# FabSHIELD® FE 81

Safety Data Sheet

According to OSHA's Hazardous Communication Standard (HCS) 29 CFR § 1910.1200.
Issue date: 1/8/2026 Revision date: 1/8/2026 Supersedes: 1/8/2026 Version: 1.0

## SECTION 1: Identification

### 1.1. Identification

| | | |
|---|---|---|
| Product form | : | Mixture |
| Trade name | : | FabSHIELD® FE 81 |
| Product code | : | S2271 |
| Type of product | | Flux cored tubular wire for arc welding |

### 1.2. Recommended use and restrictions on use

| | | |
|---|---|---|
| Use of the substance/mixture | : | Arc Welding |
| Recommended use | : | Use only as indicated for welding operations |
| Restrictions on use | : | Use only as indicated for welding operations |

### 1.3. Supplier

**Manufacturer**
Hobart Brothers LLC
101 Trade Square East
Troy, OH 45373
United States of America
T +1 (937)-332-5188
sds@hobartbrothers.com - www.hobartbrothers.com

**Canadian address**
Hobart Brothers LLC
2570 North Talbot Road
Old Castle, Ontario N0R1L0
Canada
T +1 (519) 737-3000

### 1.4. Emergency telephone number

| | | |
|---|---|---|
| Emergency number | : | +1 (800) 424-9300 |

## SECTION 2: Hazard(s) identification

### 2.1. Classification of the substance or mixture

**GHS US classification**

The product described in Section 1 is not classified as hazardous according to applicable GHS hazard classification criteria as required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200), Canada's Hazardous Products Regulations and Mexico's Harmonized System for Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

### 2.2. GHS Label elements, including precautionary statements

**GHS US labeling**

No labeling applicable

### 2.3. Other hazards which do not result in classification

WARNING! - Avoid breathing welding fumes and gases, they may be dangerous to your health. Always use adequate ventilation. Always use appropriate personal protective equipment;
PRIMARY ROUTES OF ENTRY: Respiratory System, Eyes and/or Skin.
ARC RAYS: The welding arc can injure eyes and burn skin.
ELECTRIC SHOCK: Arc welding and associated processes can kill, see Section 8.
FUMES AND GASES: Can be dangerous to your health.
Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Most fume ingredients are present as complex oxides and compounds and not as pure metals. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 3 of this Safety Data Sheet, plus those from the base metal and coating, etc. Monitor for the component materials identified in the list in Section 3.
Fumes from the use of this product may contain complex oxides or compounds of the elements and molecules from the components found in Section 3. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Other conditions that also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities). One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1, F1.3, and Z49.1, available from the American Welding Society (www.aws.org) 8669 NW 36 Street, #130, Miami, Florida 33166-6672, Phone: 800-443-9353 or 305-443-9353.

### 2.4. Unknown acute toxicity (GHS US)

No additional information available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Name | Product identifier | % | GHS US classification |
|---|---|---|---|
| IRON | CAS-No.: 7439-89-6 | 70 – 90 | Aquatic Acute 2, H401<br>Aquatic Chronic 2, H411 |
| IRON OXIDE (Fe2O3) | CAS-No.: 1309-37-1 | 4 – 12 | Not classified |
| ALUMINUM | CAS-No.: 7429-90-5 | 2 – 5 | Flam. Sol. 1, H228<br>Water-react. 2, H261 |
| MAGNESIUM | CAS-No.: 7439-95-4 | ≤ 2 | Flam. Sol. 1, H228<br>Pyr. Sol. 1, H250<br>Self-heat. 1, H251<br>Water-react. 2, H261<br>Acute Tox. 4 (Inhalation:dust,mist), H332<br>Aquatic Acute 3, H402<br>Aquatic Chronic 3, H412 |
| LITHIUM CARBONATE | CAS-No.: 554-13-2 | ≤ 2 | Acute Tox. 4 (Oral), H302<br>Eye Irrit. 2, H319<br>Aquatic Acute 3, H402<br>Aquatic Chronic 3, H412 |

| Name | Product identifier | % | GHS US classification |
|---|---|---|---|
| LITHIUM OXIDE | CAS-No.: 12057-24-8 | ≤ 2 | Acute Tox. 3 (Inhalation), H331<br>Skin Corr. 1B, H314<br>Eye Dam. 1, H318 |
| MAGNESIUM OXIDE | CAS-No.: 1309-48-4 | ≤ 2 | Not classified |
| MANGANESE OXIDE | CAS-No.: 1344-43-0 | ≤ 2 | Aquatic Acute 2, H401<br>Aquatic Chronic 2, H411 |
| MANGANESE | CAS-No.: 7439-96-5 | ≤ 1 | Aquatic Acute 2, H401<br>Aquatic Chronic 2, H411 |
| QUARTZ | CAS-No.: 14808-60-7 | ≤ 1 | Carc. 1A, H350<br>STOT RE 1, H372 |
| CERIUM OXIDE | CAS-No.: 1306-38-3 | ≤ 1 | Aquatic Acute 3, H402<br>Aquatic Chronic 3, H412 |
| NICKEL | CAS-No.: 7440-02-0 | ≤ 1 | Skin Sens. 1, H317<br>Carc. 2, H351<br>STOT RE 1, H372 |
| SILICON | CAS-No.: 7440-21-3 | ≤ 0.5 | Not classified |
| ZIRCONIUM | CAS-No.: 7440-67-7 | ≤ 0.5 | Pyr. Sol. 1, H250<br>Self-heat. 2, H252<br>Water-react. 1, H260 |
| TITANIUM | CAS-No.: 7440-32-6 | ≤ 0.5 | Flam. Sol. 1, H228 |

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : To avoid electric shock, disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration. If no detectable pulse, begin Cardiopulmonary Resuscitation (CPR). Call emergency physician to the scene of the accident.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, provide fresh air and contact physician immediately. If breathing has stopped, perform artificial respiration until medical assistance arrives.

First-aid measures after skin contact : Remove contaminated clothing and wash the skin thoroughly with soap and water. If symptoms develop, seek medical attention at once. . Wash skin with plenty of water.

First-aid measures after eye contact : Dust of the product or fume generated in use of product should be flushed from the eyes with copious amounts of clean, tepid water until victim is transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once. Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Not an expected route of exposure. Do not eat, drink, or smoke while welding; wash hands thoroughly before performing these activities. If symptoms develop, seek medical attention at once. Call a poison center/doctor/physician if you feel unwell.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure. Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard. Refer to section 11 for more information.

| | | |
|---|---|---|
| Symptoms/effects after skin contact | : | None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing. |
| Symptoms/effects after eye contact | : | None under normal conditions. Dust from this product may cause eye irritation. |
| Symptoms/effects after ingestion | : | None under normal conditions. |

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

| | | |
|---|---|---|
| Suitable extinguishing media | : | This product is essentially nonflammable until welded; therefore, use a suitable extinguishing agent for a surrounding fire. Water spray. Dry powder. Foam. |
| Unsuitable extinguishing media | : | None known. |

### 5.2. Specific hazards arising from the chemical

| | | |
|---|---|---|
| Fire hazard | : | As shipped, this product is nonflammable, non-explosive and essentially nonhazardous until welded. |
| Explosion hazard | : | No direct explosion hazard. |
| Hazardous decomposition products in case of fire | : | Welding arcs and sparks can ignite combustibles and flammable products. Unused welding consumables may remain hot for a period of time after completion of a welding process. See American National Standard Institute (ANSI) Z49.1 and National Fire Protection Association (NFPA) 51B for further general safety information on the use and handling of welding consumables and associated procedures. |

### 5.3. Special protective equipment and precautions for fire-fighters

| | | |
|---|---|---|
| Firefighting instructions | : | Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection. |
| Protection during firefighting | : | Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

| | | |
|---|---|---|
| General measures | : | If airborne dust and/or fume is present, use adequate engineering controls to prevent overexposure. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material-damage. |

#### 6.1.1. For non-emergency personnel

| | | |
|---|---|---|
| Protective equipment | : | Wear recommended personal protective equipment, ensure adequate ventilation, and ensure air handling systems are operational. |
| Emergency procedures | : | Ventilate spillage area. |

#### 6.1.2. For emergency responders

| | | |
|---|---|---|
| Protective equipment | : | Do not attempt to take action without suitable protective equipment. For further information, refer to Section 8. |
| Emergency procedures | : | Evacuate unnecessary personnel. |

### 6.2. Environmental precautions

Avoid release to the environment. Should not be released into the environment. Prevent from reaching drains, sewer or waterway.

### 6.3. Methods and material for containment and cleaning up

| | | |
|---|---|---|
| For containment | : | Absorb with sand or other inert absorbent. |

| | | |
|---|---|---|
| Methods for cleaning up | : | Mechanically recover the product. Sweep or scoop up solid material while minimizing dust generation. |
| Other information | : | Wear protective eye wear, gloves and clothing when handling these materials. Dispose of contents/container in accordance with local regulations. Dispose of materials or solid residues at an authorized site. |

### 6.4. Reference to other sections

Refer to Section 8 and Section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

| | | |
|---|---|---|
| Additional hazards when processed | : | Not expected to present a significant hazard under anticipated conditions of normal use. |
| Precautions for safe handling | : | Ensure good ventilation of the work station.<br>Wear personal protective equipment.<br>Use appropriate personal protective equipment (see Section 8). Use only with adequate ventilation. Prevent generation of combustible dust in air mixtures. Avoid breathing dust. Do not eat, drink, smoke or use personal products when handling chemical substances. Wear gloves when handling welding consumables. Wash thoroughly after handling. Avoid breathing welding fumes and gases, they may be dangerous to your health. |
| Hygiene measures | : | Do not eat, drink or smoke when using this product. Always wash hands after handling the product. |

### 7.2. Conditions for safe storage, including any incompatibilities

| | | |
|---|---|---|
| Technical measures | : | Keep in a cool, well-ventilated place away from heat. |
| Storage conditions | : | Keep container tightly sealed, keep container dry, store in a cool, well-ventilated area, keep separate from acids and strong bases to prevent possible chemical reactions. |
| Packaging materials | : | Always store product in original container. If original container is damaged or destroyed, store in container of same material as original container. |

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| MANGANESE (7439-96-5) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| Local name | Manganese, elemental and inorganic compounds, as Mn |
| ACGIH® TLV® TWA | 0.02 mg/m³ (Respirable fraction)<br>0.1 mg/m³ (Inhalable fraction) |
| Remark (ACGIH®) | TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2025 |
| **USA - OSHA - Occupational Exposure Limits** | |
| Local name | Manganese |
| OSHA PEL C | 5 mg/m³ compounds (as Mn)<br>5 mg/m³ fume (as Mn) |
| Regulatory reference (US-OSHA) | OSHA Annotated Table Z-1 |

| SILICON (7440-21-3) | |
|---|---|
| **USA - OSHA - Occupational Exposure Limits** | |
| Local name | Silicon |
| OSHA PEL TWA | 15 mg/m³ (Total dust)<br>5 mg/m³ (Respirable fraction) |
| Regulatory reference (US-OSHA) | OSHA Annotated Table Z-1 |

| QUARTZ (14808-60-7) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH® TLV® TWA | 0.025 mg/m³ (Respirable fraction) |

| ALUMINUM (7429-90-5) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH® TLV® TWA | 1 mg/m³ (Respirable fraction) |

| MAGNESIUM OXIDE (1309-48-4) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH® TLV® TWA | 10 mg/m³ (Inhalable fraction) |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| Local name | Zirconium and compounds, as Zr |
| ACGIH® TLV® TWA | 5 mg/m³ |
| ACGIH® TLV® STEL | 10 mg/m³ |
| Remark (ACGIH®) | TLV® Basis: Resp tract irr. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2025 |
| **USA - OSHA - Occupational Exposure Limits** | |
| Local name | Zirconium compounds (as Zr) |
| OSHA PEL TWA | 5 mg/m³ |
| Regulatory reference (US-OSHA) | OSHA Annotated Table Z-1 |

| IRON OXIDE (Fe2O3) (1309-37-1) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH® TLV® TWA | 5 mg/m³ (Respirable fraction) |

| MANGANESE OXIDE (1344-43-0) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH® TLV® TWA | 0.02 mg/m³ (Respirable fraction)<br>0.1 mg/m³ (Inhalable fraction) |

| NICKEL (7440-02-0) | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH® TLV® TWA | 1.5 mg/m³ (Inhalable fraction) |

## 8.2. Appropriate engineering controls

Appropriate engineering controls : Use enough ventilation or local exhaust at the arc or both to keep the fumes and gases below exposure limits in Section 8.1, in the worker's breathing zone and the general area. Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

## 8.3. Individual protection measures/Personal protective equipment

**Personal protective equipment:**

Wear recommended personal protective equipment.

**Materials for protective clothing:**

Wear hand, head and body protection that help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum, this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection as well as dark non-synthetic clothing.

**Hand protection:**

Protective gloves

**Eye protection:**

Wear helmet or use face shield with filter lens for open arc welding processes. See ANSI Z49.1. As a rule of thumb, begin with Shade Number 14. Adjust if needed by selecting the next lighter or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others from the weld arc flash. Safety glasses

| Type | Field of application | Characteristics |
|---|---|---|
| Welding mask, Full face respirator | | |

**Skin and body protection:**

Wear suitable protective clothing. Wear hand, head and body protection that help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum, this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection as well as dark non-synthetic clothing.

**Respiratory protection:**

Use NIOSH-approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the regulatory limits. Train the welder to keep his head out of the fumes.

**Personal protective equipment symbol(s):**

# SECTION 9: Physical and chemical properties

## 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state | : | Solid |
| Color | : | Metallic grey black |
| Odor | : | Not applicable |
| Odor threshold | : | No data available |
| pH | : | No data available |
| Melting point | : | No data available |
| Freezing point | : | Not applicable |
| Boiling point | : | No data available |

| | | |
|---|---|---|
| Flash point | : | Not applicable |
| Relative evaporation rate (butyl acetate=1) | : | No data available |
| Flammability (solid, gas) | : | Non flammable. |
| Vapor pressure | : | No data available |
| Relative vapor density at 20°C | : | No data available |
| Relative density | : | No data available |
| Solubility | : | No data available |
| Partition coefficient n-octanol/water (Log Pow) | : | No data available |
| Auto-ignition temperature | : | Not applicable |
| Decomposition temperature | : | No data available |
| Viscosity, kinematic | : | Not applicable |
| Viscosity, dynamic | : | No data available |
| Explosion limits | : | Not applicable |
| Explosive properties | : | No data available |
| Oxidizing properties | : | No data available |

### 9.2. Other information

Additional information : Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, non-explosive and essentially nonhazardous until welded.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Contact with acids or strong bases may cause generation of gas.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

GENERAL: This welding consumable is solid and nonvolatile as shipped. This product is only intended for use per the welding parameters it was designed for. When this product is used for welding, hazardous fumes may be created. Other factors to consider include the base metal, base metal preparation and base metal coatings. All of these factors can contribute to the fume and gases generated during welding. The amount of fume varies with the welding parameters.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions. See Section 7.

### 10.5. Incompatible materials

Strong acids, strong bases, strong oxidizing agents, and strong reducing agents.

### 10.6. Hazardous decomposition products

Hazardous decomposition products when this product is used in a welding process would include those from the volatilization, reaction, or oxidation of the components in Section 3 and those of the base metal, including plating or coatings like galvanizing. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures that exceed regulatory limits. Always use enough exhaust ventilation to maintain exposure below regulatory limits. Refer to the following sources for important additional information: American National Standard Institute (ANSI) Z49.1; Safety in Welding, Cutting and Allied Processes published by the American Welding Society, 8669 NW 36 Street, # 130, Miami, Florida 33166-6672, Phone: 800-443-9353 or 305-443-9353; and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington, DC 2040.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Exposure to welding fumes and gases during use of product can result in eye, nose and throat irritation, dizziness, and nausea. Workers in the area who experience these symptoms should leave the area immediately, seek fresh air and obtain medical attention. See Section 4 of this SDS for detailed information.

Acute toxicity (inhalation) : Inhalation of welding fumes and gases can be dangerous to your health. Welding fumes can be difficult to classify due to the variety of potential base materials, coatings, air contaminants and welding processes. Always use adequate ventilation. Always use appropriate personal protective equipment. Short-term (acute) overexposure effects - welding fumes, may result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.
Manganese, Manganese Oxide - metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure.

Chronic toxicity (Inhalation) : Long-term (chronic) overexposed effects - welding fumes, excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or siderosis. Studies have shown that there is sufficient evidence of ocular melanoma in welders.
Manganese, manganese oxide – Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and, less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurologic problems. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait, see Section 8.1.

| IRON (7439-89-6) | |
|---|---|
| LD50 oral rat | 98600 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male, Experimental value, Oral, 14 - 28 day(s)) |
| LC50 Inhalation - Rat | > 0.25 mg/l (6 h, Rat, Male, Experimental value, Inhalation (dust), 28 day(s)) |
| ATE US (oral) | 98600 mg/kg body weight |

| MANGANESE (7439-96-5) | |
|---|---|
| LD50 oral rat | > 2000 mg/kg body weight (OECD 420: Acute Oral toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 14 day(s)) |
| LC50 Inhalation - Rat | > 5.14 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (dust), 14 day(s)) |
| LC50 Inhalation - Rat (Dust/Mist) | > 5.14 mg/l Source: ECHA |

| CARBON MONOXIDE (630-08-0) | |
|---|---|
| ATE US (gases) | 700 ppmV/4h |

| SILICON (7440-21-3) | |
|---|---|
| LD50 oral rat | > 5000 mg/kg body weight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Read-across, Oral, 14 day(s)) |
| LD50 dermal rabbit | > 5000 mg/kg body weight (24 h, Rabbit, Read-across, Dermal, 14 day(s)) |

| MAGNESIUM (7439-95-4) | |
|---|---|
| LD50 oral rat | > 2000 mg/kg body weight Animal: rat, Animal sex: female, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method) |
| LD50 dermal rat | > 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity) |
| LC50 Inhalation - Rat | > 2.1 mg/l/4h Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation)), Guideline: EPA OPPTS 870.1300 (Acute inhalation toxicity) |
| ATE US (dust, mist) | 1.5 mg/l/4h |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| LD50 oral rat | > 5000 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Active element, Oral, 14 day(s)) |
| LD50 dermal rat | > 2000 mg/kg body weight (Equivalent or similar to OECD 402, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s)) |
| LC50 Inhalation - Rat | > 5.05 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Active element, Inhalation (aerosol), 15 day(s)) |
| LC50 Inhalation - Rat (Dust/Mist) | 5.05 mg/l Source: IUCLID |
| ATE US (dust, mist) | 5.05 mg/l/4h |

| LITHIUM CARBONATE (554-13-2) | |
|---|---|
| LD50 oral rat | 525 mg/kg (Rat, Experimental value, Oral) |
| LD50 oral | 753 mg/kg body weight Animal: mouse |
| LD50 dermal rabbit | > 3000 mg/kg (Equivalent or similar to OECD 402, 24 h, Rabbit, Male / female, Experimental value, Dermal, 14 day(s)) |
| LC50 Inhalation - Rat | > 2 mg/l (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Experimental value, Inhalation (dust), 15 day(s)) |
| LC50 Inhalation - Rat (Dust/Mist) | > 2.17 mg/l Source: International Uniform ChemicaL Information Database |
| ATE US (oral) | 525 mg/kg body weight |

| LITHIUM OXIDE (12057-24-8) | |
|---|---|
| LC50 Inhalation - Rat | 0.94 mg/l air (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Experimental value, Inhalation (dust), 14 day(s)) |
| ATE US (gases) | 700 ppmV/4h |
| ATE US (vapors) | 0.94 mg/l/4h |
| ATE US (dust, mist) | 0.94 mg/l/4h |

| MAGNESIUM OXIDE (1309-48-4) | |
|---|---|
| LD50 oral rat | > 5000 mg/kg (Rat, Literature study, Oral) |
| LD50 dermal rabbit | > 2000 mg/kg body weight (Rabbit, Literature study, Dermal) |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| LD50 oral rat | > 5000 mg/kg Source: ECHA |
| LC50 Inhalation - Rat | > 4.3 mg/l air Animal: rat, Guideline: OECD Guideline 436 (Acute Inhalation Toxicity: Acute Toxic Class Method), Guideline: EPA OPPTS 870.1300 (Acute inhalation toxicity) |
| LC50 Inhalation - Rat (Dust/Mist) | > 4.3 mg/l Source: ECHA |

| IRON OXIDE (Fe2O3) (1309-37-1) | |
|---|---|
| LD50 oral rat | > 10000 mg/kg body weight (Rat, Male, Experimental value, Oral) |
| LC50 Inhalation - Rat | 5.05 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (aerosol), 14 day(s)) |
| ATE US (vapors) | 5.05 mg/l/4h |
| ATE US (dust, mist) | 5.05 mg/l/4h |

| MANGANESE OXIDE (1344-43-0) | |
|---|---|
| LD50 oral rat | > 2000 mg/kg body weight (OECD 420: Acute Oral toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 14 day(s)) |
| LC50 Inhalation - Rat | > 5.35 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (dust), 14 day(s)) |
| LC50 Inhalation - Rat (Dust/Mist) | > 5.35 mg/l Source: ECHA |

| NICKEL (7440-02-0) | |
|---|---|
| LD50 oral rat | > 9000 mg/kg (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 15 day(s)) |

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified.

| Welding fumes | |
|---|---|
| IARC group | 1 - Carcinogenic to humans |

| Ultraviolet radiation | |
|---|---|
| IARC group | 1 - Carcinogenic to humans |

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

| CARBON MONOXIDE (630-08-0) | |
|---|---|
| STOT-repeated exposure | Causes damage to organs through prolonged or repeated exposure. |

| SILICON (7440-21-3) | |
|---|---|
| NOAEL (oral,rat,90 days) | > 5000 mg/kg body weight Animal: rat, Animal sex: male |

| QUARTZ (14808-60-7) | |
|---|---|
| STOT-repeated exposure | Causes damage to organs through prolonged or repeated exposure. |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| NOAEL (oral,rat,90 days) | ≥ 1000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test) |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| NOAEL (oral,rat,90 days) | 3156 – 7085 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents) |

| NICKEL (7440-02-0) | |
|---|---|
| STOT-repeated exposure | Causes damage to organs through prolonged or repeated exposure. |

Aspiration hazard : Not classified

Viscosity, kinematic : Not applicable

Likely routes of exposure : Inhalation. Skin and eye contact.

Symptoms/effects after inhalation : Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure. Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard. Refer to section 11 for more information.

Symptoms/effects after skin contact : None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/effects after eye contact : None under normal conditions. Dust from this product may cause eye irritation.

Symptoms/effects after ingestion : None under normal conditions.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Welding processes can release fumes directly to the environment. Welding wire can degrade if left outside and unprotected. Residues from welding consumables and processes can degrade and accumulate in the soil and groundwater.

| IRON (7439-89-6) | |
|---|---|
| LC50 - Fish [1] | 8.65 mg/l Source: ECHA |
| LC50 - Other aquatic organisms [1] | 106.3 mg/l Source: ECHA |
| EC50 - Crustacea [1] | > 100 mg/l Test organisms (species): Daphnia magna |
| EC50 - Crustacea [2] | > 10000 mg/l Test organisms (species): Daphnia magna |
| EC50 72h - Algae [1] | 18 mg/l Source: ECHA |

| MANGANESE (7439-96-5) | |
|---|---|
| LC50 - Fish [1] | > 3.6 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value) |
| EC50 - Crustacea [1] | > 1.6 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value) |
| EC50 72h - Algae [1] | 4.5 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) |
| EC50 72h - Algae [2] | 2.8 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) |
| ErC50 algae | 4.5 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value) |
| NOEC (chronic) | 1.7 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '8 d' |

| SILICON (7440-21-3) | |
|---|---|
| LC50 - Fish [1] | > 100 mg/l (Pisces, Read-across) |
| EC50 72h - Algae [1] | ≈ 250 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum) |
| ErC50 algae | 250 mg/l (Equivalent or similar to OECD 201, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Read-across) |

| MAGNESIUM (7439-95-4) | |
|---|---|
| LC50 - Fish [1] | ≈ 541 mg/l Test organisms (species): Pimephales promelas |
| LC50 - Other aquatic organisms [1] | 64.7 mg/l Source: ECOTOX |
| LC50 - Fish [2] | 569 mg/l Test organisms (species): Pimephales promelas |
| EC50 72h - Algae [1] | > 99.2 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum) |
| EC50 72h - Algae [2] | > 20 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum) |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| LC50 - Fish [1] | 77.556 mg/l Source: QSAR |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| EC50 - Crustacea [1] | > 1000 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Fresh water, Experimental value, Locomotor effect) |
| EC50 96h - Algae [1] | 53.489 mg/l Source: QSAR |
| ErC50 algae | 10.2 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Fresh water, Experimental value, Nominal concentration) |

| LITHIUM CARBONATE (554-13-2) | |
|---|---|
| LC50 - Fish [1] | 30.3 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Static system, Fresh water, Experimental value, GLP) |
| EC50 - Crustacea [1] | 33.2 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP) |
| EC50 72h - Algae [1] | > 400 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) |
| ErC50 algae | > 400 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, Nominal concentration) |
| LOEC (chronic) | 2.53 mg/l Test organisms (species): Daphnia magna Duration: '21 d' |
| NOEC (chronic) | 1.7 mg/l Test organisms (species): Daphnia magna Duration: '21 d' |
| NOEC chronic fish | 17.35 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio) Duration: '34 d' |

| LITHIUM OXIDE (12057-24-8) | |
|---|---|
| LC50 - Fish [1] | 100000000 mg/l Source: ECOSAR |
| EC50 96h - Algae [1] | 27400000 mg/l Source: ECOSAR |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| LC50 - Fish [1] | > 100 mg/l Source: ECHA |

| IRON OXIDE (Fe2O3) (1309-37-1) | |
|---|---|
| EC50 - Crustacea [1] | > 100 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP) |

| MANGANESE OXIDE (1344-43-0) | |
|---|---|
| LC50 - Fish [1] | > 100 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, GLP) |
| EC50 - Crustacea [1] | > 4 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP) |
| EC50 72h - Algae [1] | 1.1 mg/l (OECD 201: Alga, Growth Inhibition Test, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, GLP) |
| LOEC (chronic) | 4.1 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '8 d' |
| NOEC (chronic) | 1.3 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '8 d' |
| NOEC chronic fish | 0.55 mg/l Test organisms (species): Salvelinus fontinalis Duration: '65 d' |

## 12.2. Persistence and degradability

| FabSHIELD® FE 81 | |
|---|---|
| Persistence and degradability | Not rapidly degradable |

| IRON (7439-89-6) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| MANGANESE (7439-96-5) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |

| CARBON MONOXIDE (630-08-0) | |
|---|---|
| Persistence and degradability | Not rapidly degradable |

| Welding fumes | |
|---|---|
| Persistence and degradability | Not rapidly degradable |

| Ultraviolet radiation | |
|---|---|
| Persistence and degradability | Not rapidly degradable |

| SILICON (7440-21-3) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| MAGNESIUM (7439-95-4) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |

| QUARTZ (14808-60-7) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| ALUMINUM (7429-90-5) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| LITHIUM CARBONATE (554-13-2) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| LITHIUM OXIDE (12057-24-8) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| MAGNESIUM OXIDE (1309-48-4) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| Persistence and degradability | Biodegradability in soil: not applicable, Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |

| TITANIUM (7440-32-6) | |
|---|---|
| Persistence and degradability | Biodegradability in soil: not applicable, Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |

| IRON OXIDE (Fe2O3) (1309-37-1) | |
|---|---|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

| MANGANESE OXIDE (1344-43-0) | |
|---|---|
| Persistence and degradability | Biodegradability in soil: not applicable, Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |

| NICKEL (7440-02-0) | |
|---|---|
| Persistence and degradability | Biodegradability in soil: not applicable, Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

## 12.3. Bioaccumulative potential

| IRON (7439-89-6) | |
|---|---|
| Bioaccumulative potential | Not bioaccumulative. |

| MANGANESE (7439-96-5) | |
|---|---|
| Bioaccumulative potential | No bioaccumulation data available. |

| SILICON (7440-21-3) | |
|---|---|
| Bioaccumulative potential | Not bioaccumulative. |

| MAGNESIUM (7439-95-4) | |
|---|---|
| BCF - Other aquatic organisms [1] | 41 – 44 (Lamellibranchiata, Intestines) |
| Partition coefficient n-octanol/water (Log Pow) | -0.57 Source: SRC |

| QUARTZ (14808-60-7) | |
|---|---|
| Bioaccumulative potential | Not bioaccumulative. |

| ALUMINUM (7429-90-5) | |
|---|---|
| Bioaccumulative potential | No bioaccumulation data available. |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| Bioaccumulative potential | Not bioaccumulative. |

| LITHIUM CARBONATE (554-13-2) | |
|---|---|
| Partition coefficient n-octanol/water (Log Pow) | -6.19 |
| Bioaccumulative potential | Not bioaccumulative. |

| LITHIUM OXIDE (12057-24-8) | |
|---|---|
| Bioaccumulative potential | Not bioaccumulative. |

| MAGNESIUM OXIDE (1309-48-4) | |
|---|---|
| Bioaccumulative potential | Bioaccumulation: not applicable. |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| Partition coefficient n-octanol/water (Log Pow) | -0.57 Source: QSAR |
| Bioaccumulative potential | No bioaccumulation data available. |

| TITANIUM (7440-32-6) | |
|---|---|
| Bioaccumulative potential | No bioaccumulation data available. |

| IRON OXIDE (Fe2O3) (1309-37-1) | |
|---|---|
| Bioaccumulative potential | Not bioaccumulative. |

| MANGANESE OXIDE (1344-43-0) | |
|---|---|
| Bioaccumulative potential | Bioaccumulation: not applicable. |

| NICKEL (7440-02-0) | |
|---|---|
| BCF - Other aquatic organisms [1] | 8 – 45 (≤ 4 week(s), Cambarus sp., Flow-through system, Fresh water, Experimental value, Fresh weight) |
| Bioaccumulative potential | Low potential for bioaccumulation (BCF < 500). |

## 12.4. Mobility in soil

| IRON (7439-89-6) | |
|---|---|
| Surface tension | No data available in the literature |
| Ecology - soil | Low potential for mobility in soil. |

| MANGANESE (7439-96-5) | |
|---|---|
| Ecology - soil | No (test)data on mobility of the substance available. |

| SILICON (7440-21-3) | |
|---|---|
| Surface tension | No data available in the literature |
| Ecology - soil | Low potential for adsorption in soil. |

| QUARTZ (14808-60-7) | |
|---|---|
| Ecology - soil | No (test)data on mobility of the substance available. |

| ALUMINUM (7429-90-5) | |
|---|---|
| Ecology - soil | Adsorbs into the soil. |

| CERIUM OXIDE (1306-38-3) | |
|---|---|
| Ecology - soil | Adsorbs into the soil. |

| LITHIUM CARBONATE (554-13-2) | |
|---|---|
| Surface tension | No data available in the literature |
| Ecology - soil | No (test)data on mobility of the substance available. |

| LITHIUM OXIDE (12057-24-8) | |
|---|---|
| Surface tension | No data available in the literature |
| Ecology - soil | No (test)data on mobility of the substance available. |

| MAGNESIUM OXIDE (1309-48-4) | |
|---|---|
| Surface tension | No data available in the literature |
| Ecology - soil | No (test)data on mobility of the substance available. |

| ZIRCONIUM (7440-67-7) | |
|---|---|
| Ecology - soil | Adsorbs into the soil. |

| TITANIUM (7440-32-6) | |
|---|---|
| Ecology - soil | Adsorbs into the soil. |

| IRON OXIDE (Fe2O3) (1309-37-1) | |
|---|---|
| Surface tension | Not applicable (solid) |
| Ecology - soil | Adsorbs into the soil. |

| MANGANESE OXIDE (1344-43-0) | |
|---|---|
| Ecology - soil | Adsorbs into the soil. |

| NICKEL (7440-02-0) | |
|---|---|
| Surface tension | No data available in the literature |
| Ecology - soil | No (test)data on mobility of the substance available. |

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Comply with applicable regulations for solid waste disposal. Disposal must be done according to official regulations.
Additional information : Do not re-use empty containers.

## SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

| DOT | TDG | IMDG | IATA |
|---|---|---|---|
| **14.1. UN number** | | | |
| Not regulated | Not regulated | Not regulated | Not regulated |
| **14.2. Proper Shipping Name** | | | |
| Not regulated | Not regulated | Not regulated | Not regulated |
| **14.3. Transport hazard class(es)** | | | |
| Not regulated | Not regulated | Not regulated | Not regulated |
| **14.4. Packing group** | | | |
| Not regulated | Not regulated | Not regulated | Not regulated |
| **14.5. Environmental hazards** | | | |
| Not regulated | Not regulated | Not regulated | Not regulated |
| No supplementary information available | | | |
| **14.6. Special precautions for user** | | | |
| Not regulated | Not regulated | Not regulated | Not regulated |

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory, or present below threshold value, except forthe following:

| | | |
|---|---|---|
| Welding fumes | CAS-No. | % |
| Ultraviolet radiation | CAS-No. | % |
| QUARTZ | CAS-No. 14808-60-7 | ≤ 1% |

| | | |
|---|---|---|
| CERIUM OXIDE | CAS-No. 1306-38-3 | ≤ 1% |
| MAGNESIUM OXIDE | CAS-No. 1309-48-4 | ≤ 2% |
| NICKEL | CAS-No. 7440-02-0 | ≤ 1% |

| Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372. | | |
|---|---|---|
| MANGANESE | CAS-No. 7439-96-5 | ≤ 1% |
| ALUMINUM | CAS-No. 7429-90-5 | 2 – 5% |
| LITHIUM CARBONATE | CAS-No. 554-13-2 | ≤ 2% |

## 15.2. International regulations

### CANADA

**IRON (7439-89-6)**

Listed on the Canadian DSL (Domestic Substances List)

**MANGANESE (7439-96-5)**

Listed on the Canadian DSL (Domestic Substances List)

**CARBON MONOXIDE (630-08-0)**

Listed on the Canadian DSL (Domestic Substances List)

**SILICON (7440-21-3)**

Listed on the Canadian DSL (Domestic Substances List)

**MAGNESIUM (7439-95-4)**

Listed on the Canadian DSL (Domestic Substances List)

**ALUMINUM (7429-90-5)**

Listed on the Canadian DSL (Domestic Substances List)

**LITHIUM CARBONATE (554-13-2)**

Listed on the Canadian DSL (Domestic Substances List)

**LITHIUM OXIDE (12057-24-8)**

Listed on the Canadian DSL (Domestic Substances List)

**ZIRCONIUM (7440-67-7)**

Listed on the Canadian DSL (Domestic Substances List)

**TITANIUM (7440-32-6)**

Listed on the Canadian DSL (Domestic Substances List)

**IRON OXIDE (Fe2O3) (1309-37-1)**

Listed on the Canadian DSL (Domestic Substances List)

**MANGANESE OXIDE (1344-43-0)**

Listed on the Canadian DSL (Domestic Substances List)

### National regulations

**IRON (7439-89-6)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**MANGANESE (7439-96-5)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**CARBON MONOXIDE (630-08-0)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**SILICON (7440-21-3)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**MAGNESIUM (7439-95-4)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**ALUMINUM (7429-90-5)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**LITHIUM CARBONATE (554-13-2)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**ZIRCONIUM (7440-67-7)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**TITANIUM (7440-32-6)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**IRON OXIDE (Fe2O3) (1309-37-1)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**MANGANESE OXIDE (1344-43-0)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

### 15.3. US State regulations

**⚠ WARNING:** This product can expose you to chemicals, including titanium dioxide and/or chromium and/or nickel and/or antimony trioxide, which are known to the State of California to cause cancer, and to carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

## SECTION 16: Other information

According to OSHA's Hazardous Communication Standard (HCS) 29 CFR § 1910.1200.

Revision date : 1/8/2026

Other information : OSHA 29 CFR 1910, US Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000 or bookstore.gpo.gov.
USA: American National Standard Institute (ANSI) Z49.1 “Safety in Welding, Cutting and Allied Processes”, ANSI/AWS F1.1 “Method for Sampling Airborne Particles Generated by Welding and Allied Processes,” ANSI/AWS F1.6 "Guide for Estimating Welding Emissions for EPA and Ventilation Permit Reporting," ANSI/AWSF3.2M/F3.2 “Ventilation Guide for Weld Fume,” American Welding Society, 8669 NW 36 Street, #130, Miami, Florida 33166-6672, Phone: 800-443-9353 or 305-443-9353. Safety and Health Fact Sheets available from AWS at www.aws.org.
NFPA 51B “Standard for Fire Prevention During Welding, Cutting and Other Hot Work” published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.
Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists (ACGIH), 6500 Glenway Ave, Cincinnati, Ohio 45211, USA.
Canada: CSA Standard CAN/CSA-W117.2-01 “Safety in Welding, Cutting and Allied Processes”.

| **Full text of hazard classes and H-statements** | |
|---|---|
| H228 | Flammable solid |
| H250 | Catches fire spontaneously if exposed to air |
| H251 | Self-heating; may catch fire |
| H252 | Self-heating in large quantities; may catch fire |
| H260 | In contact with water releases flammable gases, which may ignite spontaneously |
| H261 | In contact with water releases flammable gas |
| H302 | Harmful if swallowed |
| H314 | Causes severe skin burns and eye damage |
| H317 | May cause an allergic skin reaction |
| H318 | Causes serious eye damage |
| H319 | Causes serious eye irritation |
| H331 | Toxic if inhaled |
| H332 | Harmful if inhaled |
| H350 | May cause cancer. |
| H351 | Suspected of causing cancer. |
| H372 | Causes damage to organs through prolonged or repeated exposure |
| H401 | Toxic to aquatic life |
| H402 | Harmful to aquatic life |
| H411 | Toxic to aquatic life with long lasting effects |
| H412 | Harmful to aquatic life with long lasting effects |

Hobart Brothers LLC strongly recommends the users of this product study this SDS, the product label information and become aware of all hazards associated with welding. Hobart Brothers LLC believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Hobart Brothers LLC does not make any expressed or implied warranty as to this information.