



**FERRO**  
ELECTRONIC MATERIALS®

## MATERIAL SAFETY DATA SHEET

### ZIROX 180

Ferro Product ID 51443A

Revision No. 4

October, 1999

### CHEMICAL PRODUCT/COMPANY IDENTIFICATION

#### Material Identification

Ferro Electronic Materials Product Identification Number: 51443A

#### Tradenames and Synonyms

ZrO<sub>2</sub>

ZIRCONIUM OXIDE

ZIRCONIA

ZIRCONIC ANHYDRIDE

#### Company Identification

MANUFACTURER

**FERRO ELECTRONIC MATERIALS**

4511 Hyde Park Blvd.

Niagara Falls, NY 14305-0067

#### PHONE NUMBERS

Product Information 1-716-278-9400

Transport Emergency **CHEMTREC:**

1-800-424-9300

Safety/Health Information 1-716-278-9423

## COMPOSITION/INFORMATION ON INGREDIENTS

### Components

<u>Material</u>	<u>CAS Number</u>	<u>%</u>
ZIRCONIUM DIOXIDE	1314-23-4	98
SILICON DIOXIDE (AMORPHOUS)	7631-86-9	1.5
TITANIUM, FERROUS, ALUMINUM, AND CALCIUM OXIDES	-----	<1.0

## HAZARDS IDENTIFICATION

### Potential Health Effects

SUMMARY OF RISKS: ACUTE/CHRONIC EFFECTS: Lung granulomas have been reported in zirconium dioxide workers. Tests on animals indicate that it delivers a very low order of toxicity on inhalation. As with any dust, inhalation of excessive amounts of this dust may cause irritation of the nose and respiratory tract. Use of ointments containing zirconium dioxide are reported to cause skin lesions (granulomas).

This product contains trace quantities (130 to 145 pCi/g) of naturally occurring uranium and thorium. Overexposure by inhalation of respirable dusts containing these radioactive elements may cause lung cancer.

This product also contains amorphous fumed silica. Overexposure by inhalation of respirable dusts may cause respiratory problems including pneumoconiosis.

### Target Organs

None reported.

### Primary Entry Route

This product can enter the body by ingestion or inhalation.

### Carcinogenicity Information

This product is not considered a known or suspected carcinogen by the NTP, IARC, or OSHA.

## FIRST AID MEASURES

### Inhalation

If inhaled, immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

### Skin Contact

Thoroughly wash affected area with mild soap and water. Get medical help.

### Eye Contact

Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Get medical help.

### Ingestion

Give victim a large quantity of water to drink. Never give anything by mouth to someone who is unconscious or convulsing. Get medical help.

## FIRE FIGHTING MEASURES

### Flammable Properties

Will not burn.

### Extinguishing Media

As appropriate for combustibles in area.

### Fire Fighting Instructions

None.

## ACCIDENTAL RELEASE MEASURES

### Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

### Accidental Release Measures

Sweep up spillage. Avoid creation of respirable airborne dust.

## HANDLING AND STORAGE

### Handling (Personnel)

Practice good housekeeping to prevent accumulation of zirconium dioxide dust. Avoid excessive dusting during cleanup and handling. Wash hands thoroughly after handling this material and before eating, drinking, or smoking. Use it with

adequate ventilation. Avoid its prolonged or repeated contact with skin. Do not take this material out of your work area or to your home on your clothing or equipment.

### **Storage**

Store this product in closed containers. Protect containers from physical damage.

## **EXPOSURE CONTROLS/PERSONAL PROTECTION**

### **Engineering Controls**

Use sufficient ventilation to keep employee exposure below recommended limits. When using this product as an abrasive blast agent in confined areas, airborne dust levels should be controlled by physical enclosure of the abrasive blasting operation. The enclosure should be exhaust ventilated in accordance with 29 CFR 1910.94 Ventilation (a) Abrasive Blasting.

### **Personal Protective Equipment**

#### **Eye/Face Protection**

Wear safety glasses with side shields.

#### **Respirators**

A NIOSH/MSHA approved air-purifying respirator with a high efficiency filter approved for radionuclides may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

OSHA requires a continuous flow air-line supplied respirator with hood for protection in abrasive blasting operations. Refer to OSHA Standards 29 CFR 1910.94.

#### **Protective Clothing**

Wear impervious clothing, such as gloves, apron, boots, or whole bodysuit as appropriate.

### **Workplace Considerations**

#### **Ventilation**

Use local exhaust ventilation where dust is generated to maintain airborne levels below the TLV.

### Safety Stations

Make eyewash stations, washing facilities, and safety showers available in areas of use and handling.

### Contaminated Equipment

Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Particles can adhere to contact lenses and cause corneal damage.

### Exposure Guidelines

PEL (OSHA)	Particulates (Not Otherwise Regulated)
	15 mg/m <sup>3</sup> , 8 Hr. TWA, total dust
	5 mg/m <sup>3</sup> , 8 Hr. TWA, respirable dust

## PHYSICAL AND CHEMICAL PROPERTIES

### Physical Data

Vapor Pressure	Not volatile
Vapor Density	Not volatile
Melting Point	2,715 C (4,919 F)
Evaporation Rate	Not found
Solubility in Water	Insoluble
Odor	Odorless
Form	Powder or grain
Color	White to light yellow
Specific Gravity	5.6-5.9

### Stability and Reactivity

#### Chemical Stability

Stable.

#### Incompatibility with Other Materials

None reasonably foreseeable.

#### Decomposition

Decomposition will not occur.

#### Polymerization

Polymerization will not occur.

## DISPOSAL CONSIDERATIONS

### Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state, and local regulations. If approved, may be transferred to a land disposal site.

### NOTE:

Many states have, or are developing, new regulations for disposal of waste containing Naturally Occurring Radioactive Materials (NORM) above background levels. Consult and comply with current regulations.

## TRANSPORTATION INFORMATION

### Shipping Information

ZIRCONIA IS NOT REGULATED AS A HAZARDOUS MATERIAL BY DOT OR IMO.

### Shipping Containers

Bags  
Semi-bulk Bags  
Fiber Drums

## REGULATORY INFORMATION

EPA TSCA Status: All ingredients in this product are listed on the EPA Toxic Substances Control Act Chemical Substance Inventory

### U.S. Federal Regulations

TSCA Inventory Status: Reported/Included.

### TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : No  
Chronic : Yes  
Fire : No  
Reactivity : No  
Pressure : No

### LISTS:

SARA Extremely Hazardous Substance - No  
CERCLA Hazardous Material - No  
SARA Toxic Chemical - No

CANADIAN WHMIS CLASSIFICATIONS:  
D-2A; D-2B

"This material is exempt from NRC regulations for source material per 10 CFR 40, since it falls under the definition of unprocessed material containing less than 0.05% uranium or thorium."

## OTHER INFORMATION

### NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health	0
Flammability	0
Reactivity	0

Personal protection rating to be supplied by user depending on use conditions.

### Additional Information

### WARNING!

This product contains radionuclides known to the State of California to cause cancer.

**DO NOT INGEST. AVOID THE CREATION AND INHALATION OF RESPIRABLE AIRBORNE PARTICLES. SEE MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.**

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. Component percentages are typical based on historical production performance. Ferro Electronic Materials does not make any expressed or implied warranty that future production will continue to possess these typical properties.

### Responsibility for MSDS

Ferro Electronic Materials  
4511 Hyde Park Blvd.  
Niagara Falls, NY 14305-0067

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Manager of Health, Safety, & Environmental  
Telephone (716) 278-9423      Fax (716) 285-3026

**End of MSDS**