

KNFH Hardener

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Date of issue: 12/28/2018

Revision date: 03/17/2020

Version: EH-KNFH-2020a

SECTION 1: Identification

Identification

Product form : Mixture
Product name : KNFH Hardener
Product code : EH-KNFH, EH-KNFH-7
Chemical family : Polyamine mixture

Relevant identified uses of the substance or mixture and uses advised against

Recommended use : Curing agent for epoxy resins

Details of the supplier of the safety data sheet

Manufacturer

Gougeon Brothers, Inc
100 Patterson Ave.
Bay City, MI 48706 - U.S.A.
T 888-377-6738 or 989-684-7286

Distributor

Emergency telephone number

Emergency number : CHEMTREC 1 (800) 424-9300
CHEMTREC International +1 (703) 527-3887 24 hr

SECTION 2: Hazard identification

Classification of the substance or mixture

Acute Tox. 4 (Oral)
Skin Corr. 1C
Eye Dam. 1
Skin Sens. 1
Repr. 2
Aquatic Acute 1
Aquatic Chronic 1

Label elements

Hazard pictograms (GHS)



Signal word (GHS)

Danger

Hazard statements (GHS)

Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. Suspected of damaging fertility or the unborn child. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statements (GHS)

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. If swallowed: rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Collect spillage. Store locked up. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

Other hazards

No additional information available

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Unknown acute toxicity

53% of the mixture consists of ingredient(s) of unknown acute toxicity (Oral)

SECTION 3: Composition/information on ingredients

Substances

Not applicable

Mixtures

Name	Product identifier	%
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer	(CAS-No.) 68609-08-5	9.6 - 48
1,3-Cyclohexanedimethanamine	(CAS-No.) 2579-20-6	10 - 30
Phenol, 4-nonyl-, branched	(CAS-No.) 84852-15-3	10 - 30
Benzyl alcohol	(CAS-No.) 100-51-6	1 - 24
Isophoronediamine	(CAS-No.) 2855-13-2	1 - 24
Dimethyl silicone polymer with silica	(CAS-No.) 67762-90-7	1 - 5
Ethanol, 2,2',2"-nitrotris-	(CAS-No.) 102-71-6	1 - 5

The concentrations listed represent actual ranges that result from batch variability.

The exact chemical identity and/or exact percentage (concentration) of each ingredient may be held as confidential business information (CBI). Any ingredient not disclosed in this section may have been determined not to be hazardous to health or the environment, or it may be present at a level below its disclosure threshold.

SECTION 4: First-aid measures

Description of first aid measures

- First-aid measures after inhalation** : If inhaled: Remove person to fresh air and keep comfortable for breathing. Get medical attention if irritation develops and persists.
- First-aid measures after skin contact** : If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Take off contaminated clothing and wash it before reuse. Immediately call a POISON CENTER/doctor.
- First-aid measures after eye contact** : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
- First-aid measures after ingestion** : IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Immediately call a POISON CENTER/doctor.

Most important symptoms and effects, both acute and delayed

- Symptoms/effects after inhalation** : May cause irritation to the respiratory tract. May cause burns to the respiratory tract.
- Symptoms/effects after skin contact** : Causes severe skin burns. Symptoms may include redness, pain, blisters. May cause an allergic skin reaction.
- Symptoms/effects after eye contact** : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. May cause burns.
- Symptoms/effects after ingestion** : Harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Indication of any immediate medical attention and special treatment needed

Symptoms may be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Foam. Carbon dioxide. Dry chemical.
- Unsuitable extinguishing media** : Do not use a heavy water stream.

Special hazards arising from the substance or mixture

- Fire hazard** : Products of combustion may include, and are not limited to: oxides of carbon. Toxic fumes. Nitrogen oxides. Amines. Aldehydes. Ammonia. Nitric acid. 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.
- Reactivity** : No dangerous reactions known under normal conditions of use.

Advice for firefighters

- Firefighting instructions** : Do not allow run-off from fire-fighting to enter drains or water courses.

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- Protection during firefighting** : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).
- Other information** : Use of water may generate toxic aqueous solutions.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

- General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

For non-emergency personnel

No additional information available

For emergency responders

No additional information available

Environmental precautions

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and material for containment and cleaning up

- For containment** : Stop leak if safe to do so. Absorb and/or contain spill with inert material (sand, vermiculite or other appropriate material), then place in suitable container. Do not flush into surface water or sewer system. Wear recommended personal protective equipment. Do not use sawdust or other combustible material to absorb spilled material.
- Methods for cleaning up** : Sweep or shovel spills into appropriate container for disposal. Wash with soapy water. Provide ventilation.

Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

Precautions for safe handling

- Precautions for safe handling** : Do not get in eyes, on skin, or on clothing. Do not breathe vapors or mists from heated material. Avoid breathing vapour or mist. Do not swallow. Handle and open container with care. When using do not eat, drink or smoke. Provide adequate ventilation. Wear personal protective equipment. When mixed with epoxy resin this product causes an exothermic reaction, 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.
- Hygiene measures** : Wash contaminated clothing before reuse. Always wash hands after handling the product.

Conditions for safe storage, including any incompatibilities

- Storage conditions** : Keep out of the reach of children. Keep container tightly closed. Store in dry, cool, well-ventilated area. Avoid high temperatures. Protect from moisture. Store locked up. Protect from sunlight.
- Storage temperature** : 40 - 90 °F / 4 - 32 °C

SECTION 8: Exposure controls/personal protection

Control parameters

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer (68609-08-5)		
Not applicable		
1,3-Cyclohexanedimethanamine (2579-20-6)		
Not applicable		
Benzyl alcohol (100-51-6)		
AIHA	WEEL TWA (ppm)	10 ppm
Isophoronediamine (2855-13-2)		
Not applicable		
Phenol, 4-nonyl-, branched (84852-15-3)		
Not applicable		

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Dimethyl silicone polymer with silica (67762-90-7)		
ACGIH	ACGIH TWA (mg/m ³)	10 mg/m ³ inhalable 3 mg/m ³ respirable fraction
OSHA	OSHA PEL (TWA) (mg/m ³)	6 mg/m ³ Amorphous silica 15 mg/m ³ Total dust 5 mg/m ³ respirable fraction
Ethanol, 2,2',2"-nitrilotris- (102-71-6)		
ACGIH	ACGIH TWA (mg/m ³)	5 mg/m ³

Exposure controls

Appropriate engineering controls	: Ensure good ventilation of the work station.
Hand protection	: Wear suitable gloves resistant to chemical penetration.
Eye protection	: Wear eye/face protection.
Skin and body protection	: Wear suitable protective clothing.
Respiratory protection	: In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Environmental exposure controls	: Avoid release to the environment.
Other information	: Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Gel / Paste
Colour	: Cloudy / Off-white
Odour	: Ammoniacal
Odour threshold	: No data available
pH	: 11.14
Melting point	: No data available
Freezing point	: No data available
Boiling point	: > 400 °F / 204 °C Estimated based on similar product
Flash point	: > 200 °F / 93 °C Estimated based on similar product
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: Not flammable
Vapour pressure	: < 1 mm Hg @ 68 °F / 20 °C Estimated based on ingredient data
Relative vapour density at 20 °C	: No data available
Relative density (water = 1)	: 1.01
Solubility	: Water: Appreciable.
Partition coefficient n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: Gel-paste
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

Other information

VOC content	: ASTM D 2369-07 was used to determine the Volatile Content of mixed epoxy resin and hardener. The combined VOC content for the resin and hardener system is listed below. KNFR / KNFH: 0.04 g/L ; 0.00 lb/gal
Bulk density	: 8.41 lb/gal (1.01 kg/L)

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SECTION 10: Stability and reactivity

Reactivity	: No dangerous reactions known under normal conditions of use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No dangerous reactions known under normal conditions of use. A mass of more than one pound of product plus an epoxy resin will cause irreversible polymerization with significant heat buildup and pressure. Heating will cause a rise in pressure with a risk of bursting.
Conditions to avoid	: Heat. Incompatible materials. Direct sunlight.
Incompatible materials	: Acids. Oxidizing materials. Halogenated compounds.
Hazardous decomposition products	: May include, and are not limited to: oxides of carbon. Toxic fumes. Toxic gases. Nitrogen oxides. Amines. Aldehydes. Ammonia. Nitric acid.

SECTION 11: Toxicological information

Information on toxicological effects

1,3-Cyclohexanedimethanamine (2579-20-6)	
LD50 oral rat	700 - 780 mg/kg
LD50 dermal rabbit	1700 mg/kg
Benzyl alcohol (100-51-6)	
LD50 oral rat	1620 mg/kg
LC50 inhalation rat	> 4.18 mg/l/4h (aerosol)
Isophoronediamine (2855-13-2)	
LD50 oral rat	1030 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	> 5.01 mg/l/4h mist
Phenol, 4-nonyl-, branched (84852-15-3)	
LD50 oral rat	1412 mg/kg
LD50 dermal rabbit	2031 (unknown guidelines)
Dimethyl silicone polymer with silica (67762-90-7)	
LD50 oral rat	> 5000 mg/kg OECD 401
LD50 dermal rabbit	> 2000 mg/kg OECD 402
Ethanol, 2,2',2''-nitrilotris- (102-71-6)	
LD50 dermal rabbit	> 22000 mg/kg
Acute toxicity (oral)	: Harmful if swallowed.
Acute toxicity (dermal)	: Not classified.
Acute toxicity (inhalation)	: Not classified.
Skin corrosion/irritation	: Causes severe skin burns. pH: 11.14
Serious eye damage/irritation	: Causes serious eye damage. pH: 11.14
Respiratory or skin sensitization	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified.
Carcinogenicity	: Not classified.
Ethanol, 2,2',2''-nitrilotris- (102-71-6)	
IARC group	3 - Not classifiable
Reproductive toxicity	: Suspected of damaging fertility or the unborn child.
STOT-single exposure	: Not classified.
STOT-repeated exposure	: Not classified.
Aspiration hazard	: Not classified.
Symptoms/effects after inhalation	: May cause irritation to the respiratory tract. May cause burns to the respiratory tract.
Symptoms/effects after skin contact	: Causes severe skin burns. Symptoms may include redness, pain, blisters. May cause an allergic skin reaction.

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Symptoms/effects after eye contact	: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. May cause burns.
Symptoms/effects after ingestion	: Harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.
Other information	: Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

Toxicity

Ecology - general : Very toxic to aquatic life with long lasting effects.

Benzyl alcohol (100-51-6)	
LC50 fish 1	460 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	23 mg/l (Exposure time: 48 h - Species: water flea)
LC50 fish 2	10 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
Isophoronediamine (2855-13-2)	
EC50 Daphnia 1	14.6 - 21.5 mg/l (Exposure time: 48 h - Species: Daphnia magna [semi-static])
Phenol, 4-nonyl-, branched (84852-15-3)	
LC50 fish 1	0.135 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	0.14 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	0.1351 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
Ethanol, 2,2',2''-nitritoltris- (102-71-6)	
LC50 fish 1	11800 mg/l
EC50 Daphnia 1	1386 mg/l
LC50 fish 2	> 1000 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
ErC50 (algae)	169 mg/l
NOEC chronic crustacea	16 mg/l

Persistence and degradability

KNFH Hardener	
Persistence and degradability	Not established.

Bioaccumulative potential

KNFH Hardener	
Bioaccumulative potential	Not established.
Benzyl alcohol (100-51-6)	
Partition coefficient n-octanol/water	1.1
Isophoronediamine (2855-13-2)	
Partition coefficient n-octanol/water	0.79 (at 23 °C)
Phenol, 4-nonyl-, branched (84852-15-3)	
BCF fish 1	271
Ethanol, 2,2',2''-nitritoltris- (102-71-6)	
BCF fish 1	< 3.9
Partition coefficient n-octanol/water	-2.53

Mobility in soil

No additional information available.

Other adverse effects

Other information : No other effects known.

Name	Product identifier	Ecotoxicity Classification Information
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer	(CAS-No.) 68609-08-5	No data available. (Refer to classification of bisphenol A diglycidyl ether homopolymer)
1,3-Cyclohexanedimethanamine	(CAS-No.) 2579-20-6	Aquatic Acute Cat. 3; Aquatic Chronic Cat. 3

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Name	Product identifier	Ecotoxicity Classification Information
Phenol, 4-nonyl-, branched	(CAS-No.) 84852-15-3	Aquatic Acute Cat. 1; Aquatic Chronic Cat. 1; M Factor = 10
Benzyl alcohol	(CAS-No.) 100-51-6	Not classified
Isophoronediamine	(CAS-No.) 2855-13-2	Aquatic Acute Cat. 3; Aquatic Chronic Cat. 3
Dimethyl silicone polymer with silica	(CAS-No.) 67762-90-7	Not classified
Ethanol, 2,2',2"-nitritoltris-	(CAS-No.) 102-71-6	Not classified

SECTION 13: Disposal considerations

Waste treatment methods

Product/Packaging disposal recommendations : This material must be disposed of in accordance with all local, state, provincial, and federal regulations. The generation of waste should be avoided or minimized wherever possible.

SECTION 14: Transport information

Department of Transportation (DOT) and Transportation of Dangerous Goods (TDG)

In accordance with DOT/TDG

UN-No.(DOT/TDG) : UN3259
Proper Shipping Name (DOT/TDG) : Polyamines, solid, corrosive n.o.s.
Proper Shipping Name - Addition : 1,3-cyclohexanedimethanamine
Class (DOT/TDG) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT/TDG) : III

Transport by sea

In accordance with IMDG

UN-No. (IMDG) : 3259
Proper Shipping Name (IMDG) : POLYAMINES, SOLID, CORROSIVE, N.O.S.
Proper Shipping Name - Addition : 1,3-cyclohexanedimethanamine
Class (IMDG) : 8 - Corrosive substances
Packing group (IMDG) : III
EmS-No. (1) : F-A, S-B
Marine pollutant : Yes

Transport by air

In accordance with IATA

UN-No. (IATA) : 3259
Proper Shipping Name (IATA) : Polyamines, solid, corrosive, n.o.s.
Proper Shipping Name - Addition : 1,3-cyclohexanedimethanamine
Class (IATA) : 8 - Corrosives
Packing group (IATA) : III
Marine pollutant : Yes

SECTION 15: Regulatory information

Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

All components of this product are listed, or excluded from listing, on the Canadian DSL (Domestic Substances List) and NDSL (Non-Domestic Substances List) inventories.

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-, reaction products with bisphenol A diglycidyl ether homopolymer (68609-08-5)	
EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).

Phenol, 4-nonyl-, branched (84852-15-3)	
Subject to reporting requirements of United States SARA Section 313	
EPA TSCA Regulatory Flag	SP - SP - indicates a substance that is identified in a proposed Significant New Use Rule.
SARA Section 313 - Emission Reporting	1 %

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Dimethyl silicone polymer with silica (67762-90-7)	
EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).

International regulations

No additional information available.

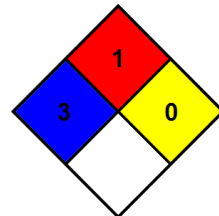
US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Benzyl alcohol (100-51-6)
U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List
Isophoronediamine (2855-13-2)
U.S. - New Jersey - Right to Know Hazardous Substance List
Ethanol, 2,2',2"-nitrilotris- (102-71-6)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Date of issue	: 12/28/2018
Revision date	: 03/17/2020
Version	: EH-KNFH-2020a
Other information	: None.
NFPA health hazard	: 3
NFPA fire hazard	: 1
NFPA reactivity	: 0



Hazard Rating	
Health	: 3 Serious Hazard
Flammability	: 1 Slight Hazard
Physical	: 0 Minimal Hazard

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