

# SAFETY DATA SHEET

## SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

**Product Form:** Mixture  
**Product Name:** CMF-1 HARDENER  
**Revision Date:** Mar 24, 2016 **Date Printed:** Apr 19, 2016  
**Version:** 1.0 **Supersedes Date:** N.A.  
**Manufacturer's Name:** CITADEL TECHNOLOGIES  
**Address:** 6430 S. 39<sup>th</sup> West Ave., Tulsa, OK 74132  
**Emergency Phone:** 1-800-424-9300  
**Information Phone Number:** 918-584-2220  
**Fax:** 918-584-2221  
**Product/Recommended Uses:** Epoxy coating and reinforcement for pipe repair

## SECTION 2) HAZARDS IDENTIFICATION

### Classification:

Specific Target Organ Toxicity - Repeated Exposure - Category 2  
Skin Corrosion - Category 1B  
Serious Eye Damage - Category 1  
Respiratory Sensitizer (Solid/Liquid) - Category 1  
Skin Sensitizer - Category 1B  
Carcinogenicity - Category 2  
Reproductive Toxicity - Category 2  
Chronic aquatic toxicity - Category 3  
Acute aquatic toxicity - Category 2  
Acute toxicity Dermal Category 4  
Acute toxicity Oral Category 4

### Pictograms:



### Signal Word:

Danger

### Hazardous Statements - Health:

H302 - Harmful if swallowed.  
H312 - Harmful in contact with skin.  
H314 - Causes severe skin burns and eye damage.  
H317 - May cause an allergic skin reaction.  
H318 - Causes serious eye damage.  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H351 - Suspected of causing cancer.  
H361 - Suspected of damaging fertility or the unborn child.  
H373 - May cause damage to organs through prolonged or repeated exposure.

**Hazardous Statements - Environmental:**

- H401 - Toxic to aquatic life.
- H412 - Harmful to aquatic life with long lasting effects.

**Precautionary Statements - General:**

- P101- If medical advice is needed, have product container or label at hand.
- P102 - Keep out of reach of children.
- P103 - Read label before use.

**Precautionary Statements - Prevention:**

- 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 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.

**Precautionary Statements - Response:**

- P301 + P312 + P330 + P331 - **IF SWALLOWED:** Call a POISON CENTER/doctor, if you feel unwell. Rinse mouth. Do **NOT** induce vomiting.
- P302 + P303 + P352 + P353 + P361 - **IF ON SKIN (or hair):** Immediately take off all contaminated clothing. Rinse skin with plenty of water or shower.
- P304 + P340 - **IF INHALED:** Remove person to fresh air and keep comfortable for breathing.
- P305 + P338 + P351 - **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
- P308 + P310 + P313 - **IF EXPOSED or CONCERNED:** Immediately call a POISON CENTER/Doctor and get medical advice/attention.
- P311 + P342 - **IF EXPERIENCING RESPIRATORY SYMPTOMS:** Call a POISON CENTER/Doctor.
- P313 + P333 - **IF SKIN IRRITATION OR RASH OCCURS:** Get medical advice/attention.
- P321 - **FOR SPECIFIC TREATMENTS:** see First-aid measures on this SDS.
- P362 + P363 + P364 - **IF ON CLOTHING:** Take off contaminated clothing and wash before reuse.

**Precautionary Statements - Storage:**

- P405 - Store locked up.

**Precautionary Statements - Disposal:**

- P501 - Dispose of contents/container to disposal recycling center.

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.

**Hazards Not Otherwise Classified (HNOC):**

None.

**Acute toxicity of 2.16% of the mixture is unknown**

---

**SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS**

---

CAS	Chemical Name	% By Weight
0000100-51-6	BENZYL ALCOHOL	24% - 56%
0135108-88-2	Formaldehyde, polymer with benzenamine, hydrogenated	13% - 30%
0000111-40-0	DIETHYLENE TRIAMINE	9% - 18%
0112945-52-5	SILICA, AMORPHOUS FUMED	6% - 11%
0000080-05-7	BISPHENOL A	5% - 9%
0013463-67-7	TITANIUM DIOXIDE	3% - 5%
0001761-71-3	METHYLENEDI(CYCLOHEXYLAMINE)	2% - 4%
NA	Organic acid	2% - 3%

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld to protect confidentiality.

---

**SECTION 4) FIRST-AID MEASURES**

---

**General:**

Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice.

**Inhalation:**

Remove source of exposure or move person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: 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. IF EXPOSED or concerned: Get medical advice/attention.

**Eye Contact:**

Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a duration of 30 minutes or until medical aid is available. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER or doctor.

**Skin Contact:**

Immediately take off all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for 30 minutes or until medical aid is available. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before re-use or discard.

**Ingestion:**

Rinse mouth. Do **NOT** induce vomiting. Immediately call a POISON CENTER/doctor. If vomiting occurs naturally, lie on your side, in the recovery position.

**Most Important Symptoms and Effects, Both Acute and Delayed:**

Skin irritation, allergic reactions.

If swallowed, product may be irritating and/or corrosive to the mouth, throat, esophagus and stomach.

If absorbed through skin or inhaled, can cause CNS effects such as headache nausea, dizziness, confusion, breathing difficulties. Severe cases of overexposure can result in respiratory failure.

**Indication of Any Immediate Medical Attention and Special Treatment Needed:**

No data available.

---

**SECTION 5) FIRE-FIGHTING MEASURES**

---

**Suitable Extinguishing Media:**

Dry chemical, foam, carbon dioxide water spray or fog is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided, as water destroys the foam. Sand or earth may be used for small fires only.

**Unsuitable Extinguishing Media:**

Not available.

**Specific Hazards in Case of Fire:**

Hazardous decomposition products formed under fire conditions - Carbon oxides, Nitrogen oxides.

Burning produces noxious and toxic fumes.

**Fire-fighting Procedures:**

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release, if it can be done safely. Move undamaged containers from immediate hazard area, if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid.

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

**Special Protective Actions:**

Wear protective pressure self-contained breathing apparatus (SCBA), and full turnout gear.

---

## SECTION 6) ACCIDENTAL RELEASE MEASURES

---

### Emergency Procedure:

ELIMINATE all ignition sources (no smokes, flares, sparks or flames in immediate area). Do not touch or walk through spilled material.

Isolate hazard area and keep unnecessary people away. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

If spilled material is cleaned up using a regulated solvent, the resulting mixture may be regulated.

### Recommended Equipment:

Positive pressure, full-face piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

### Personal Precautions:

Avoid breathing vapor. Avoid contact with skin, eye or clothing. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

### Environmental Precautions:

Stop spill/release, if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

### Methods and Materials for Containment and Cleaning up:

Contain and collect spilled materials with non-combustible, absorbent material, and place in a container for disposal according to local regulations. Dispose via a licensed waster disposal contractor. Contaminated absorbent material may pose the same physical hazards as the product.

---

## SECTION 7) HANDLING AND STORAGE

---

### General:

Wash hands after use.

Do not get in eyes, on skin or on clothing.

Do not breathe vapors or mists.

Use good personal hygiene practices.

Eating, drinking and smoking in work areas is prohibited.

Remove contaminated clothing and protective equipment before entering eating areas.

Eyewash stations and showers should be available in areas where this material is used and stored.

### Ventilation Requirements:

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.

### Storage Room Requirements:

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight, strong oxidizers and any incompatibilities. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.

---

## SECTION 8) EXPOSURE CONTROLS/PERSONAL PROTECTION

---

### Eye 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 entire face, use in combination with a face shield.

### Skin Protection:

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 a glove is 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.

Use of an apron and boots of chemically impervious materials, such as neoprene or nitrile rubber, is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect 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.

**Appropriate Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Chemical Name	OSHA STEL (ppm)	OSHA TWA (mg/m3)	OSHA TWA (ppm)	OSHA STEL (mg/m3)	OSHA Carcinogen	OSHA Skin designation	OSHA Tables (Z1,Z2,Z3)	NIOSH TWA (mg/m3)	NIOSH TWA (ppm)	NIOSH STEL (mg/m3)	NIOSH STEL (mg/m3)	NIOSH Carcinogen
DIETHYLENE TRIAMINE								4	1			
TITANIUM DIOXIDE		15					1		b			1

Chemical Name	ACGIH TWA (mg/m3)	ACGIH TWA (ppm)	ACGIH STEL (mg/m3)	ACGIH STEL (ppm)	ACGIH TLV Basis	ACGIH Carcinogen	ACGIH Notations
DIETHYLENE TRIAMINE	4.2	1			URT & eye irr		Skin
TITANIUM DIOXIDE	10				LRT irr	A4	A4

A4 - Not Classifiable as a Human Carcinogen, irr - Irritation, LRT - Lower respiratory tract, URT - Upper respiratory tract

---

**SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES**

---

**Physical and Chemical Properties**

Density	9.47 lb/gal
% Solids By Weight	43.18%
Density VOC	5.38 lb/gal
% VOC	56.82%
Specific Gravity	1.14
Appearance	N.A.
Odor Threshold	N.A.
Odor Description	N.A.
pH	N.A.
Water Solubility	N.A.
Flammability	N/A
Flash Point Symbol	>
Flash Point	200 °F
Viscosity	N.A.
Lower Explosion Level	N.A.
Upper Explosion Level	N.A.
Vapor Pressure	N.A.
Vapor Density	N.A.
Freezing Point	N.A.
Melting Point	N.A.
Low Boiling Point	N.A.
High Boiling Point	N.A.
Auto Ignition Temp	N.A.
Decomposition Pt	N.A.
Evaporation Rate	N.A.
Coefficient Water/Oil	N.A.

---

## SECTION 10) STABILITY AND REACTIVITY

---

### Stability:

The product is stable under normal storage conditions.

### Conditions to Avoid:

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

### Hazardous Reactions/Polymerization:

No data available.

### Incompatible Materials:

Incompatible with strong acids or bases, oxidizing agents and selected amines.

### Hazardous Decomposition Products:

Aldehydes, flammable hydrocarbon fragments, nitrosamine, nitrogen oxides (NO<sub>x</sub>), ammonia, nitric acid, carbon monoxide, carbon dioxide (CO<sub>2</sub>). Nitrogen oxide can react with water vapors to form corrosive nitric acid.

---

## SECTION 11) TOXICOLOGICAL INFORMATION

---

### Likely Route of Exposure:

Inhalation, ingestion, skin absorption

### Skin Corrosion/Irritation:

Causes severe skin burns and eye damage

### Serious Eye Damage/Irritation:

Causes serious eye damage

### Respiratory/Skin Sensitization:

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause an allergic skin reaction

### Germ Cell Mutagenicity:

No data available

### Carcinogenicity:

Suspected of causing cancer.

### Reproductive Toxicity:

Suspected of damaging fertility or the unborn child.

### Specific Target Organ Toxicity - Single Exposure:

No data available

### Specific Target Organ Toxicity - Repeated Exposure:

May cause damage to organs through prolonged or repeated exposure.

### Aspiration Hazard:

No data available

### Acute Toxicity:

No data available

#### 0000111-40-0 DIETHYLENE TRIAMINE

LD50 (oral, rat): 1080 mg/kg body weight (1)

LD50 (oral, rat): 1800 mg/kg body weight (2)

LD50 (oral, rat): 2330 mg/kg body weight (3)

LD50 (dermal, rabbit): 1046 mg/kg (1090 mL/kg) (3)

LD50 (dermal, guinea pig): 163 mg/kg (170 mL/kg) (4-day apply)

#### 0000100-51-6 BENZYL ALCOHOL

LC50(Inhalation, rat): >500 mg/m<sup>3</sup>; Toxic effects: Behavioral - somnolence (general depressed activity) Behavioral - ataxia Lungs, Thorax, or Respiration - respiratory depression; Reference: VCVGK\* "Vrednie chemicheskije veshstva, galogen I kislород sodergashie organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume (issue)/page/year: -,132,1984

LD50(Dermal, rabbit): 2000 mg/kg; VCVGK\* "Vrednie chemicheskije veshstva, galogen I kislород sodergashie organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume (issue)/page/year: -,132,1984

LD50(Oral, rat): 1230 mg/kg; Toxic effects: Behavioral - somnolence (general depressed activity) Behavioral - excitement Behavioral - coma

## Potential Health Effects - Miscellaneous

0013463-67-7

TITANIUM DIOXIDE

Is an IARC, NTP or OSHA carcinogen. In a lifetime inhalation test, lung cancers were found in some rats exposed to 250 mg/m<sup>3</sup> respirable titanium dust. Analysis of the titanium dioxide concentrations in the rat's lungs showed that the lung clearance mechanism was overwhelmed, and that the results at the massive 250 mg/m<sup>3</sup> level are not relevant to the workplace. Results of a DuPont epidemiology study showed that employees who had been exposed to Titanium Dioxide were at no greater risk of developing lung cancer than were employees who had not been exposed to Titanium dioxide. No pulmonary fibrosis was found in any of the employees, and no association was observed between Titanium dioxide exposure and chronic respiratory disease or x-ray abnormalities. Based on the results of this study, DuPont concludes that titanium dioxide will not cause lung cancer or chronic respiratory disease in humans at concentrations experienced in the workplace.

---

## SECTION 12) ECOLOGICAL INFORMATION

---

### Toxicity:

Toxic to aquatic life

Harmful to aquatic life with long lasting effects

### Persistence and Degradability:

No data available.

### Bio-accumulative Potential:

Bio-accumulation potential is moderate.

### Mobility in Soil:

The product is predicted to have low mobility in soil. (Insoluble in water.)

### Other Adverse Effects:

No data available.

---

## SECTION 13) DISPOSAL CONSIDERATIONS

---

### Waste Disposal:

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.

DO NOT FLUSH TO SEWER, WATERSHED, OR WATERWAY.

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.

---

## SECTION 14) TRANSPORT INFORMATION

---

### U.S. DOT Information:

UN/NA #: Not regulated

Proper Shipping Name: Not applicable

Hazard Class: Not applicable

Packing Group: Not applicable

### IMDG Information:

UN/NA #: Not regulated

Proper Shipping Name: Not applicable

Hazard Class: Not applicable

Packing Group: Not applicable

Marine Pollutant: No data available

### IATA Information:

UN/NA #: Not regulated

Proper Shipping Name: Not applicable

Hazard Class: Not applicable

Packing Group: Not applicable

---

**SECTION 15) REGULATORY INFORMATION**

---

CAS	Chemical Name	% By Weight	Regulation List
0000100-51-6	BENZYL ALCOHOL	24% - 56%	SARA312, VOC, TSCA
0135108-88-2	Formaldehyde, polymer with benzenamine, hydrogenated	13% - 30%	SARA312, TSCA, TSCA_UVCB - CHEMICAL SUBSTANCES OF UNKNOWN OR VARIABLE COMPOSITION, COMPLEX REACTION PRODUCTS AND BIOLOGICAL MATERIALS
0000111-40-0	DIETHYLENE TRIAMINE	9% - 18%	SARA312, VOC, TSCA
0112945-52-5	SILICA, AMORPHOUS FUMED	6% - 11%	SARA312
0000080-05-7	BISPHENOL A	5% - 9%	SARA312, SARA313, TSCA, CA_Prop65 - California Proposition 65, CA_Prop65_Type_Toxicity_Female - CA_Proposition65_Type_Toxicity_Female
0013463-67-7	TITANIUM DIOXIDE	3% - 5%	SARA312, IARC Carcinogen, TSCA, CA_Prop65 - California Proposition 65, CA_Prop65_Type_Toxicity_Cancer - CA_Proposition65_Type_Toxicity_Cancer
0001761-71-3	METHYLENEDI (CYCLOHEXYLAMINE)	2% - 4%	SARA312, VOC, TSCA

---

**SECTION 16) OTHER INFORMATION**

---

**Glossary:**

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDG Canadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center (US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- ESE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL- Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self-Contained Breathing Apparatus; STEL- Short Term Exposure Limit; TCEQ- Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA- Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

**DISCLAIMER**

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.