

Section 1. Identification

Product Name: CMF-1™ Hardener
Supplier: CSNRI | 621 Lockhaven Drive. Houston, TX 77073 | +1 281.590.8491
Emergency Phone Number: 800.424.9300 (CHEMTREC)
+1 703.741.5970 (Outside the US)
Product Description: Hardener solution
Product Use: Reinforcement for pipe repair

Section 2. Hazard Identification**Classification of the substance or mixture**

Acute Toxicity / Oral – Category 4
Acute Toxicity / Inhalation – Category 4
Acute Toxicity / Dermal – Category 4
Skin corrosion / Irritation – Category 1B
Sensitization / Skin – Category 1B
Eye damage / Irritation – Category 1
Specific target organ toxicity (Single Exposure) – Category 3
Toxic to reproduction – Category 1B
Specific target organ toxicity (Repeated Exposure) – Category 2

Hazard pictograms:

Signal word: Danger

Hazard statements:

H302 Harmful if swallowed
H332 Harmful if inhaled
H312 Harmful in contact with skin
H314 Causes severe skin burns and damage
H317 May cause an allergic skin reaction
H318 Causes serious eye damage
H335 May cause respiratory irritation
H360F May damage fertility
H373 May cause damage to liver and muscles through prolonged or repeated exposure

Precautionary statements:

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 Wash hands thoroughly after handling.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P302 + P352 IF ON SKIN: Wash with plenty of 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.

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P501 Dispose of contents/container in accordance with local/regional/national regulations.

Other hazards: None known.

Section 3. Composition/ Information on Ingredients

Substances: Not applicable

Mixture:

Component	CAS #	% Composition
Benzyl alcohol	100-51-6	20 - 50
Methyleneoxide, polymer with benzenamine, hydrogenated	135108-88-2	20 - 45
Diethylenetriamine	111-40-0	15 - 30
4,4'-Isopropylidenediphenol	80-05-7	5 - 10
Cyclohexanamine, 4,4'-methylenebis-	1761-71-3	0.5 - 4

Section 4. First Aid Measures

Description of first-aid measures:

Inhalation: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Call a POISON CENTER/doctor. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by the POISON CENTER/doctor.

Skin contact: Rinse skin with plenty of water. Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash with plenty of lukewarm, gently flowing water for 15-20 minutes. Continue washing with soap and water. If skin irritation occurs: Get immediate medical advice/attention. Wash contaminated clothing before re-use.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for several minutes, while holding the eyelids open. Immediately call a POISON CENTER or doctor.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If vomiting occurs naturally, lie on your side, in the recovery position. Call a POISON CENTER or doctor/physician.

Most important symptoms and effects, both acute and delayed: No additional information available

Indication of any immediate medical attention and special treatment needed, if necessary: Treat symptomatically. Contact poison center immediately if ingested. If it is suspected that fumes are still presented, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing breathing mouth to mouth resuscitation.

Section 5. Fire Fighting Measures

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials, such as: foam, dry powder, carbon dioxide, water spray, and sand. Simultaneous use of foam and water on the same

surface is to be avoided as water destroys the foam.

Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture: Hazardous thermal decomposition products: Thermal decomposition products may contain carbon monoxide, carbon dioxide, nitrogen oxides, noxious and toxic fumes.

Special protective actions for fire-fighters: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment. Do not enter fire area without proper protective equipment, including respiratory protection. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate immediate hazard area and keep unauthorized personnel out. Stop leak if safe to do so. Special danger of slipping by leaking/spilling product. Avoid contact with eyes and skin. Avoid breathing mist and vapors.

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Avoid breathing mist, dust or vapors.

For emergency responders: Put on appropriate personal protective equipment. If specialized clothing is required to deal with the spillage, take note of any information in section 8 of suitable and unsuitable materials.

Environmental precautions: Avoid disposal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods and material for containment and cleaning up: Small spill: Stop leak if possible to do so without risk. Move containers from spill area. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect all waste in suitable and labelled containers and dispose according to local legislation. Store away from other materials. Ensure all national/local regulations are observed. Large spill: Stop leak if possible to do so without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, watercourses, basements or confined areas.

Section 7. Handling and Storage

Precautions for Safe Handling: Read label before use. Obtain special instructions before use. Ensure good ventilation of the workstation. Avoid contact with skin and eyes. Avoid breathing mist, vapors and spray. Wear personal protective equipment. Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

Conditions for safe storage including any incompatibilities: Keep only in the original container in a cool well-ventilated place. Keep container tightly closed when not in use. Keep away from incompatible materials. Keep away from sources of heat and protect from physical damage. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty container retain residue and may be dangerous. Incompatible materials include the following: oxidizing agents, bases, and amines.

Section 8. Exposure Controls / Personal Protection

Control parameters:

Component	Exposure Limits	
	ACGIH	OSHA PEL

Diethylenetriamine (CAS 111-40-0)	1 ppm TWA	1 ppm TWA
--------------------------------------	-----------	-----------

Appropriate Engineering Controls: Ensure good ventilation of the workstation. Use only with adequate ventilation. Local exhaust or ventilation or other engineering controls must be provided to keep worker exposure to airborne containment below recommended levels. Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure.

Individual protection measures:

Eye and face protection: Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for the entire face, use in combination with a face shield.

Skin and body protection: Use of an apron and boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization.

Respiratory Protection: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect the worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Hand protection: Wear gloves. Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of gloves are dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, and dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.

Additional protective measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

Section 9. Physical and Chemical Properties

Physical state:	Liquid
Color:	Dark amber to brown
Odor:	Ammonia like
Odor threshold:	No data available
Melting point:	No data available
Freezing point:	No data available
Boiling point:	Not applicable
Flammability (solid, gas):	Not applicable
Flash point:	>200 °F
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
pH:	No data available
Viscosity, kinematic:	No data available
Viscosity:	No data available
Solubility:	Negligible
Vapor pressure:	<0.7 mmHg at 70 °F
Relative density:	1.02 – 1.06 (water=1)
Relative vapor density at 20 °C:	No data available
Relative evaporation rate (butyl acetate=1):	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

Explosive limits: No data available

Section 10. Stability and Reactivity

Reactivity: The product is stable at normal handling and storage conditions.

Chemical stability: The product is stable at normal handling and storage conditions.

Possibility of hazardous reactions: Under normal condition of use hazardous polymerization will not occur. Extreme heat can produce hazardous materials.

Conditions to avoid: No data available

Incompatible materials: Oxidizing agents. Bases. Amines.

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced. React with significant heat release with some curing agents. Some cure reaction may drive char and decompose the resin system, generating unidentified fumes, and vapors, which may be toxic. Heating this substance above 300 °F in the presence of air may cause slow oxidative decomposition. Above 500 °F polymerization may occur. Some combination of resin and curing agent can produce the exothermic reaction, which in large masses can cause runaway polymerization and charring of the reactants.

Section 11. Toxicological Information

Acute toxicity: Harmful if swallowed. Harmful if inhaled. No testing on this product is obtained. Toxicity endpoints and acute toxicity estimate (ATE) are evaluated according to the criteria of the third revision of the GHS.

Skin corrosion/irritation: Causes severe skin burns and damage. No test data available. Irritation properties are evaluated according to the criteria of the third revision of the GHS.

Serious eye damage/irritation: Causes serious eye damage. No test data available. Corrosive properties are evaluated according to the criteria of the third revision of the GHS.

Respiratory or skin sensitization: May cause an allergic skin reaction. No test data available. Irritation properties are evaluated according to the criteria of the third revision of the GHS.

Germ cell mutagenicity: Not classified (Based on available data, the classification criteria are not met).

Carcinogenicity: Not classified (Based on available data, the classification criteria are not met).

Reproductive Toxicity: May damage fertility or the unborn child. No test data available. Fertility toxicity is evaluated according to the criteria of the third revision of the GHS.

Developmental Toxicity: No specific data available.

STOT - single exposure: Not classified (Based on available data, the classification criteria are not met).

STOT - repeated exposure: May cause damage to organs through prolonged or repeated exposure if swallowed.

Aspiration Hazard: Not classified (Based on available data, the classification criteria are not met).

Information on the likely route of exposure: No specific data available.

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

Delayed and immediate effects and also chronic effects from short and long term exposure:

Short term exposure: No specific data available.

Long term exposure: No specific data available.

Numerical measures of toxicity:

Component	Dermal	Oral	Inhalation
Diethylenetriamine (CAS 111-40-0)	672 mg/kg LD50 dermal rabbit	819 mg/kg LD50 oral rat	-



Benzyl alcohol (CAS 100-51-6)	-	1230 mg/kg LD50 oral rat	8.8 mg/kg (4h) LC50 inhalation rabbit (vapors)
Cyclohexanamine, 4,4'- methylenebis- (CAS 1761-71-3)	-	1000 mg/kg LD50 oral rat	0.5 mg/kg (4h) LC50 inhalation rabbit (vapors)
Mixture	ca 2,240 mg/kg (estimated) (ATE)	ca 700 mg/kg (estimated) (ATE)	ca < 20 mg/kg/ 4h (estimated) (ATE)

Section 12. Ecological Information

Toxicity: The product may cause long lasting harmful effects to aquatic life

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

Other adverse effects: No information available.

Section 13. Disposal Considerations

Waste treatment methods:

Waste disposal recommendations: Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws. Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse. Empty containers should be taken to an approved waste handling site for recycling or disposal. Avoid release to the environment. DO NOT FLUSH TO SEWER, WATERSHED, OR WATERWAY.

Section 14. Transport Information

DOT / IMDG / IATA / ICAO:

UN Number: 2735
UN Proper shipping name: Amine, liquid, corrosive, n.o.s (Diethylenetriamine)
Transport hazard class: 8
Packing group: II
Environmental hazards: No
Special precautions for user: None known

Section 15. Regulatory Information

US 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. This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

CERCLA SARA: 4,4'-Isopropylidenediphenol (80-05-7) 1.0% de minimis

US state regulations:

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

Right To Know (RTK) laws by US state:

Massachusetts RTK

Diethylenetriamine	(CAS 111-40-0)
4,4'-Isopropylidenediphenol	(CAS 80-05-7)
Benzyl alcohol	(CAS 100-51-6)

New Jersey Worker and Community RTK

Diethylenetriamine	(CAS 111-40-0)
4,4'-Isopropylidenediphenol	(CAS 80-05-7)

Pennsylvania Worker and Community RTK

Diethylenetriamine	(CAS 111-40-0)
4,4'-Isopropylidenediphenol	(CAS 80-05-7)
Benzyl alcohol	(CAS 100-51-6)

Section 16. Other Information**Abbreviations and acronyms used:**

ATE:	Acute Toxicity Estimate
ACGIH:	American Conference of Governmental Industrial Hygienists
ANSI:	American National Standards Institute
CAS:	Chemical Abstracts Service
CFR:	Code of Federal Regulation
DOT:	Department of Transportation
GHS:	Globally Harmonized System
IATA:	International Air Transport Association
ICAO:	International Civil Aviation Organization
IMDG:	International Maritime Dangerous Goods
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit
PVC:	Polyvinyl Chloride
RCRA:	Resource Conservation and Recovery Act
RTK:	Right to Know
SARA:	The Superfund Amendments and Reauthorization Act
TSCA:	Toxic Substances Control Act
TWA:	Time Weighted Average

The information contained herein is based on the data available to us and is believed to be accurate. The data is offered in good faith as typical values and not as product specification. The information in this data sheet was compiled from information supplied by the vendors of the components of this compound. CSNRI makes no warranty either expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. The recommended industrial hygiene and safe handling procedures are believed to be genuinely applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate. CSNRI assumes no responsibility for injury from the use of the product described herein. The information is intended only to assist in the safe handling of this material. CSNRI DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR FREEDOM FROM PATENT INFRINGEMENT. CSNRI WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Date of issue: 10/03/2019

Revision date: 12/19/2019

Supersedes: 10/03/2019

Version: 2.0

