

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:.....ONF Hardener
APPLICABLE PRODUCT CODES: ONF, ONF-1, ONF-2, ONF-3, ONF-4, ONF-4.5, ONF-5, ONF-6, ONF-7, ONF-8.
CHEMICAL FAMILY:..... Polyamine mixture.
INTENDED PRODUCT USES:..... Curing agent for epoxy resins.
PRODUCT RESTRICTIONS: None identified.
SDS VERSION: ONF-2019b

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 1B
Eye damage/irritation, Category 1
Respiratory sensitizer, Category 1
Skin sensitizer, Category 1
Reproductive toxicity, Category 2
Specific target organ toxicity, repeated exposure – inhalation, Category 1
Acute aquatic toxicity, Category 3
Chronic aquatic toxicity, Category 3

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
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H361 Suspected of damaging fertility or the unborn child
H372 Causes damage organs through prolonged or repeated exposure if inhaled
H412 Harmful 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
P284 In case of inadequate ventilation wear respiratory 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

ONF Hardener

P313 + P333 If irritation or rash occurs: Get medical attention/advice
P314 Get medical attention/advice if you feel unwell
P342 + P 311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor
P362 + P364 Take off contaminated clothing and wash it before reuse
Storage
P405 Store locked up.
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 | 10-50 |
| 1,3-cyclohexanedimethanamine | 2579-20-6 | 10-30 |
| Cashew nutshell liquid | 8007-24-7 | 10-30 |
| Benzyl alcohol | 100-51-6 | 1-30 |
| Isophoronediamine | 2855-13-2 | 1-30 |
| 2,2',2"-Nitrilotriethanol | 102-71-6 | 1-5 |
| Piperazine | 110-85-0 | 0.1-1 |
| 1-Piperazineethanamine | 140-31-8 | 0.1-0.5 |

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: 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 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 (CO₂), 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 |
| Cashew nutshell liquid | 8007-24-7 | No data available |
| Benzyl alcohol | 100-51-6 | 10 ppm (AIHA-WEEL) |
| Isophoronediamine | 2855-13-2 | No data available |
| 2,2',2"-Nitrilotriethanol | 102-71-6 | ACGIH TLV TWA: 5.0mg/m3 |
| Piperazine | 110-85-0 | ACGIH TLV TWA: 0.03mg/m ³ (inhalable fraction and vapor) |
| 1-Piperazineethanamine | 140-31-8 | No data available |

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM: Liquid.
COLOR: Clear, amber.
ODOR: Ammonia-like
ODOR THRESHOLD: No data available
pH: 10.96
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): 0.98
BULK DENSITY: 8.19 lbs./gal. (0.98 kg/L)
VAPOR DENSITY (air = 1) No data.

ONF Hardener

EVAPORATION RATE (Butyl Acetate = 1) No data.
WATER SOLUBILITY (% BY WT.) Appreciable.
PARTITION COEFFICIENT, n-OCTANOL/WATER (log Pow) No data.
KINEMATIC VISCOSITY: 118.3 (mm²/s @ 40°C)
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.

| Resin/Hardener | VOC Content | |
|----------------|-------------|----------|
| | (g/L) | (lb/gal) |
| ONE / ONF | 21.0 | 0.17 |

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.

11. TOXICOLOGICAL INFORMATION

| Ingredient Name | CAS# | LD ₅₀ Oral | LD ₅₀ Dermal | LC ₅₀ Inhalation |
|---|------------|-----------------------|-------------------------|-----------------------------|
| 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 |
| Cashew nutshell liquid | 8007-24-7 | 2000 mg/kg | No data available | 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 |
| 2,2',2"-Nitrilotriethanol | 102-71-6 | No data available | >22,000 mg/kg | No data available |
| Piperazine | 110-85-0 | 2600 mg/kg | 8300 mg/kg | 0.8 mg/l; 4h; solid-dust |
| 1-Piperazineethanamine | 140-31-8 | 2097 mg/kg | 866 mg/kg | No data available |

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: Category 1. May cause allergy or asthma symptoms or breathing difficulties. Can cause respiratory irritation, shortness of breath or cough. NOTE: This product contains a natural plant-based ingredient that may contain trace levels of an allergen similar to the allergen found in the poison ivy plant.

SKIN SENSITIZATION: Category 1. May cause allergic skin reaction. Note: This product contains a natural plant-based ingredient that may contain trace levels of an allergen similar to the allergen found in the poison ivy plant.

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.

SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure): Category 1. May cause damage to organs through prolonged or repeated exposure if inhaled.

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

OTHER HEALTH HAZARD INFORMATION:..... This product is corrosive to skin and mucous membrane tissues. As a result of this identified hazard, it is anticipated that excessive inhalation of concentrated vapors may also cause irritation to the respiratory tract.

12. ECOLOGICAL INFORMATION

ACUTE AQUATIC TOXICITY:..... Category 3. Harmful to aquatic life. Calculated Estimate. No specific test data available for the mixture. Avoid release to the environment.

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.

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 bisphenol A diglycidyl ether homopolymer) |
| 1,3-cyclohexanedimethanamine | 2579-20-6 | Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3 |
| Cashew nutshell liquid | 8007-24-7 | Acute Aquatic Cat. 3 |
| Benzyl alcohol | 100-51-6 | Not classified |
| Isophoronediamine | 2855-13-2 | Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3 |
| 2,2',2"-Nitrilotriethanol | 102-71-6 | Not classified |
| Piperazine | 110-85-0 | Acute Aquatic Cat. 3 |
| 1-Piperazineethanamine | 140-31-8 | Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3 |

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 2735
 SHIPPING NAME:..... Polyamines, liquid, 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 2735
 SHIPPING NAME:..... Polyamines, liquid, 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 2735
 SHIPPING NAME:..... Polyamines, liquid, corrosive, n.o.s.

ONF Hardener

TECHNICAL SHIPPING NAME: 1,3-cyclohexanedimethanamine
 HAZARD CLASS: Class 8
 PACKING GROUP: PG III
 EmS Number: F-A, S-B
 MARINE POLLUTANT No

ICAO/IATA

UN NUMBER: UN 2735
 SHIPPING NAME: Polyamines, liquid, corrosive, n.o.s.
 TECHNICAL SHIPPING NAME: 1,3-cyclohexanedimethanamine
 HAZARD CLASS: Class 8
 PACKING GROUP: PG III
 MARINE POLLUTANT: No

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:..... 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 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.

COMPONENT NAME

/CAS NUMBER

STATE CODE

| | | |
|----------------|--|------------|
| Piperazine | | |
| 110-85-0 | | MA, PA, NJ |
| Benzyl alcohol | | |
| 100-51-6 | | MA, PA, NJ |

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

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: July 9, 2019
SUPERSEDES DATE:..... May 14, 2019
SDS VERSION: ONF-2019b

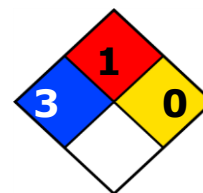
OTHER HAZARD INFORMATION AND RATING SYSTEMS:

HMIS® RATING

NFPA® 704 CODES

ONF Hardener

| | |
|-----------------------------|----------|
| HEALTH: | 3 |
| FLAMMABILITY: | 1 |
| PHYSICAL HAZARD: | 0 |
| PERSONAL PROTECTION: | |



Approximate HMIS and NFPA Risk Ratings Legend:
0 = Low or None; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe

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