



# MATERIAL SAFETY DATA SHEET

Ferro Corporation  
 Performance Pigments & Colors  
 251 West Wylie Ave.  
 Washington, PA 15301 USA

**Emergency telephone number**  
 CHEMTREC: 1-800-424-9300  
 CHEMTREC (outside U.S.): 1-703-527-3887  
 Phone Number: 1-724-223-5900  
 CHEMTREC Australia (Sydney) +(61) - 290372994

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

**Product Name:** GS LA LMC-6044P Black Aerosol,Glass/Ceram **Date of Preparation:** 03/04/2013  
**CAS-No.:** Mixture  
**Recommended use:** Industrial Use Only  
**Product Code:** 1379493

## 2. HAZARDS IDENTIFICATION

### Emergency Overview

#### Warning

Highly flammable liquid and vapor. Vapors may travel to a source and flash back. Vapors may cause flash fire or explosion. May cause respiratory tract, eye and skin irritation. May cause allergic skin or respiratory reaction. May be harmful if absorbed through skin. May be harmful by inhalation. May be harmful if swallowed. Contains titanium dioxide which may cause lung damage including cancer. Contains crystalline silica which causes silicosis and lung cancer.

		HMIS	NFPA 704
<b>Color:</b> Black	<b>Health:</b>	2*	2
<b>Physical state:</b> Liquid	<b>Flammability:</b>	3	3
<b>Odor:</b> Alcohol-like	<b>Physical Hazard:</b>	0	0
	<b>PPE:</b>	X	

### Potential Health Effects

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

**Eye contact:** Contact with eyes may cause irritation.

**Skin contact:** Prolonged skin contact may cause skin irritation. May be harmful if absorbed through skin. May cause allergic skin reaction.

**Inhalation:** May cause irritation of respiratory tract. May be harmful by inhalation. May cause severe allergic respiratory reaction.

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

**Chronic toxicity:** Chronic inhalation exposure can cause lung damage. Titanium Dioxide is listed by IARC as possibly carcinogenic to humans (Group 2B) based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. Long term inhalation causes lung damage (silicosis and cancer). 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. Suspect cancer hazard (cobalt compound).

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %
Petroleum gases, liquefied, sweetened	68476-86-8	20 - 30%
Proprietary complex inorganic compound		20 - 30%
2-Butoxyethanol	111-76-2	10 - 20%
1-Methoxy-2-propanol acetate	108-65-6	5 - 10%
Frit*		20 - 30% (May contain - see below)

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Titanium Dioxide	13463-67-7	<0.5%
Quartz silica	14808-60-7	<0.5%

The specific chemical identities are being withheld as a trade secret (29CFR1910.1200).

\* Frit, with CAS # [65997-18-4], is a mixture of inorganic chemical substances produced by rapidly quenching a molten, complex combination of materials, confining the chemical substances thus manufactured as non-migratory components of glassy solid flakes or granules. These components are present as part of the Frit.

### 4. FIRST AID MEASURES

<b>Eye contact:</b>	Rinse immediately with plenty of water, also under the eyelids. Get medical attention if irritation develops.
<b>Skin contact:</b>	Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If symptoms persist, call a physician.
<b>Inhalation:</b>	Exposures require specialized first aid with contact and medical follow-up.
<b>Ingestion:</b>	Drink plenty of water. Do not induce vomiting. Consult a physician if necessary.
<b>Notes to physician:</b>	Treat symptomatically

### 5. FIRE-FIGHTING MEASURES

**Flash point (°C):** 14( 57°F) Method: Estimated

<b>Suitable extinguishing media:</b>	Use dry chemical, CO2, water spray or "alcohol" foam.
<b>Hazardous decomposition products under fire conditions:</b>	Carbon oxides. Heavy metal compounds.
<b>Special protective equipment for firefighters:</b>	As in any fire, wear self-contained breathing apparatus (pressure-demand, NIOSH approved or equivalent) and full protective gear
<b>Unusual hazards:</b>	Flammable. Vapors may form explosive mixture with air. Vapors are heavier than air and may spread along floors. Vapor may travel considerable distance to source of ignition and flash back.

### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions:</b>	Flammable liquid. Remove all sources of ignition. Remove all non-essential people from the affected area. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.
<b>Environmental precautions:</b>	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.
<b>Methods for cleaning up:</b>	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

## 7. HANDLING AND STORAGE

### Handling:

Keep away from open flames, hot surfaces and sources of ignition. 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:

Keep containers tightly closed in a cool, well-ventilated place. Keep product and empty container away from heat and sources of ignition.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure limits

Minimize exposure in accordance with good hygiene practice.

Components	OSHA	ACGIH
Frit	0.5 mg/m <sup>3</sup> TWA Sb 5 mg/m <sup>3</sup> TWA Zr 5 mg/m <sup>3</sup> Ceiling Mn	0.5 mg/m <sup>3</sup> TWA Sb 5 mg/m <sup>3</sup> TWA Zr 0.2 mg/m <sup>3</sup> TWA Mn
2-Butoxyethanol	50 ppm TWA 240 mg/m <sup>3</sup> TWA prevent or reduce skin absorption	20 ppm TWA
Titanium Dioxide	15 mg/m <sup>3</sup> TWA total dust	10 mg/m <sup>3</sup> TWA
Quartz silica	0.1 mg/m <sup>3</sup> TWA (respirable dust)	0.025 mg/m <sup>3</sup> TWA respirable 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.

### Skin and body protection:

Lightweight protective clothing. Keep working clothes separately. Remove and wash contaminated clothing before re-use.

### Hand protection:

Impervious gloves. Follow the recommendations given by the manufacturer of protective gloves.

### Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. NIOSH-approved respirators should be worn where engineering controls and work practices do not reduce exposure to or below the PEL. Seek professional advice prior to respirator selection and use.

### Hygiene measures:

Wash hands before breaks and at the end of workday.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Color:</b>	Black	<b>Physical state:</b>	Liquid
<b>Odor:</b>	Alcohol-like	<b>Molecular weight:</b>	No data available
<b>Boiling point/range (°C):</b>	No data available	<b>pH:</b>	No data available
<b>Melting point/range (°C):</b>	No data available	<b>Specific gravity (Water =1):</b>	No data available
<b>Vapor density:</b>	Non-volatile	<b>Vapor pressure :</b>	No data available
<b>Evaporation Rate (Water = 1)</b>	Non-volatile	<b>Water solubility:</b>	Insoluble
<b>VOC content</b>	0		

## 10. STABILITY AND REACTIVITY

### Stability:

Stable at normal conditions

### Polymerization

Will not occur.

### Hazardous decomposition products:

Thermal decomposition can lead to release of irritating gases and vapors. Carbon oxides. Heavy metal compounds.

**Materials to avoid:** None known

**Conditions to avoid** Remove all sources of ignition.

**11. TOXICOLOGICAL INFORMATION**

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

**Chronic Toxicity:** In lifetime inhalation studies of rats, airborne respirable size titanium dioxide particles have been shown to cause lung tumors at concentrations associated with substantial particle lung burdens and consequential pulmonary overload and inflammation. However, other laboratory animals such as mice and hamsters did not develop lung tumors under similar testing with titanium dioxide. Human epidemiology studies do not suggest an association between occupational exposure to titanium dioxide and risk for cancer. 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.

**Components**

2-Butoxyethanol	<b>NIOSH - Pocket Guide - Target Organs</b> liver kidneys lymphoid system skin blood eyes CNS respiratory system hematopoietic system
Chromium	eyes respiratory system skin
Cobalt	respiratory system skin
Titanium Dioxide	respiratory system
Quartz silica	eyes respiratory system

**Component information, if any, is listed below**

**Frit**

<b>LD50s and LC50s:</b>	Oral LD50 (Rat) = 2000 mg/kg
<b>NTP:</b>	Known Human Carcinogen
<b>NTPS. Carcinogen:</b>	Reasonably Anticipated To Be A Human Carcinogen
<b>IARC - Group 1:</b>	Listed
<b>IARC - Group 2A:</b>	Listed
<b>IARC - Group 2B:</b>	Listed

**Proprietary complex inorganic compound**

**IARC - Group 2B:** Listed

**2-Butoxyethanol**

**LD50s and LC50s:** Inhalation LC50 (Rat) = 2.21 mg/L  
 Dermal LD50 (Rabbit) = 220 mg/kg  
 Dermal LD50 (Rat) = 2270 mg/kg  
 Inhalation LC50 (Rat) = 450 ppm  
 Oral LD50 (Rat) = 470 mg/kg

**1-Methoxy-2-propanol acetate**

**LD50s and LC50s:** Oral LD50 (Rat) = 8532 mg/kg  
 Dermal LD50 (Rabbit) = 5000 mg/kg

**Titanium Dioxide**

**LD50s and LC50s:** Oral LD50 (Rat) = 10000 mg/kg  
**OSHA - Select Carcinogens:** Present  
**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

## 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.

### 2-Butoxyethanol

Ecotoxicity - Fish Species Data:  
96 h LC50 (Lepomis macrochirus) = 1490 mg/L static  
96 h LC50 (Lepomis macrochirus) = 2950 mg/L  
Ecotoxicity - Water Flea Data:  
24 h EC50 (Daphnia magna) = 1698 - 1940 mg/L  
48 h EC50 (Daphnia magna) = 1000 mg/L

### 1-Methoxy-2-propanol acetate

Ecotoxicity - Fish Species Data:  
96 h LC50 (Pimephales promelas) = 161 mg/L static  
Ecotoxicity - Water Flea Data:  
48 h EC50 (Daphnia magna) = 500 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:** UN1950  
**Proper shipping name:** Aerosols  
**Hazard Class:** 2.1  
**ERG No:** 126

### TDG (Canada)

**UN-No** UN1950  
**Proper Shipping Name** Aerosols  
**Hazard Class** 2.1

### IMDG

**UN-No** UN1950  
**Proper Shipping Name** Aerosols  
**Hazard Class** 2.1  
**Ems:** F-D, S-U  
**Description** UN1950, Aerosols, 2.1

### IATA

**UN-No** UN1950  
**Proper shipping name** Aerosols, flammable  
**Hazard Class** 2.1  
**ERG Code** 10P  
**Shipping Description** UN1950, Aerosols, flammable, 2.1

**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
Chromium (1 - 5%)	1.0 % de minimis concentration
Cobalt (1 - 5%)	0.1 % de minimis concentration
Cobalt inorganic compounds (20 - 30%)	0.1 % de minimis concentration
Chromium (III) Compound (20 - 30%)	1.0 % de minimis concentration
Zinc compounds (5 - 10%)	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:
Chromium	Listed (PARTK)
Cobalt	Listed (PARTK)
Cobalt inorganic compounds	Listed
Chromium (III) Compound	Listed
Zinc compounds	Listed (PARTK)

Components	NJRTK:
Toluene	1866
2-Butoxyethanol	Listed (NJRTK)
Ethanolamine	0835
Chromium (III) compounds	0432
Cobalt compounds	0520
Quartz silica	1660
Zinc compounds	2021

Components	State Regulation - CA Prop65
Toluene	Developmental Toxicity Reproductive Female
Cobalt	Carcinogen
Titanium Dioxide	Carcinogen
Quartz silica	Carcinogen

**Canadian WHMIS**

**WHMIS hazard class:** D2B Toxic materials D2A Very toxic materials B2 Flammable liquid

**Canadian Ingredient Disclosure List (IDL):**

Components	Canada - WHMIS Ingredient Disclosure:
2-Butoxyethanol	1
Cobalt compounds	0.1
Chromium (III) Compound	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):** One or more ingredient(s) are not on the ENCS list.
- Korea (KECL):** Listed.
- China (IECS):** Listed.
- Australia (AICS):** One or more ingredient(s) are not on the AICS list.
- New Zealand (NZIoC):** One or more ingredient(s) are not on the NZIoC list.

## 16. OTHER INFORMATION

### For Industrial Use Only

**Prepared by:** Ferro Technical Center

**Disclaimer:** 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**