

SAFETY DATA SHEET

Date Printed: 05/10/2024

Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Identifier: Manganese Black Ferrite Spinel

Product Code: MN-FEOSP-01-P

CAS Number: 68186-94-7

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351
Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency overview Health injuries are not known or expected under normal use.

Potential health effects

Routes of exposure Inhalation. Ingestion.

Eyes This product may cause slight irritation to the eyes.

Skin This product may cause irritation to the skin.

Inhalation Inhalation of dusts may cause respiratory irritation.

Ingestion Health injuries are not known or expected under normal use.

Signs and symptoms Product dust may be irritating to eyes, skin and respiratory system.

Potential environmental effects Ecological injuries are not known or expected under normal use.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components CAS # Percent

MANGANESE FERRITE BLACK SPINEL 68186-94-7 100

Composition comments This product is the result of high temperature calcination of the component substances. Due to its

unique crystalline structure the properties of this finished pigment do not necessarily reflect the properties of the component metals or oxides.

SECTION 4. FIRST AID MEASURES

First aid procedures

Eye contact Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention

if irritation develops or persists.

Skin contact Wash the skin immediately with soap and water. Get medical attention if irritation develops or persists.

Inhalation Remove to fresh air. If the affected person is not breathing, apply artificial respiration. If breathing

is difficult, give oxygen. Call a physician if symptoms develop or persist.

Ingestion Never give anything by mouth to an unconscious person. If swallowed, do NOT induce vomiting.

Give several glasses of water to dilute contents of stomach and call a physician.

General advice If you feel unwell, seek medical advice (show the label where possible). Show this safety data

sheet to the doctor in attendance. Where there is a potential for eye exposure to this substance, an eye wash fountain should be provided within the immediate work area for emergency use.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties The product is not flammable.

Extinguishing media

Suitable extinguishing media

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable extinguishing media

N/A

Protection of firefighters

Specific hazards arising from the chemical

None known.

Protective equipment and precautions for firefighters

Use protective equipment appropriate for surrounding materials.

Fire fighting

equipment/instructions

Not a fire hazard.

Specific methods Not established.

General fire hazards This product is not flammable.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust from the spilled material.

Environmental precautions Do not discharge into drains, water courses or onto the ground.

Methods for containment Collect material into appropriate containers for reuse or disposal. Material

may also be flushed with water to a wastewater treatment system.
Methods for cleaning up Avoid dust formation. Clean up promptly by scoop or vacuum. Flush the area with water.
Other information Clean up in accordance with all applicable regulations.

SECTION 7. HANDLING AND STORAGE

Handling Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.
Keep formation of airborne dusts to a minimum. When using, do not eat, drink or smoke. Wash hands thoroughly after handling.
Storage Room temperature - normal conditions. Use care in handling/storage. Store in closed original container in a dry place. Keep in properly labelled containers.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits
ACGIH

| Components | Type | Value | % Metal | Form |
|---|------|------------------------|----------|----------------------|
| COPPER DUSTS AND MISTS | TLV | 1 mg/m ³ | 25 - 35% | (as Cu) |
| MANGANESE COMPOUNDS | TLV | 0.2 mg/m ³ | 32 - 42% | (as Mn) |
| MANGANESE FERRITE BLACK SPINEL (68186-94-7) | TWA | 0.1 mg/m ³ | 100% | Inhalable fraction. |
| | | 0.02 mg/m ³ | 100% | Respirable fraction. |

U.S. - OSHA

| Components | Type | Value | % Metal | Form |
|---|---------|---------------------|----------|-----------------|
| COPPER DUSTS AND MISTS | PEL | 1 mg/m ³ | 25 - 35% | (as Cu) |
| MANGANESE COMPOUNDS | PEL | 5 mg/m ³ | 32 - 42% | (as Mn) Ceiling |
| MANGANESE FERRITE BLACK SPINEL (68186-94-7) | Ceiling | 5 mg/m ³ | 100% | |

US. NIOSH: Pocket Guide to Chemical Hazards

Components Type Value % Metal Form
MANGANESE FERRITE BLACK SPINEL (68186-94-7) TWA 1 mg/m³ 100% Fume.
Engineering controls Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal protective equipment
Eye / face protection Safety glasses with side-shields.
Skin protection Normal work clothing (long sleeved shirts and long pants) is recommended.
Respiratory protection Use a particulate filter respirator for particulate concentrations exceeding the Occupational

Exposure Limit. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection. MSHA/NIOSH respirators approved for dusts TC-21C or NIOSH approved cartridges for Non-oil aerosols, N95, N99, N100 (42 CFR 84). If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

General hygiene considerations

Use personal protective equipment as required. Handle in accordance with good industrial hygiene

and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Powder.

Physical state Solid.

Form Powder.

Color black

Odor None.

Odor threshold Not available.

pH 6.1

Vapor pressure N/A

Vapor density N/A

Boiling point N/A

Melting point/Freezing point N/A

Solubility (water) Negligible

Specific gravity 5.3

Relative density Not available.

Flash point N/A

Flammability limits in air,

upper, % by volume

N/A

Flammability limits in air,

lower, % by volume

N/A

Auto-ignition temperature N/A

Evaporation rate N/A

Other data

Decomposition

temperature

N/A

Flammability (solid, gas) N/A

Loose Packing Density 6.9 lb/gal Shepherd Color Test Method 194

SECTION 10. STABILITY AND REACTIVITY

Chemical stability Stable under normal temperature conditions and recommended use.

Conditions to avoid None known.

Incompatible materials None known.

Hazardous decomposition

products

No hazardous decomposition products are known.

Possibility of hazardous

reactions

Hazardous polymerization does not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological data

Product Species

BLACK 20F944

LD50 Rat

Inhalation

Acute

Not Tested

LD50 Rat

Oral

Not Tested

Components Species Test Results

MANGANESE FERRITE BLACK SPINEL (CAS 68186-94-7)

LD50 Rat

Inhalation

Acute

Not Tested

LD50 Rat

Oral

Not Tested

Sensitization No data available.

Acute effects May be slightly irritating to skin and eyes. May cause respiratory irritation.

Component analysis - LD50 Refer to LD 50 information above.

Local effects Product dust may be irritating to eyes, skin and respiratory system.

Chronic effects No data available.

Subchronic effects No data available.

Skin corrosion/irritation Contact with skin may cause irritation.

Epidemiology No epidemiological data is available for this product.

Mutagenicity No data available to indicate product or any components present at greater than 0.1% are

mutagenic or genotoxic.

Reproductive effects No data available.

Teratogenicity No data available.

Symptoms and target organs Product dust may be irritating to eyes, skin and respiratory system.

Human experience Product dust may be irritating to eyes, skin and respiratory system.

Further information This product is the result of high temperature calcination of the component substances. Due to its

unique crystalline structure the properties of this finished material do not necessarily reflect the properties of the component metals or oxides.

Repeated overexposure to this compound may cause eye, skin and respiratory tract irritation.

Some compounds of the metals used in the manufacturing of this material have demonstrated various toxic properties. However, there is no evidence that this material has these toxic characteristics.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Not expected to be harmful to aquatic organisms.

Environmental effects Not classified as an environmental hazard.

Aquatic toxicity This material is not expected to be harmful to aquatic life.

Persistence and degradability The product is not expected to be biodegradable.

Bioaccumulation /

Accumulation

The product does not contain any substances expected to be bioaccumulating.

Mobility in environmental media

The product is insoluble in water.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal instructions All wastes must be handled in accordance with local, state and federal regulations.

Waste from residues / unused products

Dispose of in accordance with local regulations.

Contaminated packaging Since emptied containers retain product residue, follow label warnings even after container is emptied.

SECTION 14. TRANSPORT INFORMATION

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

SECTION 15. REGULATORY INFORMATION

US federal regulations This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

All components are on the U.S. EPA TSCA Inventory List.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

THIS PRODUCT CONTAINS A CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OR TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372. THIS INFORMATION MUST BE INCLUDED IN ALL MSDS THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.

100% MANGANESE COMPOUND

100% COPPER COMPOUND

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical

Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

Section 302 extremely
hazardous substance

No

SARA 311/312 Hazardous
chemical

Yes

Inventory status

Country(s) or region Inventory name On inventory (yes/no)*

Australia Australian Inventory of Chemical Substances (AICS) Yes

Canada Domestic Substances List (DSL) Yes

Canada Non-Domestic Substances List (NDSL) No

China Inventory of Existing Chemical Substances in China (IECSC) Yes

Country(s) or region Inventory name On inventory (yes/no)*

Europe European Inventory of Existing Commercial Chemical
Substances (EINECS) Yes

Europe European List of Notified Chemical Substances (ELINCS) No

Japan Inventory of Existing and New Chemical Substances (ENCS) Yes

Korea Existing Chemicals List (ECL) Yes

New Zealand New Zealand Inventory Yes

Philippines Philippine Inventory of Chemicals and Chemical Substances Yes
(PICCS)

United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements
administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on
the inventory administered by the governing
country(s).

US state regulations

US - New Jersey RTK - Substances: Listed substance

MANGANESE FERRITE BLACK SPINEL (CAS
68186-94-7)

Listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. Pennsylvania RTK - Hazardous Substances

Not regulated.

US. Rhode Island RTK

MANGANESE FERRITE BLACK SPINEL (CAS 68186-94-7)

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.