



SDS 4

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

Revision Date: 08/09/2016

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Version: 1.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Graphite Products with Metallic Additives

1.2. Intended Use of the Product

Electrical component

1.3. Name, Address, and Telephone of the Responsible Party

Company

St. Mary's Carbon

259 Eberl St.

St. Mary's PA, 15857

814-781-7333

www.stmaryscarbon.com

1.4. Emergency Telephone Number

Emergency Number : 814-781-7333 (Hours of Operation: 7:30 a.m.- 4:00 p.m. M-F)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US/CA Classification

Not classified

2.2. Label Elements

GHS-US/CA Labeling

No labeling applicable

2.3. Other Hazards

This product is physiologically inert in its massive form. However, user-generated dust and/or fumes may pose a physiological hazard if inhaled or ingested. Avoid inhalation of metal dusts and fumes. May cause an influenza-like illness. Avoid skin and eye contact with dusts to prevent mechanical irritation. User-generated dust is easily ignited and difficult to extinguish.

2.4. Unknown Acute Toxicity (GHS-US/CA)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

| Name | Product Identifier | % * | GHS Ingredient Classification |
|------------------------|---------------------|---------|--|
| Copper | (CAS No) 7440-50-8 | 70 - 90 | Comb. Dust Aquatic Acute 1, H400 Aquatic Chronic 3, H412 |
| Graphite | (CAS No) 7782-42-5 | 2 - 20 | Comb. Dust |
| Tin | (CAS No) 7440-31-5 | 2 - 10 | Not classified |
| Molybdenum(IV) sulfide | (CAS No) 1317-33-5 | 2 - 10 | Acute Tox. 4 (Inhalation:dust,mist), H332 |
| Quartz | (CAS No) 14808-60-7 | < 0.5 | Carc. 1A, H350 STOT SE 3, H335 STOT RE 1, H372 |

Full text of H-phrases: see section 16

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

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General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use. When symptoms occur: go into open air and ventilate suspected area.

Skin Contact: Gently wash with plenty of soap and water. Obtain medical attention if irritation develops or persists. Cool skin rapidly with cold water after contact with molten product.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention. Removal of solidified molten material from the eyes requires medical assistance.

Ingestion: Rinse mouth. Do not induce vomiting. Obtain medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: Under normal conditions of use not expected to present a significant hazard. Under milling, or physical alteration metal dusts may be produced that cause irritation of the respiratory tract, skin, and may be harmful. Molten material may release toxic, and irritating fumes.

Inhalation: During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza; Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Skin Contact: Risk of thermal burns on contact with molten product. Dust from physical alteration of this product causes skin irritation.

Eye Contact: During metal processing. Dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes.

Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: For particulates and dust: May cause cancer. Causes damage to organs through prolonged or repeated exposure. Anemia. Prolonged or repeated exposure of silica in its respirable form can cause lung disease, however the silica in this product is not airborne and therefore not bioavailable. Limited and contradictory evidence suggest that silica may be a carcinogen when inhaled for many years (IARC). Tin: Has been shown to increase incidence of sarcoma in animal tests. Chronic exposure to tin dusts and fume may result in "stannosis", a mild form of pneumoconiosis. Molybdenum: Chronic exposure to molybdenum compounds is suspected of causing cancer. Compounds are also known to cause irritation to the skin, eyes, and respiratory tract. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips and turnings.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. Do not use water when molten material is involved, contact of hot product with water will result in a violent expansion as the water turns to steam causing explosion with massive force.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Dust, chips, or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp.

Explosion Hazard: Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

Reactivity: Dust and other forms of product formed from processing might react with water producing a flammable/explosive environment, especially in confined spaces. Molten material will react violently with water.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

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Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Appropriate self-contained breathing apparatus may be required.

Hazardous Combustion Products: None known.

Other Information: Risk of dust explosion.

Reference to Other Sections

Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not breathe dust or fumes. Do not get in eyes, on skin, or on clothing. Do not handle until all safety precautions have been read and understood. Avoid generating dust. Remove ignition sources. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate area.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Avoid generation of dust during clean-up of spills. If metal is in molten form allow to cool and collect as a solid. If metal is in solid form collect for remelting purposes.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Contact competent authorities after a spill. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. Vacuum clean-up is preferred. If sweeping is required use a dust suppressant. Use only non-sparking tools.

6.4. Reference to Other Sections

See Section 8 for advice on personal protective equipment and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Dust particles generated from processing may cause an allergic reaction in sensitive individuals. Dust generated from processing may present a dust explosion hazard. Chips, fines, and dust can react with water forming explosive/flammable hydrogen gas. Molten material may react violently with water forming explosive or flammable reactions. A thermite reaction may also occur under certain conditions.

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Avoid creating or spreading dust. Keep away from heat, sparks, open flames, hot surfaces. – No smoking.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. Avoid creating or spreading dust. Use explosion-proof electrical, ventilating, and lighting equipment. Proper grounding procedures to avoid static electricity should be followed.

Storage Conditions: Keep container closed when not in use. Store in a cool, dry place. Keep away from moisture, extremely high or low temperatures, ignition sources, and incompatible materials.

Incompatible Materials: Strong acids, strong bases, strong oxidizers. When molten: water.

7.3. Specific End Use(s)

Electrical component

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), or Canadian provincial governments.

| Copper (7440-50-8) | | |
|------------------------------------|--------------------------------------|--|
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 0.1 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 1 mg/m ³ (dust and mist) 0.1 mg/m ³ (fume) |
| USA IDLH | US IDLH (mg/m ³) | 100 mg/m ³ (dust, fume and mist) |
| Alberta | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| British Colombia | OEL TWA (mg/m ³) | 1 mg/m ³ (dust and mist) 0.2 mg/m ³ (fume) |
| Manitoba | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| New Brunswick | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| Nunavut | OEL STEL (mg/m ³) | 0.6 mg/m ³ (fume) 2 mg/m ³ (dust and mist) |
| Nunavut | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Northwest Territories | OEL STEL (mg/m ³) | 3 mg/m ³ (dust and mist) 0.6 mg/m ³ (fume) |
| Northwest Territories | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Ontario | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| Québec | VEMP (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Saskatchewan | OEL STEL (mg/m ³) | 0.6 mg/m ³ (fume) 3 mg/m ³ (dust and mist) |
| Saskatchewan | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Yukon | OEL STEL (mg/m ³) | 0.2 mg/m ³ (fume) 2 mg/m ³ (dust and mist) |
| Yukon | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Graphite (7782-42-5) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 2 mg/m ³ (all forms except graphite fibers-respirable fraction) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 2.5 mg/m ³ (natural-respirable dust) |
| USA IDLH | US IDLH (mg/m ³) | 1250 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except Graphite fibres-respirable) |
| British Colombia | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except Graphite fibres-respirable) |
| Manitoba | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except Graphite fibers-respirable) |

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| | | |
|---|--------------------------------------|--|
| | | fraction) |
| New Brunswick | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except graphite fibres) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except Graphite fibers-respirable fraction) |
| Nova Scotia | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except Graphite fibers-respirable fraction) |
| Nunavut | OEL TWA (mg/m ³) | 5 mg/m ³ (synthetic-respirable mass) 10 mg/m ³ (synthetic, total mass) |
| Northwest Territories | OEL STEL (mg/m ³) | 4 mg/m ³ (natural-respirable fraction) |
| Northwest Territories | OEL TWA (mg/m ³) | 2 mg/m ³ (natural-respirable fraction) |
| Ontario | OEL TWA (mg/m ³) | 2 mg/m ³ (except Graphite fibres-respirable) |
| Prince Edward Island | OEL TWA (mg/m ³) | 2 mg/m ³ (all forms except Graphite fibers-respirable fraction) |
| Québec | VEMP (mg/m ³) | 2 mg/m ³ (containing no Asbestos and <1% Crystalline silica, except Graphite fibres-respirable dust) |
| Saskatchewan | OEL STEL (mg/m ³) | 4 mg/m ³ (natural, except Graphite fibres-respirable fraction) |
| Saskatchewan | OEL TWA (mg/m ³) | 2 mg/m ³ (natural, except Graphite fibres-respirable fraction) |
| Yukon | OEL TWA (mg/m ³) | 20 mppcf 30 mppcf (synthetic) 10 mg/m ³ (synthetic) |
| Tin (7440-31-5) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 2 mg/m ³ |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 2 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 100 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 2 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 2 mg/m ³ |
| New Brunswick | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Nova Scotia | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 4 mg/m ³ (metal) |
| Northwest Territories | OEL TWA (mg/m ³) | 2 mg/m ³ (metal) |
| Ontario | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Prince Edward Island | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Québec | VEMP (mg/m ³) | 2 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 4 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 2 mg/m ³ |
| Molybdenum(IV) sulfide (1317-33-5) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 10 mg/m ³ (inhalable fraction); 3mg/m ³ TWA (respirable fraction)(listed under Molybdenum) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 15 mg/m ³ (total dust)(listed under Molybdenum insoluble compounds) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 5000 mg/m ³ (Listed under Molybdenum) |
| Quartz (14808-60-7) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.025 mg/m ³ (respirable fraction) |
| USA ACGIH | ACGIH chemical category | A2 - Suspected Human Carcinogen |
| USA OSHA | OSHA PEL (STEL) (mg/m ³) | 250 mppcf/%SiO ₂ +5, 10mg/m ³ /%SiO ₂ +2 |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.05 mg/m ³ (respirable dust) |
| USA IDLH | US IDLH (mg/m ³) | 50 mg/m ³ (respirable dust) |
| Alberta | OEL TWA (mg/m ³) | 0.025 mg/m ³ (respirable particulate) |

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| | | |
|------------------------------------|------------------------------|---|
| British Columbia | OEL TWA (mg/m ³) | 0.025 mg/m ³ (respirable) |
| Manitoba | OEL TWA (mg/m ³) | 0.025 mg/m ³ (respirable fraction) |
| New Brunswick | OEL TWA (mg/m ³) | 0.1 mg/m ³ (respirable fraction) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.025 mg/m ³ (respirable fraction) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.025 mg/m ³ (respirable fraction) |
| Nunavut | OEL TWA (mg/m ³) | 0.1 mg/m ³ (respirable mass) 0.3 mg/m ³ (total mass) |
| Northwest Territories | OEL TWA (mg/m ³) | 0.05 mg/m ³ (respirable fraction) |
| Ontario | OEL TWA (mg/m ³) | 0.10 mg/m ³ (designated substances regulation-respirable) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.025 mg/m ³ (respirable fraction) |
| Québec | VEMP (mg/m ³) | 0.1 mg/m ³ (respirable dust) |
| Saskatchewan | OEL TWA (mg/m ³) | 0.05 mg/m ³ (respirable fraction) |
| Yukon | OEL TWA (mg/m ³) | 300 particle/mL |

8.2. Exposure Controls

Appropriate Engineering Controls: The following applies to the product if it is cut, sanded or altered in such a way that excessive and/or significant particulates and/or dusts may be generated: Provide adequate ventilation to minimize dust concentrations.

Materials for Protective Clothing: Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing: Chemically resistant materials and fabrics. With molten material wear thermally protective clothing.

Hand Protection: Wear protective gloves.

Eye Protection: Chemical safety goggles.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

| | |
|--------------------------------|------------------|
| Physical State | : Solid |
| Appearance | : Copper colored |
| Odor | : None |
| Odor Threshold | : Not available |
| pH | : Not available |
| Evaporation Rate | : Not available |
| Melting Point | : Not available |
| Freezing Point | : Not available |
| Boiling Point | : Not available |
| Flash Point | : Not available |
| Auto-ignition Temperature | : Not available |
| Decomposition Temperature | : Not available |
| Flammability (solid, gas) | : Not available |
| Lower Flammable Limit | : Not available |
| Upper Flammable Limit | : Not available |
| Vapor Pressure | : Not available |
| Relative Vapor Density at 20°C | : Not available |
| Relative Density | : 4 - 6 |

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| | |
|---|-----------------|
| Specific Gravity | : Not available |
| Solubility | : Not available |
| Partition Coefficient: N-Octanol/Water | : Not available |
| Viscosity | : Not available |

SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity:** Dust and other forms of product formed from processing might react with water producing a flammable/explosive environment, especially in confined spaces. Molten material will react violently with water.
- 10.2. Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).
- 10.3. Possibility of Hazardous Reactions:** Hazardous reactions will not occur under normal conditions.
- 10.4. Conditions to Avoid:** Direct sunlight, extremely high or low temperatures, heat, hot surfaces, sparks, open flames, incompatible materials, and other ignition sources. Dust accumulation (to minimize explosion hazard).
- 10.5. Incompatible Materials:** strong acids, strong bases and strong oxidants. When molten: water.
- 10.6. Hazardous Decomposition Products:** None known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity (Oral): Not classified

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: Not classified.

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza; Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: Risk of thermal burns on contact with molten product. Dust from physical alteration of this product causes skin irritation.

Symptoms/Injuries After Eye Contact: During metal processing. Dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: For particulates and dust: May cause cancer. Causes damage to organs through prolonged or repeated exposure. Anemia. Prolonged or repeated exposure of silica in its respirable form can cause lung disease, however the silica in this product is not airborne and therefore not bioavailable. Limited and contradictory evidence suggest that silica may be a carcinogen when inhaled for many years (IARC). Tin: Has been shown to increase incidence of sarcoma in animal tests. Chronic exposure to tin dusts and fume may result in "stannosis", a mild form of pneumoconiosis. Molybdenum: Chronic exposure to molybdenum compounds is suspected of causing cancer. Compounds are also known to cause irritation to the skin, eyes, and respiratory tract. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Molybdenum(IV) sulfide (1317-33-5)

LC50 Inhalation Rat

> 2820 mg/m³ (Exposure time: 4 h)

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|---|---|
| LC50 Inhalation Rat | 2.82 mg/l/4h |
| Quartz (14808-60-7) | |
| LD50 Oral Rat | > 5000 mg/kg |
| LD50 Dermal Rat | > 5000 mg/kg |
| Quartz (14808-60-7) | |
| IARC Group | 1 |
| National Toxicology Program (NTP) Status | Known Human Carcinogens. |
| OSHA Hazard Communication Carcinogen List | In OSHA Hazard Communication Carcinogen list. |

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

| | |
|--------------------------------|---|
| Copper (7440-50-8) | |
| LC50 Fish 1 | 0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas) |
| EC50 Daphnia 1 | 0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static]) |
| EC50 Other Aquatic Organisms 1 | 0.0426 (0.0426 - 0.0535) mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static]) |
| LC50 Fish 2 | < 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static]) |
| EC50 Other Aquatic Organisms 2 | 0.031 (0.031 - 0.054) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static]) |

12.2. Persistence and Degradability

| | |
|-------------------------------|----------------------------|
| Copper (7440-50-8) | |
| Persistence and Degradability | Not readily biodegradable. |

12.3. Bioaccumulative Potential Not available

12.4. Mobility in Soil Not available

12.5. Other Adverse Effects Not available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations

Ecology - Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

14.4. In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

| | |
|--|-------|
| Copper (7440-50-8) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1.0 % |
| Graphite (7782-42-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Tin (7440-31-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Molybdenum(IV) sulfide (1317-33-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |

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Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

Quartz (14808-60-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. US State Regulations

Quartz (14808-60-7)

U.S. - California - Proposition 65 - Carcinogens List

WARNING: This product contains chemicals known to the State of California to cause cancer.

Copper (7440-50-8)

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

U.S. - Pennsylvania - RTK (Right to Know) List

Graphite (7782-42-5)

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

Tin (7440-31-5)

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

Molybdenum(IV) sulfide (1317-33-5)

U.S. - Massachusetts - Right To Know List

Quartz (14808-60-7)

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

15.3. Canadian Regulations

Copper (7440-50-8)

Listed on the Canadian DSL (Domestic Substances List)

Graphite (7782-42-5)

Listed on the Canadian DSL (Domestic Substances List)

Tin (7440-31-5)

Listed on the Canadian DSL (Domestic Substances List)

Molybdenum(IV) sulfide (1317-33-5)

Listed on the Canadian DSL (Domestic Substances List)

Quartz (14808-60-7)

Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 08/09/2016

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR).

GHS Full Text Phrases:

| | |
|--|--|
| Acute Tox. 4 (Inhalation:dust,mist) | Acute toxicity (inhalation:dust,mist) Category 4 |
| Aquatic Acute 1 | Hazardous to the aquatic environment - Acute Hazard Category 1 |
| Aquatic Chronic 3 | Hazardous to the aquatic environment - Chronic Hazard Category 3 |
| Carc. 1A | Carcinogenicity Category 1A |
| Comb. Dust | May form combustible dust concentrations in air |
| STOT RE 1 | Specific target organ toxicity (repeated exposure) Category 1 |

SDS 4

Safety Data Sheet

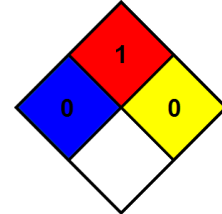
According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

| | |
|-----------|--|
| STOT SE 3 | Specific target organ toxicity (single exposure) Category 3 |
| H332 | Harmful if inhaled |
| H335 | May cause respiratory irritation |
| H350 | May cause cancer |
| H372 | Causes damage to organs through prolonged or repeated exposure |
| H400 | Very toxic to aquatic life |
| H412 | Harmful to aquatic life with long lasting effects |

NFPA Health Hazard : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

NFPA Fire Hazard : 1 - Must be preheated before ignition can occur.

NFPA Reactivity Hazard : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 1 Slight Hazard

Physical : 0 Minimal Hazard

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

NA GHS SDS 2015 (US, Can)