

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## \*\*\* Section 1 - PRODUCT AND COMPANY IDENTIFICATION \*\*\*

**Material Name:** FERRO PHOSPHOROUS

### Manufacturer Information

CMC Cometals  
CONTACT:  
2050 Center Avenue, Suite 250  
Ft. Lee, NJ 07024  
Mfg Contact: CMC Cometals

EMERGENCY

### Synonyms

### Product Use

alloy

## \*\*\* Section 2 - HAZARDS IDENTIFICATION \*\*\*

### EMERGENCY OVERVIEW

**Physical Form:** solid

**Health Hazards:** No significant target effects reported.

**Physical Hazards:** Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

### POTENTIAL HEALTH EFFECTS

#### Inhalation

**Short Term:** irritation

**Long Term:** no information on significant adverse effects

#### Skin

**Short Term:** irritation

**Long Term:** no information on significant adverse effects

#### Eye

**Short Term:** irritation

**Long Term:** no information on significant adverse effects

#### Ingestion

**Short Term:** no information on significant adverse effects

**Long Term:** no information on significant adverse effects

## \*\*\* Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS \*\*\*

CAS	Component	Percent	Symbol(s)	Risk Phrase(s)
7439-89-6	IRON 231-096-4	<73	---	---
7723-14-0	PHOSPHORUS, WHITE 231-768-7	>=23	F	R:11-16-52-53
7439-96-5	MANGANESE 231-105-1	<=2	---	---
7440-21-3	SILICON 231-130-8	<=1	---	---
7440-44-0	CARBON 231-153-3	<=1	F	R:11

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7704-34-9	SULFUR 231-722-6	<=0.5	Xi	R:38-36-37-38
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## Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Manganese compounds, n.o.s., Manganese compounds, inorganic, Graphite, synthetic.

### \*\*\* Section 4 - FIRST AID MEASURES \*\*\*

#### Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

#### Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

#### Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

#### Ingestion

If a large amount is swallowed, get medical attention.

### \*\*\* Section 5 - FIRE FIGHTING MEASURES \*\*\*

See Section 9 for Flammability Properties

**NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

#### Flammable Properties

Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

#### Extinguishing Media

dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride

#### Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

#### Thermal Decomposition Products

**Acids:** phosphine

**Water or Moisture:** phosphine

#### Thermal Decomposition Products

**Combustion:** oxides of iron, oxides of phosphorus

### \*\*\* Section 6 - ACCIDENTAL RELEASE MEASURES \*\*\*

#### Occupational spill/release

Collect spilled material in appropriate container for disposal. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

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## \*\*\* Section 7 - HANDLING AND STORAGE \*\*\*

### Handling Procedures

Use methods to minimize dust.

### Storage Procedures

Store and handle in accordance with all current regulations and standards. Avoid generating dust. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B). See original container for storage recommendations. Keep separated from incompatible substances.

## \*\*\* Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION \*\*\*

### Component Exposure Limits

#### PHOSPHORUS, WHITE (7723-14-0)

NIOSH: 0.1 mg/m<sup>3</sup> TWA  
5 mg/m<sup>3</sup> IDLH

OSHA (US): 0.1 mg/m<sup>3</sup> TWA  
Mexico: 0.1 mg/m<sup>3</sup> TWA  
0.3 mg/m<sup>3</sup> STEL

#### MANGANESE (7439-96-5)

ACGIH: 0.2 mg/m<sup>3</sup> TWA  
NIOSH: 1 mg/m<sup>3</sup> TWA (fume)  
3 mg/m<sup>3</sup> STEL  
500 mg/m<sup>3</sup> IDLH

OSHA (US): 5 mg/m<sup>3</sup> Ceiling (fume)  
Mexico: 0.2 mg/m<sup>3</sup> TWA; 1 mg/m<sup>3</sup> TWA (as Mn, fume)  
3 mg/m<sup>3</sup> STEL (as Mn, fume)

#### CARBON (7440-44-0)

OSHA (US): 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)  
Mexico: 2 mg/m<sup>3</sup> TWA (dust)

#### SILICON (7440-21-3)

NIOSH: 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable dust)  
OSHA (US): 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)  
Mexico: 10 mg/m<sup>3</sup> TWA (inhalable fraction)  
20 mg/m<sup>3</sup> STEL

### Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

### PERSONAL PROTECTIVE EQUIPMENT

#### Eyes/Face

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

#### Protective Clothing

Wear appropriate chemical resistant clothing.

#### Glove Recommendations

Wear appropriate chemical resistant gloves.

#### Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

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Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any air-purifying full-facepiece respirator equipped with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

## For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

## \*\*\* Section 9 - PHYSICAL AND CHEMICAL PROPERTIES \*\*\*

<b>Physical State:</b>	Solid	<b>Appearance:</b>	Not available
<b>Physical Form:</b>	solid	<b>Odor:</b>	Not Available
<b>Odor Threshold:</b>	Not available	<b>Melting Point:</b>	Not available
<b>Boiling Point:</b>	Not applicable	<b>Vapor Pressure:</b>	Not applicable
<b>Vapor Density (air = 1):</b>	Not applicable	<b>Density:</b>	Not available
<b>Specific Gravity (water = 1):</b>	Not available	<b>Water Solubility:</b>	Not available
<b>Coeff. Water/Oil Dist:</b>	Not available		

## \*\*\* Section 10 - STABILITY AND REACTIVITY \*\*\*

### Chemical Stability

Stable at normal temperatures and pressure.

### Conditions to Avoid

None reported.

### Materials to Avoid

None known.

CARBON:

ALKALI METALS: Contact may result in an exothermic reaction with ignition or an explosion.

AMMONIUM NITRATE: Possible explosion when heated.

AMMONIUM PERCHLORATE: Possible explosion on heating.

BROMATES: Contact is likely to result in ignition or an explosion.

CALCIUM HYPOCHLORITE: Possible explosion on heating.

CHLORATES: Contact is likely to result in ignition or an explosion.

CHLORINE MONOXIDE: Explodes.

CHROMATES: Incompatible.

DICHLORINE OXIDE: Explosion reaction.

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HALOGENS: Contact of carbon with any halogen is liable to result in ignition or an explosion.

INTERHALOGENS: Contact of carbon with any interhalogen is liable to result in ignition or an explosion.

IODATES: Contact is likely to result in ignition or an explosion.

IODINE PENTOXIDE: Explodes when warmed.

METAL NITRATES: Contact is likely to result in ignition or an explosion.

NITRIC ACID: Violent reaction.

NITROGEN OXIDE: Ignition with incandescence.

NITROGEN TRIFLUORIDE: Explosion at reduced temperatures.

OILS (UNSATURATED): Fire and explosion hazard.

OXIDES: Contact with many oxides is likely to result in ignition or an explosion.

OXIDIZERS (STRONG): Fire and explosion hazard.

OXOSALTS: Contact is likely to result in ignition or an explosion.

OXYGEN: May result in ignition or an explosion.

OXYGEN DIFLUORIDE: Possible explosion.

OZONE: Fire hazard.

PEROXIDES: Contact is likely to result in ignition or an explosion.

PEROXYFORMIC ACID: Violent oxidation.

PEROXYFUROIC ACID: Explosive decomposition.

POTASSIUM PERMANGANATE: Ignition on heating.

SODIUM SULFIDE: May undergo spontaneous heating.

TRIOXYGEN DIFLUORIDE: Ignition with possible explosion.

IRON:

ACETALDEHYDE: Polymerizes readily.

AMMONIUM NITRATE: Violent or explosive reaction.

AMMONIUM PEROXODISULFATE: Violent reaction.

BROMINE PENTAFLUORIDE: Violent reaction and possible ignition.

CHLORIC ACID: Forms explosive compound.

CHLORINE (GAS): Ignites.

CHLORINE TRIFLUORIDE: Violent reaction and possible ignition.

CHLOROFORMAMIDINIUM NITRATE: Explosive ignition.

DINITROGEN TETRAOXIDE: Ignites.

FLUORINE: Ignites.

HYDROGEN PEROXIDE: Violent decomposition.

MINERAL ACIDS: Readily attacked.

NITROGEN DIOXIDE: Incandescent reaction.

NITRYL FLUORIDE: Incandesces when heated.

ORGANIC ACIDS: Attacked or dissolved.

PEROXYFORMIC ACID: Incompatible.

PHOSPHORUS: Incandesces when heated.

POLYSTYRENE BEADS: Possible static ignition.

POTASSIUM DICHROMATE: Ignites on contact.

POTASSIUM PERCHLORATE + MANGANESE DIOXIDE: Ignites.

SODIUM ACETYLIDE: Possible violent reaction.

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SODIUM PEROXIDE: Ignites under friction @ 240 C.  
SULFURIC ACID: Possible explosion hazard.  
MANGANESE:  
ALUMINUM (DUST): Forms explosive mixtures with air.  
AMMONIUM NITRATE (FUSED): Violent or explosive reaction.  
BROMINE PENTAFLUORIDE: Violent reaction and possible ignition.  
CARBON DIOXIDE: Ignites.  
CHLORINE: Ignites.  
FLUORINE: Incandescent reaction.  
HYDROGEN PEROXIDE: Violent decomposition and/or ignition.  
NITRIC ACID: Incandescent reaction and feeble explosion.  
NITROGEN DIOXIDE: Ignition.  
OXIDIZERS (STRONG): Fire and explosion hazard.  
PHOSPHORUS: Incandescent reaction when heated.  
SULFUR DIOXIDE: Burns brilliantly on warming.  
PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW):  
ACIDS: May cause reacts violently.  
ALKALI METAL NITRIDES: Formation of highly flammable compound.  
ALKALINE HYDROXIDES: Formation of pyrotechnic compound on boiling.  
AMMONIUM NITRATE: Explosion on impact.  
ANIMAL CHARCOAL: May cause ignition reaction.  
ANTIMONY PENTACHLORIDE: Ignites on contact.  
ANTIMONY PENTAFLUORIDE: Ignition reaction on contact.  
BARIUM BROMATE: May cause explosive reaction by heat, percussion, or light friction.  
BARIUM CHLORATE: May cause explosive reaction by heat, percussion, or light friction.  
BARIUM IODATE: May cause explosive reaction by heat, percussion, or light friction.  
BERYLLIUM: May cause incandescent reaction in phosphorus vapors.  
BORON TRIFLUORIDE: Incandescent reaction.  
BORON TRIIODIDE: May cause incandescent reaction.  
BROMATES: May cause explosion reaction by heat, percussion, or light friction.  
BROMINE (GAS, VAPOR): May cause incandescent reaction.  
BROMINE (LIQUID): May cause explosive reaction.  
BROMINE: Yields slimy by-product that explodes violently on heating.  
BROMINE TRIFLUORIDE: May cause incandescent reaction.  
BROMOAZIDE: May cause explosive reaction.  
CALCIUM BROMATE: May cause explosive reaction by heat, percussion, or light friction.  
CALCIUM CHLORATE: May cause explosive reaction by heat, percussion, or light friction.  
CALCIUM HYDROXIDE (HOT): Evolves phosphine, which may ignite in air.  
CALCIUM IODATE: May cause explosive reaction by heat, percussion, or light friction.  
CARBON DISULFIDE: Yields slimy by-products that explode violently on heating.

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CAUSTIC ALKALIES (BOILING): Evolves phosphine, which may ignite in air.  
CARBON: Ignition at room temperature.  
CERIUM: May cause violent reaction on heating to 400-500 C.  
CESIUM: May cause vigorous reaction below 250 C.  
CESIUM ACETYLENE CARBIDE: May cause incandescent reaction on heating.  
CESIUM NITRIDE: May cause vigorous reaction.  
CHLORATES (MOIST): May cause explosive reaction on contact.  
CHLORINE (GAS): May cause ignition reaction.  
CHLORINE (LIQUID): May cause explosive reaction.  
CHLORINE DIOXIDE: May cause ignition and possible explosion.  
CHLORINE MONOXIDE: May cause explosive reaction.  
CHLORINE TRIFLUORIDE: May cause ignition reaction.  
CHLORINE TRIOXIDE: May cause explosive reaction.  
CHLORINE + HEPTANE: May cause possible explosive reaction.  
CHLOROSULFONIC ACID: May cause explosive reaction @ 25-30 C.  
CHLOROSULFURIC ACID: May cause explosion hazard.  
CHROMIC ANHYDRIDE: May cause explosive reaction.  
CHROMIC ACID: May cause explosive reaction.  
CHROMIUM TRIOXIDE (MOLTEN): May cause explosive reaction.  
CHROMYL CHLORIDE: May cause explosive reaction with moist phosphorus.  
COPPER: May cause incandescent reaction on heating.  
CYANOGEN IODIDE: May cause incandescent reaction with molten phosphorus.  
DINITROGEN PENTAOXIDE: May cause ignition on heating.  
DINITROGEN TETROXIDE: May cause violent combustion.  
FLUORINE (GAS): Ignites on contact.  
HALOGENS OR INTERHALOGENS: May cause ignition or incandescent reaction.  
HALOGEN AZIDES: May cause explosive reaction.  
HEPTASILVER NITRATE OCTAOXIDE: May cause explosion on impact.  
HEXALITHIUM DISILICIDE: May cause incandescent reaction.  
HYDROGEN PEROXIDE: May cause violent reaction when heating in air.  
HYPOCHLORITES: May cause explosion hazard.  
IODATES: May cause explosion reaction with heating, percussion or light friction.  
IODINE: Ignites on contact.  
IODINE + CARBON DISULFIDE: May cause vigorous reaction.  
IODINE MONOCHLORIDE: May cause violent reaction.  
IODINE MONOBROMIDE (MOLTEN): May cause violent reaction.  
IODINE PENTAFLUORIDE: May cause explosive reaction.  
IRON: May cause incandescent reaction on heating.  
LANTHANUM: May cause violent reaction on heating to 400-500 C.  
LEAD OXIDES: May cause explosion on grinding.  
LEAD PEROXIDE: May cause explosive reaction.  
LITHIUM: May cause violent reaction on heating.  
LITHIUM CARBIDE: May cause combustion on heating.  
LITHIUM SILICIDE: May cause incandescent reaction.  
MAGNESIUM BROMATE: May cause explosive reaction by heat, percussion or light

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friction.

MAGNESIUM CHLORATE: May cause explosive reaction by heat, percussion, light friction.

MAGNESIUM IODATE: May cause explosive reaction by heat, percussion, or light friction.

MAGNESIUM PERCHLORATE: May cause explosive reaction on mixing.

MANGANESE: May cause incandescent reaction in phosphorus vapor.

METAL ACETYLIDES: Incandescens with warm phosphorus.

MERCURIC OXIDE: May cause explosion on percussion.

MERCUROUS NITRATE: May cause explosion on percussion.

NEODYMIUM: May cause violent reaction on heating.

NICKEL: May cause incandescent reaction on heating.

NITRATES: May cause possible explosion.

NITRIC ACID VAPOR: May cause ignition reaction.

NITROGEN BROMIDE: May cause violent explosion on contact.

NITROGEN CHLORIDE: May cause explosive reaction.

NITROGEN DIOXIDE: May cause ignition reaction on heating.

NITROGEN OXIDE: May cause ignition reaction on heating.

NITROGEN TRIBROMIDE: May cause explosion reaction.

NITROGEN TRIBROMIDE HEXAAMMONIATE: May cause explosive reaction.

NITROGEN TRICHLORIDE: May cause explosive reaction.

NITROSYL FLUORIDE: May cause incandescent reaction.

NITRYL FLUORIDE: May cause explosion hazard.

OIL OF TURPENTINE: Incompatible.

OSMIUM: May cause incandescent reaction in phosphorous vapor.

OXIDIZING MATERIALS: May cause explosive reaction.

OXYGEN: May cause vigorous reaction at room temperature.

PERFORMIC ACID: May cause explosive reaction.

PEROXYFORMIC ACID: May cause explosive reaction.

PLATINUM: May cause incandescent reaction on heating.

PRASEODYMIUM: May cause violent reaction on heating.

POTASSIUM: May cause explosive reaction.

POTASSIUM BROMATE: May cause explosive reaction by heat, percussion or light friction.

POTASSIUM CHLORATE: May cause explosive reaction by heat, percussion, light friction, evolves spontaneously flammable phosphine on boiling.

POTASSIUM HYDROXIDE: May cause explosive reaction.

POTASSIUM IODATE: May cause explosive reaction by heat, percussion, or light.

POTASSIUM IODATE, WATER: May cause violent reaction and possible explosion.

POTASSIUM NITRIDE: Formation of highly flammable compound on heating.

POTASSIUM PERMANGANATE: May cause explosion on grinding.

POTASSIUM PEROXIDE: May cause ignition and possible explosion.

RUBIDIUM: May cause vigorous reaction.

RUBIDIUM ACETYLENE CARBIDE: May cause incandescent reaction on heating.

SELENINYL CHLORIDE: May cause possible explosion.

SELENIUM MONOCHLORIDE: May cause explosion on mixing.

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SELENIUM OXYCHLORIDE: May cause possible explosion.  
SELENIUM OXYFLUORIDE: May cause spontaneous ignition reaction.  
SELENIUM TETRAFLUORIDE: May cause violent reaction.  
SILVER NITRATE: May cause explosive reaction by heat, percussion, or light friction.  
SILVER OXIDE: Ignition on impact.  
SODIUM: May cause explosive reaction.  
SODIUM BROMATE: May cause explosive reaction by heat, percussion, or light friction.  
SODIUM CARBIDE: May cause ignition reaction in phosphorus vapor.  
SODIUM CHLORATE: May cause explosive reaction by heat, percussion, or light friction.  
SODIUM HYDROXIDE: Evolves spontaneously flammable phosphine on boiling.  
SODIUM IODATE: May cause explosive reaction by heat, percussion, or light friction.  
SODIUM PEROXIDE: May cause explosive reaction.  
SULFUR: May cause ignition and explosion on warming.  
SULFURIC ACID (BOILING, CONCENTRATED): May cause ignition.  
SULFUR TRIOXIDE (LIQUID): May cause immediate ignition on contact.  
SULFUR TRIOXIDE (VAPOR): May cause ignition reaction, which may be delayed.  
THORIUM: May cause incandescent reaction on heating.  
VANADIUM OXYTRICHLORIDE: May cause possible explosion.  
ZINC BROMATE: May cause explosive reaction by heat, percussion, or light friction.  
ZINC CHLORATE: May cause explosive reaction by heat, percussion, or light friction.  
ZINC IODATE: May cause explosive reaction by heat, percussion, or light friction.  
ZIRCONIUM (IN VACUUM): May cause incandescent reaction on heating.  
SILICON:  
ALUMINUM + LEAD OXIDE: Mixture may explode on heating.  
BROMINE TRIFLUORIDE: Ignition reaction.  
CESIUM ACETYLIDE: Vigorous reaction on heating.  
CALCIUM: Violently incandescent reaction above 1050 C, after a short delay.  
CHLORINE (GASEOUS): Ignition on contact at ambient temperatures.  
CHLORINE TRIFLUORIDE: Ignition reaction.  
COBALT TRIFLUORIDE: Exothermic reaction, attaining red heat on warming.  
FLUORINE: Ignites at room temperature; attains temperatures above 1400 C.  
HYDROFLUORIC ACID: Attacks silicon.  
HYDROFLUORIC ACID + NITRIC ACID MIXTURE: Attacks silicon.  
IODINE PENTAFLUORIDE: Incandescent reaction.  
IRIDIUM HEXAFLUORIDE: During reduction to pentafluoride, hexafluoride must not be condensed directly onto undiluted silicon powder or explosion may occur.  
LEAD OXIDE: An initiating mixture of silicon and lead dioxide (2:1) attains a temperature around 1100 C after ignition by small flame.  
MANGANESE TRIFLUORIDE: Violent reaction.

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METAL CARBONATES (ALKALI): Exothermic reaction on heating, attaining incandescence and evolving carbon monoxide.

MOLYBDENUM HEXAFLUORIDE: During reduction to pentafluoride, hexafluoride must not be condensed directly onto undiluted silicon powder or explosion may occur.

NITROSYL FLUORIDE: Reacts with incandescence.

OSMIUM HEXAFLUORIDE: During reduction to pentafluoride, hexafluoride must not be condensed directly onto undiluted silicon powder or explosion may occur.

OXIDIZERS (STRONG): Fire and explosion hazard.

OXYGEN DIFLUORIDE: Generates sparks on heating.

PEROXYFORMIC ACID: Traces of manganese dioxide may promote oxidation with ignition.

RHENIUM HEXAFLUORIDE: During reduction to pentafluoride, hexafluoride must not be condensed directly onto undiluted silicon powder or explosion may occur.

RUBIDIUM ACETYLIDE: Reacts vigorously on warming.

SILVER FLUORIDE: Violent reaction.

SODIUM-POTASSIUM ALLOY: The reaction forms sodium silicide, which is spontaneously flammable in air.

URANIUM HEXAFLUORIDE: During reduction to pentafluoride, hexafluoride must not be condensed directly onto undiluted silicon powder or explosion may occur.

WATER: Combustible or explosive reaction at sufficiently high temperatures and pressures.

## Thermal Decomposition of Products

**Combustion:** oxides of iron, oxides of phosphorus

## Thermal Decomposition Products

**Acids:** phosphine

**Water or Moisture:** phosphine

## Possibility of Hazardous Reactions

Will not polymerize.

## \* \* \* Section 11 - TOXICOLOGICAL INFORMATION \* \* \*

### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

**IRON (7439-89-6)**

Oral LD50 Rat: 984 mg/kg

**PHOSPHORUS, WHITE (7723-14-0)**

Inhalation LC50 Rat: 4.3 mg/L/1H; Oral LD50 Rat: 3.03 mg/kg; Dermal LD50 Rat: 100 mg/kg

**MANGANESE (7439-96-5)**

Oral LD50 Rat: 9 g/kg

**CARBON (7440-44-0)**

Oral LD50 Rat: >10000 mg/kg

**SILICON (7440-21-3)**

Oral LD50 Rat: 3160 mg/kg

**SULFUR (7704-34-9)**

Inhalation LC50 Rat: >9.23 mg/L/4H; Oral LD50 Rat: >3000 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg

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## RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### IRON (7439-89-6)

Oral: 30 gm/kg oral rat LD50

### PHOSPHORUS, WHITE (7723-14-0)

Oral: 11.5 mg/kg oral rat LD50; 3030 ug/kg oral rat LD50

### MANGANESE (7439-96-5)

Oral: 9 gm/kg oral rat LD50

### SILICON (7440-21-3)

Oral: 3160 mg/kg oral rat LD50

### SULFUR (7704-34-9)

Inhalation: 1660 mg/m3 inhalation mammal LC50

## Acute Toxicity Level

### IRON (7439-89-6)

Non Toxic: ingestion.

### PHOSPHORUS, WHITE (7723-14-0)

Highly Toxic: ingestion.

### MANGANESE (7439-96-5)

Slightly Toxic: ingestion.

### SILICON (7440-21-3)

Moderately Toxic: ingestion.

### SULFUR (7704-34-9)

Highly Toxic: inhalation.

## Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.

## RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### MANGANESE (7439-96-5)

500 mg/24 hour(s) eyes rabbit mild; 500 mg/24 hour(s) skin rabbit mild

### SILICON (7440-21-3)

3 mg eyes rabbit mild

### SULFUR (7704-34-9)

8 ppm eyes human

## Local Effects

### PHOSPHORUS, WHITE (7723-14-0)

Corrosive: inhalation, skin, eye, ingestion.

### SULFUR (7704-34-9)

Irritant: inhalation, skin, eye.

## Target Organs

### MANGANESE (7439-96-5)

nervous system.

Iron itself has not been evaluated by IARC. However iron and steel founding has been evaluated as IARC Group 1 (Human Sufficient Evidence). Studies have shown that certain exposures in iron and steel founding can cause lung cancer in humans. Excesses of leukemia and urogenital and digestive system cancers have also been reported.

## Medical Conditions Aggravated by Exposure

history of alcoholism, blood system disorders, liver disorders, nervous system disorders, respiratory disorders

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## RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### **IRON (7439-89-6)**

450 mg/kg intratracheal rat TDLo (15 week(s))

### **MANGANESE (7439-96-5)**

400 mg/kg intramuscular rat TDLo (1 year(s))

## RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### **MANGANESE (7439-96-5)**

dominant lethal test rat intraperitoneal 25 mg/kg

## RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### **PHOSPHORUS, WHITE (7723-14-0)**

11 ug/kg oral rat TDLo (pregnant female 1-22 day(s), continuous)

### **MANGANESE (7439-96-5)**

322.5 mg/kg oral mouse TDLo (male 43 day(s)); 1290 mg/kg oral mouse TDLo (male 43 day(s)); 0.71 mg/m<sup>3</sup> inhalation rat TCLo (pregnant female 15-16 day(s), continuous); 0.71 mg/m<sup>3</sup> inhalation rat TCLo (multigenerations); 50 mg/kg oral rat TDLo (post pregnancy 20 day(s), continuous); 90 mg/kg oral rat TDLo (post pregnancy 18 day(s), continuous)

### **CARBON (7440-44-0)**

167 mg/kg subcutaneous rat TDLo (pregnant female 8 day(s), continuous)

## Additional Data

Alcohol may enhance the toxic effects.

Symptoms may depend on a combination of contributing factors including genetic predisposition, age, nutrition, anemia or alcohol. Nephrotoxicity has been demonstrated with excessive exposure to silicon.

## HEALTH EFFECTS

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## Inhalation - Acute Exposure

CARBON: Inhalation of dust may cause slight mucous membrane irritation. IRON: Dust may cause mucous membrane and respiratory irritation due to mechanical action. Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed iron oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes. Lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours. MANGANESE: Dust or fumes may be irritating to the mucous membranes. Occupational exposure to dust or fumes has been reported to cause upper respiratory tract problems, black mucous membrane discharge from the nose, and neurological damage. Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): The vapors of burning white phosphorus are irritating to the nose, throat and lungs and may cause coughing, dyspnea, garlic odor of breath, pulmonary edema, abdominal pain, nausea, vomiting, diarrhea and unconsciousness. Photophobia with myosis, dilation of pupils, retinal hemorrhage, congestion of the blood vessels and rarely optic neuritis have been reported following inhalation. Other symptoms may include those as detailed in acute ingestion. SILICON: Dust may cause respiratory and mucous membrane irritation and cough. Intratracheal administration of 25 mg in rabbits produced slight pulmonary lesions.

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## Inhalation - Chronic Exposure

CARBON: Repeated or prolonged exposure may cause irritation and pulmonary disorders. Lung damage may result if sufficient exposure occurs. IRON: Prolonged or repeated exposure may cause a mottling of the lungs, a condition called siderosis which is considered to be a benign pneumoconiosis that does not cause significant physiologic impairment. Symptoms may include chronic bronchitis, emphysema, and dyspnea on exertion. MANGANESE: If sufficient quantities of manganese dust or fumes are inhaled and absorbed, systemic poisoning known as "manganism", a Parkinsonian-like syndrome may occur. It is characterized initially by anorexia, asthenia, headache, insomnia or somnolence, irritability, restlessness, and spasm or pain in the muscles. Manganese psychosis may follow with uncontrollable behavior, unaccountable laughing or crying, visual hallucinations, confusion and euphoria. Sexual excitement followed by impotence may occur. These symptoms may disappear with the onset of true neurological manifestations of slow, slurred and irregular speech, monotonous tone, double vision, impaired hearing, difficulty with fine motor movements, and disturbances in gait and balance with frequent propulsion or retropulsion. Mask-like face, decreased movement of the eyelids and eyes and tremors of the upper extremities and head may also occur. Other signs and symptoms may include urinary bladder disturbances, excessive salivation and sweating, hematological changes, vasomotor disorders, decreased pulmonary function, kidney and possibly liver damage. Removal from exposure shortly after onset of symptoms usually results in improvement, although there may be residual disturbances in gait and speech. Once manganism is well established it becomes irreversible and progressive, but not fatal. An increased incidence of bronchitis and pneumonitis has been reported in studies of workers exposed to manganese dust and fume, and although these effects have been confirmed by animal experiments, they may represent an aggravation of a pre-existing condition. Allergic diseases of the respiratory tract have also been reported in one study. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): Repeated or prolonged exposure may cause a dull red appearance of the oral mucosa, weakness, anemia, anorexia, stomach complaints, bronchitis, cachexia and paleness. Phosphorus exerts a solvent action on the teeth. An increase in bone formation under epiphyseal cartilage may occur and impair blood circulation in the bone. These changes lead to bone destruction and necrosis resulting in severe deformity of the mandible, and less often the maxilla, known as phossy jaw. This is characterized by periostitis with suppuration, ulceration, and the presence of pus with a foul, fetid odor exuding both internally and externally. Sequestration of bone may occur. The shortest period of exposure resulting in bone necrosis is reported to be 10 months. Polymorphic leukopenia, susceptibility to bone fractures and failure of the alveolar bone to resorb following extraction have been reported. In humans, chronic systemic poisoning has caused a yellow discoloration of the conjunctiva in association with jaundice from liver damage. Isolated instances of retinal edema, retinal hemorrhages and neuritic and edematous changes in the optic nerveheads have been reported. Inhalation of more than 20 ppm by rats for 7 hours/day for 5 days/week resulted in severe respiratory irritation and in a high mortality rate primarily due to edema of lungs and bronchopneumonia with hyaline membrane formation. SILICON: Inert dust may cause excessive production of mucous, mucous gland hypertrophy, and increased airway resistance and may contribute to chronic bronchitis.

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## Skin Contact - Acute Exposure

CARBON: Contact may cause irritation. IRON: Dust may cause irritation. Penetration of iron particles in the skin may cause an exogenous siderosis which may be characterized by a red-brown pigmentation of the affected area. MANGANESE: 500 mg applied to the skin of rabbits caused mild irritation. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): Vapors may cause irritation. On contact with the skin, solid phosphorus may ignite and produce severe yellowish necrotic thermal burns with redness, pain and blistering. The burns may be fluorescent under ultraviolet light and have a garlic-like odor. Often a firm grayish-white eschar is produced and is surrounded by vesiculation and infection ensues. Animal studies indicate that phosphorus is absorbed through burned skin to produce systemic poisoning with liver and kidney damage and a marked reversal of the serum calcium-phosphorus ratio and ECG changes. Shock may ensue rapidly and death may occur immediately. SILICON: May cause mechanical irritation.

## Skin Contact - Chronic Exposure

CARBON: Repeated or prolonged contact may cause mechanical irritation. IRON: May cause same effects as reported in acute exposure. MANGANESE: Sensitization has been reported in guinea pigs. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): Effects are dependent upon concentration and duration of exposure. Dermatitis or effects similar to those for acute exposure may occur. SILICON: No data available.

## Eye Contact - Acute Exposure

CARBON: Contact with dust may cause mechanical irritation. May also cause conjunctivitis. IRON: May cause irritation due to mechanical action. Iron particles imbedded in the eye may cause ocular siderosis. Effects may include discoloration of the cornea and iris, and pupillary effects including poor reaction to light and accommodation. If a particle enters the lens there may be cataract formation. Glaucoma occurs rarely in some cases of ocular siderosis. MANGANESE: Dust or fumes may be irritating to the eyes. 500 mg applied to the eyes of rabbits caused mild irritation. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): Contact with fumes may cause severe eye irritation with blepharospasm, photophobia and lacrimation. Contact with the solid may cause severe burns resulting in permanent damage. SILICON: Silicon dust may cause irritation.

## Eye Contact - Chronic Exposure

CARBON: Repeated or prolonged exposure may cause mechanical irritation. IRON: Repeated and prolonged contact may cause conjunctivitis and other effects reported in acute exposure. MANGANESE: Fumes may cause conjunctivitis. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): Effects depend on concentration and duration of exposure. Repeated or prolonged contact with corrosive substances may result in conjunctivitis or effects as in acute exposure. SILICON: No data available.

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## Ingestion - Acute Exposure

CARBON: Extremely large doses may produce gastrointestinal disturbances. IRON: There are no reports available on poisoning from metallic iron, which is poorly absorbed. The principal manifestations of poisoning with iron compounds are vomiting, diarrhea, and circulatory collapse. MANGANESE: Extremely large doses may cause gastrointestinal irritation and possibly systemic toxicity. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): May cause warmth or burning pain in the throat and abdomen with intense thirst. Nausea, vomiting, hematemesis, garlic odor, belching lumenescence, or fuming of breath or excreta, bloody diarrhea, oliguria, anuria, and cardiac arrhythmia may occur within 1-2 hours. Death in coma from peripheral vascular collapse or cardiac arrest may occur in 24-48 hours, or symptoms may subside and recur in several days more intensely. Delayed symptoms may include anemia, uremia, nausea, bloody diarrhea, loss of mucosal surfaces of the stomach and intestines, marked thirst, skin eruption, increased blood coagulation time, restlessness, depression, high pulse rate, delirium, fall in blood pressure, cyanosis, hypoglycemia, infiltration of the vital organs, kidney damage with oliguria and albumin casts in the urine, or anuria, pitting edema, liver damage with enlargement, tenderness, jaundice, petechial hemorrhages into the skin, membranes and viscera, tetany (hypocalcemic), prostration and shock. Phosphorus may cause abnormal electrocardiograms, abnormal urinary and serum calcium and phosphate levels, proteinuria, aminoaciduria and elevated serum sgpt levels. It may cause damage to peripheral nerves with weakness of the lower extremities, abnormal limb sensations, visual and hearing disturbances, irritability and loss of coordination. Onset of cheyne-stokes respiration followed by convulsions, coma, and death due to cardiac or hepatic failure may occur up to 3 weeks after poisoning. In experimental animals, swelling of the glia, cortical neuron degeneration, and focal perivascular neuronal degeneration have been reported. SILICON: May cause digestive tract irritation.

## Ingestion - Chronic Exposure

CARBON: No data available. IRON: Repeated or prolonged exposure may cause hemosiderosis or hemochromatosis. MANGANESE: Manganese poisoning has been reported in persons drinking manganese-contaminated well water. Prolonged ingestion of manganese in water has produced lethargy, edema, and decreased movement of the eyes and eyelids. PHOSPHORUS, WHITE (PHOSPHORUS, YELLOW): Repeated or prolonged exposure may cause a dull red appearance of the oral mucosa, ulcerative stomatitis, salivation, toothache, bony necrosis, especially of the mandible and maxilla with loosening and loss of teeth, spontaneous fractures, anorexia, weight loss, weakness, cachexia, anemia, bronchitis, and jaundice. A few milligrams may cause acute hepatic damage with renal pathologic changes, hepatic encephalopathy, or death due to acute yellow atrophy of the liver. Hepatic degeneration leading to cirrhosis, severe kidney hemorrhage and changes in blood chemistry have been produced in experimental animals. Reproductive effects have been reported in animals. SILICON: No data available.

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## \*\*\* Section 12 - ECOLOGICAL INFORMATION \*\*\*

### Component Analysis - Aquatic Toxicity

#### IRON (7439-89-6)

**Fish:** 96 Hr LC50 Morone saxatilis: 13.6 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 0.56 mg/L [semi-static]

#### PHOSPHORUS, WHITE (7723-14-0)

**Fish:** 96 Hr LC50 Lepomis macrochirus: 0.0017-0.0035 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 0.001-0.004 mg/L [static]; 96 Hr LC50 Brachydanio rerio: >100 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 0.015-0.032 mg/L [static]; 96 Hr LC50 Pimephales promelas: 0.011-0.028 mg/L [static]

**Invertebrate:** 48 Hr EC50 Daphnia magna: 0.03 mg/L; 48 Hr EC50 Daphnia magna: 0.025 - 0.037 mg/L [Static]

#### SULFUR (7704-34-9)

**Fish:** 96 Hr LC50 Brachydanio rerio: 866 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: <14 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >180 mg/L [static]

## \*\*\* Section 13 - DISPOSAL CONSIDERATIONS \*\*\*

### Disposal Methods

Dispose in accordance with all applicable regulations.

### Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## \*\*\* Section 14 - TRANSPORT INFORMATION \*\*\*

### US DOT Information

No Classification assigned.

### Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS	
PHOSPHORUS, WHITE	7723-14-0	DOT regulated severe marine pollutant; DOT regulated severe marine pollutant; DOT regulated severe marine pollutant; DOT regulated severe marine pollutant

### TDG Information

No Classification assigned.

### Component Marine Pollutants (TDG)

This material contains one or more of the following chemicals required by CA TDG to be identified as marine pollutants.

**PHOSPHORUS, WHITE (7723-14-0)**

### ADR Information

No Classification assigned.

### ADR Tunnel Code Restrictions

This list contains tunnel restriction codes for those substances and/or chemically related entries which are found in chapter 3.2 of the ADR regulations.

**PHOSPHORUS, WHITE (7723-14-0)**

**CARBON (7440-44-0)**

**SILICON (7440-21-3)**

**SULFUR (7704-34-9)**

### RID Information

No Classification assigned.

### IATA Information

No Classification assigned.

### ICAO Information

No Classification assigned.

### IMDG Information

No Classification assigned.

### Component Marine Pollutants (IMDG)

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

This material contains one or more of the following chemicals required by IMDG to be identified as marine pollutants.

**PHOSPHORUS, WHITE (7723-14-0)**

IMDG regulated marine pollutant

## \*\*\* Section 15 - REGULATORY INFORMATION \*\*\*

### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

**PHOSPHORUS, WHITE (7723-14-0)**

**SARA 302:** 100 lb TPQ (This material is a reactive solid. The TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)

**SARA 313:** 1.0 % de minimis concentration (yellow or white)

**CERCLA:** 1 lb final RQ; 0.454 kg final RQ

**SARA 304:** 1 lb EPCRA RQ

**MANGANESE (7439-96-5)**

**SARA 313:** 1.0 % de minimis concentration

**SARA Section 311/312 (40 CFR 370 Subparts B and C)**

Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: No

### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
IRON	7439-89-6	Yes	No	No	No	No	No
PHOSPHORUS, WHITE	7723-14-0	Yes	Yes	Yes	Yes	Yes	Yes
MANGANESE	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
CARBON (related to: Graphite, synthetic)	7440-44-0	No	Yes <sup>1</sup>	No	No	Yes <sup>1</sup>	Yes
SILICON	7440-21-3	No	Yes	Yes	Yes	Yes	Yes
SULFUR	7704-34-9	Yes	Yes	No	Yes	Yes	Yes

Not regulated under California Proposition 65

### Canada

#### Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

**PHOSPHORUS, WHITE (7723-14-0)**

1 %

**MANGANESE (7439-96-5)**

1 %

### Germany Water Classification

**IRON (7439-89-6)**

Number 748, not considered hazardous to water

**MANGANESE (7439-96-5)**

Number 1443, not considered hazardous to water

**CARBON (7440-44-0)**

Number 801, not considered hazardous to water

**SULFUR (7704-34-9)**

Number 842, not considered hazardous to water

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

SULFUR (7704-34-9)

Number 753, hazard class 1 - low hazard to waters

## EU Marking and Labelling

This material is not classified

## Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
IRON	7439-89-6	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
PHOSPHORUS, WHITE	7723-14-0	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
MANGANESE	7439-96-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
CARBON	7440-44-0	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
SILICON	7440-21-3	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
SULFUR	7704-34-9	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

## \*\*\* Section 16 - OTHER INFORMATION \*\*\*

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

### Full text of R phrases in Section 3

- R11 Highly flammable.
- R16 Explosive when mixed with oxidising substances.
- R36 Irritating to eyes.
- R37 Irritating to respiratory system.
- R38 Irritating to skin.
- R52 Harmful to aquatic organisms.
- R53 May cause long-term adverse effects in the aquatic environment.

# Safety Data Sheet

Material Name: FERRO PHOSPHOROUS

SDS ID: 00202766

## Other Information

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End of Sheet 00202766