

MATERIAL SAFETY DATA SHEET

TRANSENE COMPANY INC.
10 ELECTRONICS AVE.
DANVERS, MA 01923
Phone: 978-777-7860 Fax: 978-739-5640
www.transene.com

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emergency no (CHEMTREC) 1-800-424-9300

SECTION I. MATERIAL IDENTIFICATION & PRECAUTIONARY LABELING

MATERIAL NAME:

Moly Etchant TFM

CHEMICAL NAME AND SYNONYMS: Ferricyanide

CHEMICAL FAMILY: Caustic Etchant

FORMULA: Mixture

Baker SAF-T-DATA System: Health: 1, Slight Flammability: 0, None Reactivity: 1, Slight
Contact: 1, Slight

Laboratory Protective Equipment: Goggles, lab coat

U.S. PRECAUTIONARY LABELING: During use avoid contact with eyes, skin, clothing.
Wash thoroughly after handling. When not in use keep in tightly closed container.

INTERNATIONAL LABELING: Avoid contact with eyes. After contact with skin, wash
immediately with plenty of water. Keep container tightly closed.

SAF-T-DATA* Storage Color Code: Orange (general storage)

SECTION II. INGREDIENTS AND HAZARDS

	<u>CAS Number</u>	<u>%</u>	<u>HAZARD DATA</u>	<u>OSHA/PEL</u>
Potassium ferricyanide	13746-66-2	20-30	TLV (Units) 5mg /M ³	5mg/M ³
Sodium Hydroxide	1310-73-2	1-5	2mg /M ³	2mg/M ³
Distilled Water	non-hazard	Balance		

TLV (skin) and PEL are for cyanides, as CN

SECTION III. PHYSICAL DATA

Boiling point	212°F	Specific gravity (H ₂ O=1)	approx. 1.2
Vapor pressure mm Hg	N/A	Evap. Rate (_____ = 1)	N/A
Vapor density (Air = 1)	N/A	Volatiles, %	> 70
Water solubility	Appreciable 100%	Molecular weight	N/A

Appearance & Odor: Amber, clear liquid, caustic odor

SECTION IV. FIRE AND EXPLOSION DATA

Flash point & method	Auto-ignition temp.	Flammability Limits in Air	Lower	Upper
Non-flammable	Non-flammable	N/A		
N/A	N/A			

Extinguishing media: Use extinguishing media appropriate for surrounding fire.

Special Fire Fighting procedures: Firefighters should wear proper protective equipment and use self-contained breathing apparatus with full facepiece operated in positive pressure mode.

Unusual Fire and Explosion Hazards: None identified

Toxic Gases Produced: cyanides

SECTION V. HEALTH HAZARD DATA

Threshold limit value: 5mg/m³

Permissible Exposure Limit: 5mg/m³

Toxicity of Components: No information is available

Carcinogenicity: NTP: No; IARC: No; Z list: No; OSHA Reg: No

Effects of Overexposure: None identified

Emergency and First Aid Procedures:

Ingestion: If swallowed and the person is conscious, immediately give large amounts of water. Get medical attention.

Inhalation: If a person breathes in large amounts, move the exposed person to fresh air.

Skin Contact: Immediately wash skin with plenty of soap and water for at least 15 minutes.

Eye Contact: Immediately flush with plenty of water for at least 15 minutes.

SARA/Title III Hazard Categories and Lists: Acute: No Chronic: Yes Flammability: No
Pressure: No Reactivity: No

Extremely Hazardous Substance: No

CERCLA Hazardous Substance: No

SARA 313 Toxic Chemicals: No

TSCA Inventory: Yes

SECTION VI. REACTIVITY DATA

Stability: Unstable Conditions to avoid: Light, heat
Stable X

Incompatible with: Ammonia, chromic acid, strong acids

Hazardous decomposition products: Cyanides

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear suitable protective equipment. Carefully sweep up and remove.

WASTE DISPOSAL METHOD: Dispose in accordance with all federal, state and local regulations regarding health and pollution are followed.

SECTION VIII. INDUSTRIAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: None required where adequate ventilation conditions exist. If airborne concentration is high, use an appropriate respirator or dust mask.

VENTILATION: Use adequate general or local exhaust ventilation to keep fume or dust levels as low as possible

PROTECTIVE GLOVES: Proper gloves recommended

EYE PROTECTION: Safety goggles

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep container tightly closed. Suitable for any general chemical storage area. Store in light resistant containers.

SECTION X. TRANSPORTATION DATA & ADDITIONAL INFORMATION

- Domestic (D.O.T)
Proper Shipping Name: Toxic Liquid, Inorganic, N.O.S., (Potassium Metallic Cyanide Solution), 6.1, UN 3287, PGII
- International (I.M.O.)
Proper Shipping Name: Corrosive Liquids, N.O.S. UN1760
(Potassium Ferricyanide & Sodium Hydroxide Solution)
Marine Pollutants: No
- AIR (I.C.A.O.)
Proper Shipping Name: Corrosive Liquids, N.O.S. UN1760
(Potassium Ferricyanide & Sodium Hydroxide Solution)
U.S. Customs Harmonization Number: 28371900200

N/A = Not Applicable or Not Available
N/E = Not established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. Seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, Baker cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. Baker warrants that the chemical meets the specifications set forth on the label

TRANSENE DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. **READ ALL PRECAUTIONARY INFORMATION.** As new documented general safety information becomes available, Transene will periodically revise this Material safety Data Sheet.

Note: CHEMTREC, CANUTEC, and NATIONAL RESPONSE CENTER emergency telephone numbers are to be used **ONLY** in the event of **CHEMICAL EMERGENCIES** involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to Customer Service (508-948-2501) for assistance.

-POISON-

CAUTION CYANIDE

DIRECTIONS FOR TREATMENT (CYANIDE AND HCN GAS POISONING).

CALL A PHYSICIAN IMMEDIATELY!

CARRY PATIENT TO FRESH AIR. HAVE HIM LIE DOWN. REMOVE CONTAMINATED CLOTHING BUT KEEP PATIENT WARM.

IF PATIENT IS CONSCIOUS AND BREATHING:

1. Break amyl nitrite pearl in cloth and hold lightly over nose for not more than 15-20 seconds. Repeat every 5 minutes for 25 minutes if recovery is not forthcoming.

IF CYANIDE HAS BEEN SWALLOWED AND PATIENT IS CONSCIOUS:

2. Give patient one pint of 1% Sodium Thiosulfate (or soapy water or mustard water) by mouth every 15 minutes until vomiting occurs.

IF PATIENT HAS STOPPED BREATHING:

3. Give artificial respiration until breathing starts. Break amyl nitrate pearl in a cloth and hold lightly over nose for not more than 20 seconds, repeating every 5 minutes for 25 minutes or until breathing starts.

IF PATIENT IS UNCONSCIOUS BUT BREATHING:

4. Break amyl nitrate pearl in a cloth and hold lightly over nose for not more than 20 seconds, repeating every 5 minutes for 25 seconds if recovery is not forthcoming. Give oxygen from an inhalator.

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

KEEP PATIENT QUIET AND WARM UNTIL PHYSICIAN ARRIVES.

ADDENDUM TO MATERIAL SAFETY DATA SHEET REGULATORY STATUS

THIS ADDENDUM MUST NOT BE
DETACHED FROM THE MSDS
IDENTIFIES SARA 313 SUBSTANCE(S)
Any copying or redistribution of the MSDS
must include a copy of this addendum
(Chem.Key: PHACD)

HAZARD CATEGORIES FOR SARA Section 311/312 Reporting

Acute Chronic Fire Pressure Reactive

Product or Components Of Products	SARA EHS Sect. 302		SARA Section 313 Chemicals		CERCLA Sec. 103	RCRA
	RQ (lbs.)	TPQ (lbs.)	Name List	Chemical Category	RQ (lbs.)	Section 261.33
POTASSIUM FERRICYANIDE (CYANIDE COMPOUND)	No	No	No	Yes	No	No
Sodium Hydroxide Solution (1310-73-2)	No	No	Yes	No	1000	No

Applicable Products:
Gallium Phosphate Etchants, TFE, Moly Etchant TFM,
Tungsten Etchant TFW

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.
SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity + 10,000 LBS.
SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.
CERCLA Sec 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center (800-424-8802); Listed at 40 CFR 302.4
RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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