

Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.14.2018

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KNFH Hardener

SECTION 1: Identification

Product identifier

Product name: KNFH Hardener

Product code: KNFH-1

Recommended use of the product and restriction on use

Relevant identified uses: Not determined or not applicable.

Uses advised against: Not determined or not applicable.

Reasons why uses advised against: Not determined or not applicable.

Manufacturer or supplier details

Manufacturer:

North America

Gougeon Brothers, Inc.

100 Patterson Ave.

Bay City, MI 48706, U.S.A.

310-882-2120

safety@entropyresin.com

Emergency telephone number:

North America

CHEMTREC

800-424-9300 US

703-527-3887 International

SECTION 2: Hazard(s) identification

GHS classification:

Serious eye damage, category 1

Skin corrosion, category 1A

Skin sensitization, category 1

Respiratory sensitization, category 1

Acute toxicity (oral), category 4

Acute toxicity (dermal), category 4

Acute toxicity (inhalation), category 4

Reproductive toxicity, category 2

Acute aquatic hazard, category 2

Chronic aquatic hazard, category 2

Label elements

Hazard pictograms:



Signal word: Danger

Hazard statements:

H318 Causes serious eye damage

H314 Causes severe skin burns and eye damage

H317 May cause an allergic skin reaction

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H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H302 Harmful if swallowed
H312 Harmful in contact with skin
H332 Harmful if inhaled
H361 Suspected of damaging fertility or the unborn child
H401 Toxic to aquatic life
H411 Toxic to aquatic life with long lasting effects

Precautionary statements:

P280 Wear protective gloves/protective clothing/eye protection/face protection
P260 Do not breathe dust/fume/gas/mist/vapors/spray
P264 Wash skin thoroughly after handling
P272 Contaminated work clothing should not be allowed out of the workplace
P285 In case of inadequate ventilation wear respiratory protection
P270 Do not eat, drink or smoke when using this product
P271 Use only outdoors or in a well-ventilated area
P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood
P273 Avoid release to the environment
P305+P351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
P321 Specific treatment (see supplemental first aid instructions on this label).
P363 Wash contaminated clothing before reuse
P304+P340+P310 If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician
P301+P330+P331+P310 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.
P303+P361+P353+P310 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor/physician.
P333+P313 If skin irritation or a rash occurs: Get medical advice/attention
P302+P352+P312 If on skin: Wash with soap and water. Call a poison center or doctor/physician if you feel unwell
P308+P313 If exposed or concerned: Get medical advice/attention
P391 Collect spillage
P405 Store locked up
P501 Dispose of contents and container as instructed in Section 13

Hazards not otherwise classified: None

SECTION 3: Composition/information on ingredients

Identification	Name	Weight %
CAS number: 84852-15-3	Nonyl phenol	14-18
CAS number: 67762-90-7	Siloxanes and Silicones, di-Me, reaction products with silica	1-5
CAS number: 100-51-6	Benzyl Alcohol	<25
CAS number: 108-95-2	Phenol	<0.1

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CAS number: 140-31-8	1-Piperazineethanamine	<0.5
CAS number: 2579-20-6	1,3-Cyclohexanedimethanamine	25-30
CAS number: 2855-13-2	Isophorone diamine	<25
CAS number: 102-71-6	2,2',2''-Nitrilotriethanol	<3
CAS number: 110-85-0	Piperazine	<1
CAS number: 91672-41-2	Phenol, 2-nonyl-, branched	<1

Additional Information: None

SECTION 4: First aid measures

Description of first aid measures

General notes:

Not determined or not applicable.

After inhalation:

Loosen clothing as necessary and position individual in a comfortable position

Maintain an unobstructed airway

Get medical advice/attention if you feel unwell

Move exposed individual to fresh air

Immediately call a POISON CONTROL CENTER or seek medical attention

After skin contact:

Rinse affected area with soap and water

If symptoms develop or persist, seek medical attention

Immediately remove all contaminated clothing

Wash affected area with soap and water

Immediately call a POISON CONTROL CENTER or seek medical attention

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes

Remove contact lenses, if present and easy to do

Continue rinsing

Get medical advice/attention

Remove contact lens(es) if able to do so during rinsing

Immediately call a POISON CONTROL CENTER or seek medical attention

After swallowing:

Rinse mouth and then drink plenty of water

Do not induce vomiting

Get medical advice/attention if you feel unwell

Immediately call a POISON CONTROL CENTER or seek medical attention

Most important symptoms and effects, both acute and delayed

Acute symptoms and effects:

Not determined or not applicable.

Delayed symptoms and effects:

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Not determined or not applicable.

Immediate medical attention and special treatment

Specific treatment:

Not determined or not applicable.

Notes for the doctor:

Not determined or not applicable.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition

Unsuitable extinguishing media:

Do not use water as an extinguisher

Specific hazards during fire-fighting:

Thermal decomposition can lead to release of irritating gases and vapors

Special protective equipment for firefighters:

Wear protective eye wear, gloves and clothing

Refer to Section 8

Use typical firefighting equipment, self-contained breathing apparatus, special tightly sealed suit

Special precautions:

Heating causes a rise in pressure, risk of bursting and combustion

Shut off sources of ignition

Carbon monoxide and carbon dioxide may form upon combustion

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation

Ensure air handling systems are operational

Wear protective eye wear, gloves and clothing

Environmental precautions:

Should not be released into the environment

Prevent from reaching drains, sewer or waterway

Methods and material for containment and cleaning up:

Absorb with non-combustible liquid-binding material (sand, diatomaceous earth (clay), acid binders, universal binders)

Dispose of contents / container in accordance with local regulations

Reference to other sections:

Not determined or not applicable.

SECTION 7: Handling and storage

Precautions for safe handling:

Do not eat, drink, smoke or use personal products when handling chemical substances.

Avoid breathing mist or vapor.

Use only with adequate ventilation.

Conditions for safe storage, including any incompatibilities:

Store in a cool, well-ventilated area.

Store away from foodstuffs.

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SECTION 8: Exposure controls/personal protection

Only those substances with limit values have been included below.

Occupational Exposure limit values:

Country (Legal Basis)	Substance	Identifier	Permissible concentration
ACGIH	2,2',2''-Nitrilotriethanol	102-71-6	ACGIH TLV TWA: 5.0 mg/m ³
	Phenol	108-95-2	ACGIH TLV TWA 5 ppm [skin]
	Piperazine	110-85-0	8-Hour Exposure Limit (TLV-TWA): 0.03 ppm
United States (OSHA)	Phenol	108-95-2	OSHA PEL TWA 19 mg/m ³ [skin]
	Phenol	108-95-2	OSHA PEL TWA 5 ppm [skin]
WEEL	Benzyl Alcohol	100-51-6	WEEL TWA 10.0 ppm
NIOSH	Phenol	108-95-2	NIOSH REL TWA 5 ppm [skin]
	Phenol	108-95-2	NIOSH REL TWA 19 mg/m ³ [skin]
	Phenol	108-95-2	NIOSH REL C 15.6 ppm [15-minute] [skin]
	Phenol	108-95-2	NIOSH REL C 60 mg/m ³ [15-minute] [skin]

Biological limit values:

No biological exposure limits noted for the ingredient(s).

Information on monitoring procedures:

Not determined or not applicable.

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

Personal protection equipment

Eye and face protection:

Safety goggles or glasses, or appropriate eye protection.

Skin and body protection:

Select glove material impermeable and resistant to the substance.

Select glove material based on rates of diffusion and degradation.

Respiratory protection:

When necessary, use NIOSH-approved breathing equipment.

General hygienic measures:

Wash hands before breaks and at the end of work.

Avoid contact with skin, eyes and clothing.

Perform routine housekeeping.

Wash contaminated clothing before reusing.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Liquid
Odor	Not determined or not available.

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Odor threshold	Not determined or not available.
pH	Not determined or not available.
Melting point/freezing point	Not determined or not available.
Initial boiling point/range	Not determined or not available.
Flash point (closed cup)	Not determined or not available.
Evaporation rate	Not determined or not available.
Flammability (solid, gas)	Not determined or not available.
Upper flammability/explosive limit	Not determined or not available.
Lower flammability/explosive limit	Not determined or not available.
Vapor pressure	Not determined or not available.
Vapor density	Not determined or not available.
Density	Not determined or not available.
Relative density	Not determined or not available.
Solubilities	Not determined or not available.
Partition coefficient (n-octanol/water)	Not determined or not available.
Auto/Self-ignition temperature	Not determined or not available.
Decomposition temperature	Not determined or not available.
Dynamic viscosity	Not determined or not available.
Kinematic viscosity	Not determined or not available.
Explosive properties	Not determined or not available.
Oxidizing properties	Not determined or not available.

Other information

SECTION 10: Stability and reactivity

Reactivity:

Does not react under normal conditions of use and storage.

Chemical stability:

Stable under normal conditions of use and storage.

Possibility of hazardous reactions:

None under normal conditions of use and storage.

Conditions to avoid:

None known.

Incompatible materials:

None known.

Hazardous decomposition products:

None known.

SECTION 11: Toxicological information

Acute toxicity

Assessment: Harmful if swallowed Harmful in contact with skin Harmful if inhaled

Product data: No data available.

Substance data:

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Name	Route	Result
1,3-Cyclohexanedimethanamine	oral	LD50 - Rat - 880 mg/kg
1-Piperazineethanamine	oral	LD50 - Chicken - 1,500 mg/kg
Phenol	oral	LD50 - Mouse - 270 mg/kg
	dermal	LD50 - Rabbit - 630 mg/kg
Nonyl phenol	oral	LD50 - Rat - 1,300 mg/kg
Isophorone diamine	oral	LD50 - Rat - 1,030 mg/kg
Benzyl Alcohol	oral	LD50 - Rat - 1,230 mg/kg
	inhalation	LD50 - Rat - > 4,178 mg/m ³

Skin corrosion/irritation

Assessment: Causes severe skin burns and eye damage

Product data: No data available.

Substance data:

Name	Result
1,3-Cyclohexanedimethanamine	Corrosive to the skin.
Piperazine	Causes skin damage
1-Piperazineethanamine	Corrosive to the skin.
Phenol	Corrosive to the skin.
Nonyl phenol	Corrosive to the skin.
Isophorone diamine	Corrosive to the skin.
Phenol, 2-nonyl-, branched	Corrosive to the skin.

Serious eye damage/irritation

Assessment: Causes serious eye damage

Product data: No data available.

Substance data:

Name	Result
Nonyl phenol	Corrosive to the eyes.
Phenol, 2-nonyl-, branched	Corrosive to the eyes.

Respiratory or skin sensitization

Assessment: May cause an allergic skin reaction May cause allergy or asthma symptoms or breathing difficulties if inhaled

Product data: No data available.

Substance data:

Name	Result
Piperazine	Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals
1-Piperazineethanamine	Sensitization possible through skin contact.
Isophorone diamine	Sensitization possible through skin contact.

Carcinogenicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

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Substance data: No data available.

International Agency for Research on Cancer (IARC):

Name	Classification
2,2',2''-Nitrilotriethanol	Group 3 - Not classifiable as to its carcinogenicity to humans

National Toxicology Program (NTP): None of the ingredients are listed.

Germ cell mutagenicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data:

Name	Result
Phenol	In vitro tests showed mutagenic effects.

Reproductive toxicity

Assessment: Suspected of damaging fertility or the unborn child

Product data: No data available.

Substance data:

Name	Result
Piperazine	Suspected of damaging fertility or the unborn child.
Nonyl phenol	Suspected human reproductive toxicant.
Phenol, 2-nonyl-, branched	Suspected of damaging fertility or the unborn child.

Specific target organ toxicity (single exposure)

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data:

Name	Result
Phenol	May cause damage to organs through prolonged or repeated exposure.
Phenol, 2-nonyl-, branched	May cause respiratory irritation.

Specific target organ toxicity (repeated exposure)

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Aspiration toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Information on likely routes of exposure: No data available.

Symptoms related to the physical, chemical and toxicological characteristics: No data available.

Other information: No data available.

SECTION 12: Ecological information

Acute (short-term) toxicity

Assessment: Toxic to aquatic life

Product data: No data available.

Substance data:

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Name	Result
1,3-Cyclohexanedimethanamine	static test EC50 - Daphnia magna (Water flea) - 33.1 mg/l - 48 h
	static test EC50 - Pseudokirchneriella subcapitata (green algae) - 56.7 mg/l - 72h
Nonyl phenol	flow-through test LC50 - Lepomis macrochirus - 0.209 mg/l - 96 h
	semi-static test EC50 - Daphnia magna (Water flea) - 0.0844 mg/l - 48 h
	static test EC50 - Selenastrum capricornutum (green algae) - 0.33 mg/l - 72 h
Isophorone diamine	LC50 - Daphnia magna (Water flea) - 17.4 mg/L - 48 h

Chronic (long-term) toxicity

Product data: No data available.

Substance data: No data available.

Persistence and degradability

Product data: No data available.

Substance data: No data available.

Bioaccumulative potential

Product data: No data available.

Substance data: No data available.

Mobility in soil

Product data: No data available.

Substance data: No data available.

Other adverse effects: No data available.



SECTION 13: Disposal considerations

Disposal methods:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11)

SECTION 14: Transport information

United States Transportation of dangerous goods (49 CFR DOT)

UN number	2735
UN proper shipping name	Amines, liquid, corrosive, n.o.s. (1,3-Cyclohexanedimethanamine, Isophorone diamine)
UN transport hazard class(es)	8  
Packing group	III
Environmental hazards	Marine Pollutant (Nonyl phenol)
Special precautions for user	None

International Maritime Dangerous Goods (IMDG)

UN number	2735
UN proper shipping name	Amines, liquid, corrosive, n.o.s. (1,3-Cyclohexanedimethanamine, Isophorone diamine)

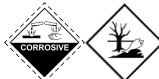
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UN transport hazard class(es)	8	
Packing group	III	
Environmental hazards	Marine Pollutant (Nonyl phenol)	
Special precautions for user	None	
EmS number	F-A, S-B	
Excepted quantities	30mL inner pckg; 1L outer pckg	
Limited quantity	5L	

International Air Transport Association Dangerous Goods Regulations (IATA-DGR)

UN number	2735	
UN proper shipping name	Amines, liquid, corrosive, n.o.s. (1,3-Cyclohexanedimethanamine, Isophorone diamine)	
UN transport hazard class(es)	8	
Packing group	III	
Environmental hazards	Marine Pollutant (Nonyl phenol)	
Special precautions for user	None	
Excepted quantities	30mL inner pckg; 1L outer pckg	
Limited quantity	1L	

SECTION 15: Regulatory information

United States regulations

Inventory listing (TSCA):

2579-20-6	1,3-Cyclohexanedimethanamine	Listed
67762-90-7	Siloxanes and Silicones, di-Me, reaction products with silica	Listed
102-71-6	2,2',2''-Nitrilotriethanol	Listed
110-85-0	Piperazine	Listed
140-31-8	1-Piperazineethanamine	Listed
108-95-2	Phenol	Listed
84852-15-3	Nonyl phenol	Listed
2855-13-2	Isophorone diamine	Listed
100-51-6	Benzyl Alcohol	Listed
91672-41-2	Phenol, 2-nonyl-, branched	Listed

Significant New Use Rule (TSCA Section 5):

84852-15-3	Nonyl phenol	Listed
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Export notification under TSCA Section 12(b):

84852-15-3	Nonyl phenol	Listed
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SARA Section 311/312 hazards:

Acute	Chronic	Fire	Pressure	Reactive
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Yes	Yes	No	No	No
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SARA Section 302 extremely hazardous substances:

108-95-2	Phenol	Listed
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SARA Section 313 toxic chemicals:

108-95-2	Phenol	Listed
84852-15-3	Nonyl phenol	Listed

CERCLA:

108-95-2	Phenol	Listed	1000
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RCRA:

108-95-2	Phenol	Listed	U188
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Section 112(r) of the Clean Air Act (CAA): Not determined.

Massachusetts Right to Know:

2579-20-6	1,3-Cyclohexanedimethanamine	Not Listed
67762-90-7	Siloxanes and Silicones, di-Me, reaction products with silica	Not Listed
102-71-6	2,2',2''-Nitrilotriethanol	Listed
110-85-0	Piperazine	Listed
140-31-8	1-Piperazineethanamine	Listed
108-95-2	Phenol	Listed
84852-15-3	Nonyl phenol	Listed
2855-13-2	Isophorone diamine	Not Listed
100-51-6	Benzyl Alcohol	Listed
91672-41-2	Phenol, 2-nonyl-, branched	Not Listed

New Jersey Right to Know:

2579-20-6	1,3-Cyclohexanedimethanamine	Not Listed
67762-90-7	Siloxanes and Silicones, di-Me, reaction products with silica	Not Listed
102-71-6	2,2',2''-Nitrilotriethanol	Listed
110-85-0	Piperazine	Listed
140-31-8	1-Piperazineethanamine	Listed
108-95-2	Phenol	Listed
84852-15-3	Nonyl phenol	Not Listed
2855-13-2	Isophorone diamine	Listed
100-51-6	Benzyl Alcohol	Not Listed
91672-41-2	Phenol, 2-nonyl-, branched	Not Listed

New York Right to Know:

2579-20-6	1,3-Cyclohexanedimethanamine	Not Listed
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67762-90-7	Siloxanes and Silicones, di-Me, reaction products with silica	Not Listed
102-71-6	2,2',2''-Nitrilotriethanol	Not Listed
110-85-0	Piperazine	Listed
140-31-8	1-Piperazineethanamine	Listed
108-95-2	Phenol	Listed
84852-15-3	Nonyl phenol	Not Listed
2855-13-2	Isophorone diamine	Listed
100-51-6	Benzyl Alcohol	Not Listed
91672-41-2	Phenol, 2-nonyl-, branched	Not Listed

Pennsylvania Right to Know:

2579-20-6	1,3-Cyclohexanedimethanamine	Not Listed
67762-90-7	Siloxanes and Silicones, di-Me, reaction products with silica	Not Listed
102-71-6	2,2',2''-Nitrilotriethanol	Listed
110-85-0	Piperazine	Listed
140-31-8	1-Piperazineethanamine	Listed
108-95-2	Phenol	Listed
84852-15-3	Nonyl phenol	Listed
2855-13-2	Isophorone diamine	Not Listed
100-51-6	Benzyl Alcohol	Listed
91672-41-2	Phenol, 2-nonyl-, branched	Not Listed

California Proposition 65: None of the ingredients are listed.

SECTION 16: Other information

Abbreviations and Acronyms: None

Disclaimer:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

NFPA: 3-0-0

HMIS: 3-0-0

Initial preparation date: 02.14.2018

End of Safety Data Sheet