



MATERIAL SAFETY DATA SHEET

Ferro Corporation
Liquid Coatings & Dispersions
1301 N. Flora Street
Plymouth, IN 46563 USA

Emergency telephone number
CHEMTREC: 1-800-424-9300
CHEMTREC (outside U.S.): 1-703-527-3887
Plant Number: 1-574-935-5131

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Name: Steel Putty Resin **Date of Preparation:** 03/01/2012
CAS-No.: Mixture
Product Code: PL25-810030

2. HAZARDS IDENTIFICATION

Emergency Overview

Warning

May cause respiratory tract, eye and skin irritation. May cause allergic skin reaction. May cause sensitization of susceptible persons by skin contact. May be harmful if swallowed.

	Health:	HMIS	NFPA 704
Color: Gray		2	2
Physical state: Liquid	Flammability:	1	1
Odor: Pungent	Physical Hazard:	0	0
		F	

Potential Health Effects

Principle routes of exposure: Inhalation, ingestion, skin and eye contact.

Eye contact: Moderately irritating to the eyes.

Skin contact: Prolonged skin contact may cause skin irritation and/or dermatitis. May cause allergic skin reaction. May cause sensitization by skin contact.

Inhalation: Over-exposure by inhalation may cause respiratory irritation.

Ingestion: May irritate digestive tract. May be harmful if swallowed.

Chronic toxicity: This product contains amorphous silica. Overexposure by inhalation of respirable dust may cause respiratory problems including pneumoconiosis.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %
Iron	7439-89-6	70 - 80%
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	10 - 20%
Silica	7631-86-9	1 - 5%
Allyl Glycidyl Ether (AGE)	106-92-3	1 - 5%
Polyethylene	9002-88-4	1 - 5%
Glass oxide	65997-17-3	1 - 5%

4. FIRST AID MEASURES

Eye contact: Rinse immediately with plenty of water, also under the eyelids. Get medical attention if irritation develops.

Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If symptoms persist call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.

Ingestion: Drink plenty of water. Do not induce vomiting. Consult a physician if necessary.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point (°C): 141(286°F) Method: Open Cup

Suitable extinguishing media: Dry chemical. Carbon dioxide (CO₂). Water spray mist or foam.

Hazardous decomposition products: Carbon monoxide. Carbon dioxide (CO₂). Hydrocarbons. Aldehydes.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus (pressure-demand, NIOSH approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate area of all unnecessary personnel. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

Methods for cleaning up: Wear personal protective equipment. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Clean contaminated surface thoroughly. Dispose of promptly.

7. HANDLING AND STORAGE

Handling:

Handle in accordance with good industrial hygiene and safety practice. Use only in area provided with appropriate exhaust ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Do not eat, drink, or smoke in areas of use or storage. Do not take internally. Wash thoroughly after handling.

Storage:

Store at room temperature in the original container. Keep tightly closed in a dry and cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Minimize exposure in accordance with good hygiene practice.

Components	OSHA	ACGIH
Silica	20 mppcf TWA Listed	Not established
Allyl Glycidyl Ether (AGE)	10 ppm Ceiling 45 mg/m ³ Ceiling	1 ppm TWA
Glass oxide	Not established	1 fiber/cm ³ TWA respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination 5 mg/m ³ TWA inhalable fraction

Engineering measures:	Provide appropriate exhaust ventilation wherever dust, mist, vapors, or fumes can be generated. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Eye protection:	Safety glasses with side-shields. If splashes are likely to occur, wear: Goggles.
Skin and body protection:	Lightweight protective clothing. If conditions warrant, use. Chemical resistant apron. impervious clothing.
Hand protection:	Impervious gloves. Follow the recommendations given by the manufacturer of protective gloves.
Respiratory protection:	NIOSH-approved respirators should be worn where engineering controls and work practices do not reduce exposure to or below the PEL. In case of insufficient ventilation wear suitable respiratory equipment . Seek professional advice prior to respirator selection and use.
Hygiene measures:	Wash hands before breaks and at the end of workday. Keep working clothes separate. Wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Gray	Physical state:	Liquid
Odor:	Pungent	Molecular weight:	No data available
Boiling point/range (°C):	154	pH:	No data available
Melting point/range (°C):	No data available	Specific gravity (Water =1):	3.061
Vapor pressure :	4.7 mm Hg	Water solubility:	Partly soluble
VOC content (%)	6.		

10. STABILITY AND REACTIVITY

Stability:	Stable at normal conditions.
Polymerization	None under normal processing.
Hazardous decomposition products:	Carbon monoxide. Carbon dioxide (CO ₂). Hydrocarbons. Aldehydes.
Materials to avoid:	Incompatible with strong acids and bases. Incompatible with oxidizing agents.
Conditions to avoid	Excessive temperatures.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:	Information given is based on data on the components and the toxicology of similar products.
Target Organ Effects:	Amorphous silica: Respiratory system, eyes.

Component information, if any, is listed below

Iron

LD50s and LC50s: Oral LD50 (Rat) = 984 mg/kg

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane

LD50s and LC50s: Oral LD50 (Rat) = 11400 mg/kg

Silica

LD50s and LC50s: Inhalation LC50 (Rat) = 2.2 mg/L
 Dermal LD50 (Rabbit) = 2000 mg/kg
 Oral LD50 (Rat) = 5000 mg/kg

Allyl Glycidyl Ether (AGE)

LD50s and LC50s: Oral LD50 (Rat) = 1600 mg/kg
 Dermal LD50 (Rabbit) = 2550 mg/kg
 Inhalation LC50 (Mouse) = 270 ppm

Polyethylene

LD50s and LC50s: Inhalation LC50 (Mouse) = 12 g/m³

12. ECOLOGICAL INFORMATION

Aquatic toxicity: Information given is based on data on the components and the ecotoxicology of similar products. No data is available on the product itself.

Iron

Ecotoxicity - Fish Species Data:
96 h LC50 (Cyprinus carpio) = 0.56 mg/L semi-static
96 h LC50 (Morone saxatilis) = 13.6 mg/L static

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane

Ecotoxicity - Fish Species Data:
1.5 mg/l 96 hours (Rainbow trout), 2.4 mg/l 96 hours (Zebra fish)
Ecotoxicity - Water Flea Data:
3.6mg/l 24 hours

Silica

Ecotoxicity - Fish Species Data:
96 h LC50 (Brachydanio rerio) = 5000 mg/L static
Ecotoxicity - Water Flea Data:
48 h EC50 (Ceriodaphnia dubia) = 7600 mg/L
Ecotoxicity - Freshwater Algae Data:
72 h EC50 (Pseudokirchneriella subcapitata) = 440 mg/L

Allyl Glycidyl Ether (AGE)

Ecotoxicity - Fish Species Data:
96 h LC50 (Carassius auratus) = 30 mg/L

Persistence and degradability: Not determined

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Where possible recycling is preferred to disposal or incineration.

14. TRANSPORT INFORMATION

DOT (U.S.)

Proper shipping name: Not regulated.

TDG (Canada)

Proper shipping name: Not regulated.

15. REGULATORY INFORMATION

U.S. Regulations:

TSCA: Not subject to TSCA 12(b) Export Notification

SARA 313: Not subject to the provisions of SARA 313 Title III

State Regulations

This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

Components	NJRTK:
Silica, amorphous, silica gel	Listed (NJRTK)
Silica	Listed (NJRTK)
Allyl Glycidyl Ether (AGE)	Listed (NJRTK)

Canadian WHMIS

WHMIS hazard class: Non-controlled

Canadian Ingredient Disclosure List (IDL):

Components	Canada - WHMIS Ingredient Disclosure:
Silica	1
Allyl Glycidyl Ether (AGE)	0.1

International Inventories

TSCA 8(b):	Listed or exempt.
Canadian DSL/NDSL list	All ingredient(s) are listed on the DSL or NDSL
EC-No.	Listed or exempt.
Philippines (PICCS):	One or more ingredient(s) are not on the PICCS list.
Japan (ENCS):	Listed or exempt.
Korea (KECL):	Listed.
China (IECS):	Listed.
Australia (AICS):	Listed.
New Zealand (NZIoC):	Listed.

16. OTHER INFORMATION

For Industrial Use Only

Prepared by: Ferro Technical Center

The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

End of Safety Data Sheet



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Plant Number: 1-574-935-5131

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Name: Steel Putty Activator **Date of Preparation:** 03/05/2012
CAS-No.: Mixture
Recommended use: Industrial Use Only
Product Code: PL03190SP

2. HAZARDS IDENTIFICATION

Emergency Overview

Warning
Harmful by inhalation. Avoid contact with the skin and the eyes. May be corrosive to the skin, eyes and respiratory tract. Harmful if swallowed. May cause allergic skin or respiratory reaction. May cause sensitization of susceptible persons. Overexposure may cause CNS depression.

Color: Amber	Health:	HMIS	NFPA 704
Physical state: Liquid	Flammability:	3	3
Odor: Pungent	Physical Hazard:	1	1
		0	0
		X	

Potential Health Effects

Principle routes of exposure: Inhalation, ingestion, skin and eye contact.
Eye contact: May cause severe eye irritation. Corrosive to eyes.
Skin contact: Extremely irritating to the skin. Corrosive to skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Inhalation: Over-exposure by inhalation may cause respiratory irritation. Fumes or vapors from the heated material may be severely irritating and corrosive. May cause sensitization by inhalation. Inhalation of high vapor concentrations can cause CNS-depression and narcosis.
Ingestion: Harmful if swallowed. Causes burns.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %
Diethylenetriamine	111-40-0	60 - 70%
Bisphenol A	80-05-7	40 - 50%

4. FIRST AID MEASURES

Eye contact: Rinse immediately with plenty of water, also under the eyelids. Get medical attention if irritation develops.
Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If symptoms persist call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.

Ingestion: Drink plenty of water. Do not induce vomiting. Consult a physician if necessary.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point (°C): >93.4(200.1°F) Method: Seta closed cup

Suitable extinguishing media: Foam. Dry chemical. Carbon dioxide (CO2).

Hazardous decomposition products: Carbon monoxide. Carbon dioxide (CO2). Hydrocarbons.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus (pressure-demand, NIOSH approved or equivalent) and full protective gear.

Unusual hazards: Water or fog may cause frothing which can be violent, especially if sprayed into containers of hot or burning liquid.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate area of all unnecessary personnel. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

Methods for cleaning up: Wear personal protective equipment. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Clean contaminated surface thoroughly. Dispose of promptly.

7. HANDLING AND STORAGE

Handling:

Handle in accordance with good industrial hygiene and safety practice. Use only in area provided with appropriate exhaust ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Do not eat, drink, or smoke in areas of use or storage. Do not take internally. Wash thoroughly after handling.

Storage:

Store at room temperature in the original container. Keep tightly closed in a dry and cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Minimize exposure in accordance with good hygiene practice.

Components	OSHA	ACGIH
Diethylenetriamine	Not established	Skin 1 ppm TWA

Engineering measures: Provide appropriate exhaust ventilation wherever dust, mist, vapors, or fumes can be generated. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Eye protection: Goggles. If conditions warrant. Face-shield.

Skin and body protection: impervious clothing. If conditions warrant, use. Chemical resistant apron.

Hand protection:	Impervious gloves. Follow the recommendations given by the manufacturer of protective gloves.
Respiratory protection:	NIOSH-approved respirators should be worn where engineering controls and work practices do not reduce exposure to or below the PEL. In case of insufficient ventilation wear suitable respiratory equipment . Seek professional advice prior to respirator selection and use.
Hygiene measures:	Wash hands before breaks and at the end of workday. Keep working clothes separate. Wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Amber	Physical state:	Liquid
Odor:	Pungent	Molecular weight:	No data available
Boiling point/range (°C):	207	pH:	No data available
Melting point/range (°C):	No data available	Specific gravity (Water =1):	1.02081
Vapor pressure :	No data available	Water solubility:	Partly soluble
VOC content (%)	40.29	HAPS content (%):	37.83

10. STABILITY AND REACTIVITY

Stability:	Stable at normal conditions.
Polymerization	None under normal processing.
Hazardous decomposition products:	Carbon monoxide. Carbon dioxide (CO ₂). Hydrocarbons.
Materials to avoid:	Incompatible with oxidizing agents.
Conditions to avoid	Excessive temperatures. Heating this substance above 260 C in the presence of air may cause polymerization to occur..

11. TOXICOLOGICAL INFORMATION

Acute toxicity: Information given is based on data on the components and the toxicology of similar products.

Component information, if any, is listed below

Diethylenetriamine

LD50s and LC50s: Dermal LD50 (Rabbit) = 672 mg/kg
Oral LD50 (Rat) = 819 mg/kg

Bisphenol A

LD50s and LC50s: Dermal LD50 (Rabbit) = 3000 mg/kg
Oral LD50 (Rat) = 3200 mg/kg

12. ECOLOGICAL INFORMATION

Aquatic toxicity: Information given is based on data on the components and the ecotoxicology of similar products. No data is available on the product itself.

Diethylenetriamine

Ecotoxicity - Fish Species Data:
96 h LC50 (Poecilia reticulata) = 1014 mg/L semi-static
96 h LC50 (Poecilia reticulata) = 248 mg/L static
96 h LC50 (Leuciscus idus) = 430 mg/L semi-static
Ecotoxicity - Water Flea Data:
48 h EC50 (Daphnia magna) = 16 mg/L
24 h EC50 (Daphnia magna) = 37 mg/L
Ecotoxicity - Freshwater Algae Data:
72 h EC50 (Pseudokirchneriella subcapitata) = 1164 mg/L
96 h EC50 (Pseudokirchneriella subcapitata) = 345.6 mg/L
96 h EC50 (Desmodesmus subspicatus) = 592 mg/L

Bisphenol A

Ecotoxicity - Fish Species Data:
96 h LC50 (Pimephales promelas) = 3.6 - 5.4 mg/L flow-through
96 h LC50 (Pimephales promelas) = 4.0 - 5.5 mg/L static
96 h LC50 (Oncorhynchus mykiss) = 4 mg/L
96 h LC50 (Brachydanio rerio) = 9.9 mg/L static
Ecotoxicity - Water Flea Data:
48 h EC50 (Daphnia magna) = 9.2 - 11.4 mg/L Static
48 h EC50 (Daphnia magna) = 10.2 mg/L
48 h EC50 (Daphnia magna) = 3.9 mg/L
Ecotoxicity - Freshwater Algae Data:
96 h EC50 (Pseudokirchneriella subcapitata) = 2.5 mg/L

Persistence and degradability: Not determined

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Where possible recycling is preferred to disposal or incineration.

14. TRANSPORT INFORMATION

DOT (U.S.)

UN/ID No: UN2735
Proper shipping name: Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine)
U.S. DOT - Hazard Class: 8
Packing group: II

TDG (Canada)

Proper shipping name: Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine)
Packing group: II

15. REGULATORY INFORMATION

U.S. Regulations:

TSCA: Not subject to TSCA 12(b) Export Notification

SARA 313:

Components	U.S. - CERCLA/SARA - Section 313 - Emission Reporting
Bisphenol A (40 - 50%)	1.0 % de minimis concentration

State Regulations

This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

Components	PARTK:
Bisphenol A	Listed (PARTK)

Components	NJRTK:
Diethylenetriamine	Listed (NJRTK)
Bisphenol A	Listed (NJRTK)

Canadian WHMIS

WHMIS hazard class: D2B Toxic materials E Corrosive material

Canadian Ingredient Disclosure List (IDL):

Components	Canada - WHMIS Ingredient Disclosure:
Diethylenetriamine	0.1
Bisphenol A	1

International Inventories

TSCA 8(b): Listed or exempt.
Canadian DSL/NDSL list All ingredient(s) are listed on the DSL or NDSL
EC-No. Listed or exempt.
Philippines (PICCS): Listed.
Japan (ENCS): Listed or exempt.
Korea (KECL): Listed.
China (IECS): Listed.
Australia (AICS): Listed.
New Zealand (NZIoC): Listed.

16. OTHER INFORMATION

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End of Safety Data Sheet