

Performance Pigments & Colors

MATERIAL SAFETY DATA SHEET

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

Product Name: GS LA LMM-14 Black Laser Marking **Date of Preparation:** 03/01/2013
CAS-No.: Mixture
Recommended use: Industrial Use Only
Product Code: 1320589

2. HAZARDS IDENTIFICATION

Emergency Overview

Warning

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

| | | <u>HMIS</u> | <u>NFPA 704</u> |
|-------------------------------|---|-------------|-----------------|
| Color: Black | Health: | 2* | 2 |
| Physical state: Liquid | Flammability: | 1 | 1 |
| Odor: Characteristic | Physical Hazard: 0 0 PPE: B | | |

Potential Health Effects

Eye contact: Contact with eyes may cause irritation.

Skin contact: Prolonged skin contact may cause skin irritation. May cause allergic skin reaction.

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

Ingestion: May irritate digestive tract.

Chronic toxicity: Chronic inhalation exposure can cause lung damage. 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. Inhalation of nickel and nickel compounds is associated with nasal and lung damage and cancer.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Components | CAS Number | Weight % |
|---------------------------------------|-------------|----------|
| Molybdenum compound | | 20 - 30% |
| Quartz silica | 14808-60-7 | 5 - 10% |
| Nickel iron chromite, black, spinel | 71631-15-7 | 1 - 5% |
| Mica | 12001-26-2 | 1 - 5% |
| Silica, amorphous, fumed, cryst.-free | 112945-52-5 | 1 - 5% |

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

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(>200°F) Method: PMCC |
| Suitable extinguishing media: | Use dry chemical, CO ₂ , water spray or "alcohol" foam. |
| Hazardous decomposition products under fire conditions: | Carbon oxides. Heavy metal compounds. |
| 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: | 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. |
| 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:
 Keep in a dry, cool and well-ventilated place

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Minimize exposure in accordance with good hygiene practice.

| Components | OSHA | ACGIH |
|---------------|---|---|
| Quartz silica | 0.1 mg/m ³ TWA (respirable dust) | 0.025 mg/m ³ TWA respirable fraction |
| Mica | 20 mppcf TWA | 3 mg/m ³ 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

| | | | |
|-------------------------------------|-------------------|-------------------------------------|-------------------|
| Color: | Black | Physical state: | Liquid |
| Odor: | Characteristic | 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: | >1.00 | Vapor pressure : | No data available |
| Evaporation Rate (Water = 1) | <1.00 | Water solubility: | Insoluble |
| VOC content | 70% | | |

10. STABILITY AND REACTIVITY

| | |
|--|---|
| Stability: | Stable at normal conditions |
| Polymerization | None under normal processing |
| Hazardous decomposition products: | Thermal decomposition can lead to release of irritating gases and vapors. Carbon oxides. Heavy metal compounds. |
| Materials to avoid: | Nitric acid. |
| 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 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. |
| Components | NIOSH - Pocket Guide - Target Organs |
| Quartz silica | eyes respiratory system |
| Mica | respiratory system |
| Nickel | lungs skin nasal cavities |
| Chromium | eyes respiratory system skin |
| Component information, if any, is listed below | |

Molybdenum compound

LD50s and LC50s: Oral LD50 (Rat) = 2689 mg/kg
 Dermal LD50 (Rat) = 2 g/kg
 Inhalation LC50 (Rat) = 5840 mg/m³

Quartz silica

LD50s and LC50s: Oral LD50 (Rat) = 500 mg/kg
OSHA - Select Present
Carcinogens: Known Human Carcinogen Listed
NTP:
IARC - Group 1: Present

Nickel iron chromite,

black, spinel Known Human Carcinogen
OSHA - Select Listed
Carcinogens:
NTP:
IARC - Group 1:

Silica, amorphous, fumed, cryst.-free

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.) Not Regulated

Proper shipping name:

TDG (Canada)

Proper Shipping Name Not Regulated

IMDG

Proper Shipping Name Not Regulated

IATA

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 (1 - 5%) | 0.1 % de minimis concentration |
| Chromium (III) compounds (1 - 5%) | 1.0 % de minimis concentration |
| Molybdenum compound (20 - 30%) | 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: |
|--------------------------|------------------------------|
| Nickel compounds | Listed (PARTK) |
| Chromium (III) compounds | Listed (PARTK) |
| Molybdenum compound | Listed (PARTK) |
| Components | NJRTK: |
| Nickel compounds | 1341 |
| Chromium (III) compounds | 0432 |
| Quartz silica | 1660 |
| Components | State Regulation - CA Prop65 |
| Nickel compounds | Carcinogen |
| Quartz silica | Carcinogen |

Canadian WHMIS

WHMIS hazard class: D2A Very toxic materials

Canadian Ingredient Disclosure List (IDL):

| Components | Canada - WHMIS Ingredient Disclosure: |
|--------------------------|---------------------------------------|
| Nickel compounds | 0.1 |
| Chromium (III) compounds | 0.1 |
| Quartz silica | 1 |
| Mica | 1 |
| Molybdenum 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): | 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

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