



MATERIAL SAFETY DATA SHEET

Ferro Corporation
Performance Pigments & Colors
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Emergency telephone number
CHEMTREC: 1-800-424-9300
CHEMTREC (outside U.S.): 1-703-527-3887
Phone Number: 1-724-223-5900

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

Product Name: C-790EZ GRAY 100 LB **Date of Preparation:** 12/20/2011
LDRUM
Chemical Family: Inorganic Pigment
CAS-No.: Mixture
Product Code: 1026626

2. HAZARDS IDENTIFICATION

Emergency Overview

Warning

May cause respiratory tract, eye and skin irritation. May cause allergic skin or respiratory reaction. Avoid dust formation. May cause physical irritation. Contains crystalline silica which causes silicosis and lung cancer. Cancer hazard from inhalation (Nickel compounds).

| | | <u>HMIS</u> | <u>NFPA 704</u> |
|------------------------|----------|-------------|-----------------|
| Color: | Gray | 2* | 2 |
| Physical state: | Powder | 0 | 0 |
| Odor: | Odorless | 0 | 0 |
| | | E | |

Potential Health Effects

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

Eye contact: May cause slight irritation.

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

Inhalation: May cause irritation of respiratory tract. May cause severe allergic respiratory reaction.

Ingestion: May irritate digestive tract.

Chronic toxicity: No known effects under normal conditions of use. Excessive inhalation of dust may cause chemical pneumonitis, cyanosis, and pulmonary edema. Respirable crystalline silica has been classified as a Group I (sufficient evidence in humans for carcinogenicity) carcinogenic by IARC and is listed by NTP as a substance which may reasonably be anticipated to be a carcinogen. Long term inhalation causes lung damage (silicosis and cancer). Suspect cancer hazard (cobalt compound). Inhalation of nickel and nickel compounds is associated with nasal and lung damage and cancer.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Components | CAS Number | Weight % |
|-----------------------------|-------------|------------|
| Zirconium Silicate | 14940-68-2 | 70 - 80% |
| Cobalt nickel grey pariclas | 68186-89-0 | 20 - 30% |
| Quartz silica | 14808-60-7 | 1 - 5% |
| Silica, fumed | 112945-52-5 | 0.1 - 0.5% |

This product contains trace quantities of naturally occurring radioactive uranium, thorium and radium (<0.02% total). Overexposure by inhalation to respirable dusts containing uranium, thorium and radium may cause cancer, however, observance of the OSHA limit for respirable dusts of 5 mg/m³ will ensure the use of this product to be well below the regulatory limits established for these components.

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): Non combustible

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product itself does not burn.

Hazardous decomposition products: Metal fumes.

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: Avoid dust formation. Evacuate area of all unnecessary personnel. Avoid contact with skin, eyes and clothing. Use personal protective equipment.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Wear personal protective equipment. Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly. Dispose of promptly.

7. HANDLING AND STORAGE

Handling:

Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation. Avoid contact with skin, eyes and clothing. Wash hands thoroughly before eating, drinking or smoking. Use only in well-ventilated areas. In case of insufficient ventilation, wear suitable respiratory equipment. Provide appropriate exhaust ventilation at places where dust is formed.

Storage:

Keep container tightly closed in a dry and well-ventilated place. Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Minimize exposure in accordance with good hygiene practice.

| Components | OSHA | ACGIH |
|--------------------|----------------------------|--|
| Zirconium Silicate | 5 mg/m ³ TWA Zr | 10 mg/m ³ STEL Zr 5 mg/m ³ TWA Zr |
| Quartz silica | Listed | 0.025 mg/m ³ TWA respirable fraction |

| | |
|----------------------------------|---|
| Engineering measures: | Provide appropriate exhaust ventilation at machinery and at places where dust or fumes can be generated. Ensure adequate ventilation, especially in confined areas. |
| Eye protection: | Safety glasses with side-shields. |
| Skin and body protection: | Lightweight protective clothing. |
| Hand protection: | Impervious gloves. |
| Respiratory protection: | Use NIOSH approved respirator when ventilation is inadequate. NIOSH-approved respirators should be worn where engineering controls and work practices do not reduce exposure to or below the PEL. |
| Hygiene measures: | Wash hands before breaks and at the end of workday. Contaminated work clothing should not be allowed out of the workplace. Ensure that eyewash stations and safety showers are proximal to the work-station location. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|-------------------------------------|-------------------|-------------------------------------|-------------------|
| Color: | Gray | Physical state: | Powder |
| Odor: | Odorless | Molecular weight: | No data available |
| Boiling point/range (°C): | No data available | pH: | No data available |
| Melting point/range (°C): | No data available | Specific gravity (Water =1): | No data available |
| Vapor density: | Non-volatile | Vapor pressure : | No data available |
| Evaporation Rate (Water = 1) | Non-volatile | Water solubility: | Insoluble |
| VOC content (%) | 0 | | |

10. STABILITY AND REACTIVITY

| | |
|--|------------------------------|
| Stability: | Stable at normal conditions. |
| Polymerization | Will not occur. |
| Hazardous decomposition products: | None under normal use. |
| Materials to avoid: | None known. |
| Conditions to avoid | None known. |

11. TOXICOLOGICAL INFORMATION

| | |
|------------------------------|--|
| Acute toxicity: | Information given is based on data on the components and the toxicology of similar products |
| Chronic Toxicity: | Contains crystalline silica which causes silicosis and lung cancer. |
| Carcinogenic Effects: | Respirable crystalline silica has been classified as a Group I (sufficient evidence in humans for carcinogenicity) carcinogenic by IARC and is listed by NTP as a substance which may reasonably be anticipated to be a carcinogen. Crystalline silica is also a known cause of silicosis, a non-cancerous lung disease caused by excessive exposure to crystalline silica. IARC has identified Cobalt and Cobalt compounds as "possibly carcinogenic" as a group. IARC made the overall evaluation that "Nickel compounds are carcinogenic to humans (Group 1)" on the basis of the combined results of epidemiological studies, carcinogenicity studies in experimental animals, and several types of other relevant data. |
| Target Organ Effects: | Silica: Respiratory system. Cobalt compound: Skin, respiratory system. Nickel compounds: Lungs, skin. |

Component information, if any, is listed below

Cobalt nickel grey paricase

| | |
|-----------------------------------|------------------------|
| OSHA - Select Carcinogens: | Present |
| NTP: | Known Human Carcinogen |

Cobalt nickel grey paricilase

IARC - Group 1: Listed

IARC - Group 2B: Listed

Quartz silica

LD50s and LC50s: Oral LD50 (Rat) = 500 mg/kg

OSHA - Select Carcinogens: Present

NTP: Known Human Carcinogen

IARC - Group 1: Listed

Silica, fumed

LD50s and LC50s: Oral LD50 (Rat) = 3160 mg/kg

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

| Components | U.S. - CERCLA/SARA - Section 313 - Emission Reporting |
|-----------------------------|---|
| Nickel compounds (20 - 30%) | 0.1 % de minimis concentration |
| Cobalt compounds (5 - 10%) | 0.1 % 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: |
|------------------|----------------|
| Nickel compounds | Listed (PARTK) |
| Cobalt compounds | Listed (PARTK) |

| Components | NJRTK: |
|------------------|----------------|
| Quartz silica | Listed (NJRTK) |
| Nickel compounds | Listed (NJRTK) |
| Cobalt compounds | Listed (NJRTK) |

| Components | State Regulation - CA Prop65 |
|--------------------|------------------------------|
| Quartz silica | Carcinogen |
| Zirconium Silicate | Radionuclides |
| Nickel compounds | Carcinogen |
| Cobalt compounds | Carcinogen |

Canadian WHMIS

WHMIS hazard class: D2B Toxic materials D2A Very toxic materials

Canadian Ingredient Disclosure List (IDL):

| Components | Canada - WHMIS Ingredient Disclosure: |
|--------------------|---------------------------------------|
| Quartz silica | 1 |
| Zirconium Silicate | 1 |
| Nickel compounds | 0.1 |
| Cobalt compounds | 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): One or more ingredient(s) are not on the ENCS list.
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