** ..... Cloudy-off white.  
**ODOR:** ..... Ammonia-like  
**ODOR THRESHOLD:** ..... No data available  
**pH:** ..... 11.14  
**MELTING POINT / FREEZING POINT** ..... No data.  
**BOILING POINT (760mm/Hg):** ..... > 400°F (204°C) estimated based on similar product.  
**FLASH POINT:** ..... > 200°F (93°C) estimated based similar product.  
**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)** ..... 1.01  
**BULK DENSITY** ..... 8.41 lbs./gal. (1.01 kg/L)  
**VAPOR DENSITY (air = 1)** ..... No data.  
**EVAPORATION RATE (Butyl Acetate = 1)** ..... No data.  
**WATER SOLUBILITY (% BY WT.)** ..... Appreciable.  
**PARTITION COEFFICIENT, n-OCTANOL/WATER (log Pow)** ..... No data.  
**KINEMATIC VISCOSITY:** ..... Gel-paste (mm<sup>2</sup>/s @ 25°C)  
**DECOMPOSITION TEMPERATURE:** ..... No data available.

# KNFH Hardener

**% 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>
KNFR / KNFH .....	0.04	0.00

## 10. STABILITY AND REACTIVITY

**STABILITY:** ..... Product is stable at normal temperatures and pressures.

**REACTIVITY/HAZARDOUS REACTIONS:** ..... Product will not react by itself under normal operating temperatures. A mass of more than one pound of product plus an epoxy resin will cause irreversible polymerization with significant heat buildup and pressure.

**INCOMPATIBILITIES:** ..... Avoid acids, oxidizing materials, halogenated organic compounds (e.g., methylene chloride). 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 and direct sunlight.

**DECOMPOSITION PRODUCTS:** ..... Very toxic fumes and gases when burned or otherwise heated to thermal decomposition. Decomposition products may include, but not limited to: oxides of nitrogen, volatile amines, ammonia, nitric acid and aldehydes.

## 11. TOXICOLOGICAL INFORMATION

<u>Ingredient Name</u>	<u>CAS#</u>	<u>LD<sub>50</sub> Oral</u>	<u>LD<sub>50</sub> Dermal</u>	<u>LC<sub>50</sub> Inhalation</u>
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer	68609-08-5	No data available	No data available	No data available
1,3-cyclohexanedimethanamine	2579-20-6	700-780 mg/kg	1700 mg/kg	No data available
Benzyl alcohol	100-51-6	1620 mg/kg	No data available	>4.18 mg/l 4h aerosol
Isophoronediamine	2855-13-2	1030 mg/kg	>2000	>5.01 mg/l 4h mist
Nonyphenol	84852-15-3	1412 mg/kg	2031 mg/kg (unknown guidelines)	No data
2,2',2"-Nitrilotriethanol	102-71-6	No data available	>22,000 mg/kg	No data available
Silicones and siloxanes, dimethyl-, reaction products with silica	67762-90-7	>5000 mg/kg OECD 401	>2000 mg/kg OECD 402	No data

**ACUTE TOXICITY:** ..... No specific toxicity data exists for this mixture. Classification is based on acute toxicity estimation methods using ingredient data.

Oral: ..... Category 4. Harmful if swallowed. Corrosive. Can cause severe damage to the mouth, throat and stomach.

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 1C. Causes severe skin burns. Effects may be immediate. May cause persistent irritation or dermatitis.

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

**RESPIRATORY SENSITIZATION:** ..... Not classified. Based on available data the product does not meet classification criteria.

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

**REPRODUCTIVE TOXICITY:** ..... Category 2. Suspected of damaging fertility or the unborn child.

**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.

# KNFH Hardener

**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:** ..... Category 1. Very toxic to aquatic life. Calculated Estimate. No specific test data available for the mixture. Avoid release to the environment.

**CHRONIC AQUATIC TOXICITY:** ..... Category 1. Very toxic to aquatic life with long lasting effects. Calculated Estimate. No specific test data available for the mixture. Avoid release to the environment.

**PERSISTENCE 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
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer	68609-08-5	No data available. (Refer to classification of bisphenol A diglycidyl ether homopolymer)
1,3-cyclohexanedimethanamine	2579-20-6	Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3
Benzyl alcohol	100-51-6	Not classified
Isophoronediamine	2855-13-2	Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3
Nonyphenol	84852-15-3	Acute Aquatic Cat. 1; Chronic Aquatic Cat. 1; M Factor = 10
2,2',2"-Nitrilotriethanol	102-71-6	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: ..... UN 3259  
SHIPPING NAME: ..... Polyamines, solid, corrosive, n.o.s.  
TECHNICAL SHIPPING NAME: ..... 1,3-cyclohexanedimethanamine  
HAZARD CLASS: ..... Class 8  
PACKING GROUP: ..... PG III  
MARINE POLLUTANT: ..... No

### CANADA TDG

UN NUMBER: ..... UN 3259  
SHIPPING NAME: ..... Polyamines, solid, corrosive, n.o.s.  
TECHNICAL SHIPPING NAME: ..... 1,3-cyclohexanedimethanamine  
HAZARD CLASS: ..... Class 8  
PACKING GROUP: ..... PG III  
MARINE POLLUTANT: ..... No

### IMDG

UN NUMBER: ..... UN 3259  
SHIPPING NAME: ..... Polyamines, solid, corrosive, n.o.s.  
TECHNICAL SHIPPING NAME: ..... 1,3-cyclohexanedimethanamine  
HAZARD CLASS: ..... Class 8  
PACKING GROUP: ..... PG III  
EmS Number: ..... F-A, S-B  
MARINE POLLUTANT ..... Yes

### ICAO/IATA

UN NUMBER: ..... UN 3259

# KNFH Hardener

SHIPPING NAME:..... Polyamines, solid, corrosive, n.o.s.  
 TECHNICAL SHIPPING NAME:..... 1,3-cyclohexanedimethanamine  
 HAZARD CLASS:..... Class 8  
 PACKING GROUP:..... PG III  
 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.

**US EPA TSCA Information:**..... A component in this product (4-Nonylphenol, branched, CAS# 84852-15-3) may be subject to TSCA Section 5(a) SNUR requirements. A component in this product (4-Nonylphenol, branched, CAS# 84852-15-3) may be subject to TSCA Section 12(b) SNUR requirements.

**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 the health and physical classifications in Section 2.  
 Subject to Section 313 ..... 4-Nonylphenol, branched, CAS# 84852-15-3

**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.

**COMPONENT NAME /CAS NUMBER**

**STATE CODE**

Nonylphenol 84852-15-3	PA, NJ
Benzyl alcohol 100-51-6	MA, PA, NJ

## 16. OTHER INFORMATION

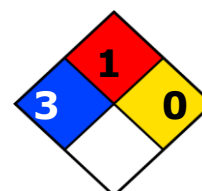
**REASON FOR ISSUE:**..... Updates to all sections.  
**PREPARED BY:**..... Gougeon Brothers, Inc.  
**SDS CONTACT:**..... safety@gougeon.com  
**TITLE:**..... Health, Safety & Environmental Manager  
**APPROVAL DATE:**..... May 14, 2019  
**SUPERSEDES DATE:**..... December 28, 2018  
**SDS VERSION:**..... KNFH-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

## KNFH Hardener

---

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.