



# SAFETY DATA SHEET

**MATERION**

## 1. Identification

|   |  |
|---|--|
| <b>Product identifier</b>                                     | <b>Copper Beryllium Wrought Alloy</b>  |
| <b>Other means of identification</b>                          |  |
| <b>SDS number</b>   | A10  |
| <b>Synonyms</b>   | Beryllium Copper, Copper Beryllium, BeCu, CuBe, Alloy 10, Alloy 10X (C17500); Alloy 165 (17000); Alloy 170; Alloy 171 (C17450), Alloy C717 (C71700), Brush 60®, BrushForm® 47, BrushForm® 65 (C17460); Alloy 174 (C17400), (C17410), (C17420); Alloy 25, Alloy 190, BrushForm® 290 (C17200); Alloy 3 (C17510); Alloy 310; Alloy 390®; Alloy 390E, MoldMAX®, PROtherm®, WeldPak®, EtchMet™, Alloy 172   |
| <b>Recommended use</b>  | Industrial uses: Uses of substances as such or in preparations at industrial sites<br>Offshore industries<br>Manufacture of basic metals, including alloys<br>Manufacture of computer, electronic and optical products, electrical equipment<br>General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment<br>Electricity, steam, gas water supply and sewage treatment<br>Scientific research and development<br>Other: Manufacture of medical and defense equipment<br>Manufacture of fabricated metal products, except machinery and equipment |
| <b>Recommended restrictions</b>                               | Professional uses: Public domain (administration, education, entertainment, services, craftsmen)<br>Casting, grinding or polishing of beryllium-containing alloys by artists;<br>Casting, grinding or polishing of beryllium-containing alloys for dental crowns, appliances or prosthetics;<br>Casting, grinding or polishing of beryllium-containing alloys for jewelry.<br>Consumer uses: Private households (= general public = consumers)   |
| <b>Manufacturer/Importer/Supplier/Distributor information</b> |  |
| <b>Manufacturer</b>   |  |
| <b>Company name</b>   | Materion Brush Inc.  |
| <b>Address</b>  | 6070 Parkland Boulevard<br>Mayfield Heights, OH 44124<br>United States   |
| <b>Telephone</b>  | +1.216.383.4019  |
| <b>Website</b>  | www.materion.com   |
| <b>E-mail</b>   | ehs@materion.com   |
| <b>Contact person</b>   | Theodore L. Knudson  |
| <b>Emergency phone number</b>                                 | +1.216.383.4019  |
| <b>Supplier</b>   | Materion Brush Inc.<br>6070 Parkland Boulevard<br>Mayfield Heights, OH 44124 US<br>+1.216.486.4200   |

## 2. Hazard identification

|                              |   |                                 |
|------------------------------|---|---------------------------------|
| <b>Physical hazards</b>      | Not classified.                                   |                                 |
| <b>Health hazards</b>        | Sensitization, skin                               | Category 1                      |
|                              | Carcinogenicity                                   | Category 1                      |
|                              | Specific target organ toxicity, repeated exposure | Category 1 (Respiratory system) |
| <b>Environmental hazards</b> | Not classified.                                   |                                 |

## Label elements



|                                 |  |
|---------------------------------|--|
| <b>Signal word</b>              | Danger   |
| <b>Hazard statement</b>         | May cause an allergic skin reaction. May cause cancer. Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.  |
| <b>Precautionary statement</b>  |  |
| <b>Prevention</b>               | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection. |
| <b>Response</b>                 | If on skin: Wash with plenty of water. If exposed or concerned: Call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a poison center/doctor. Take off contaminated clothing and wash it before reuse.  |
| <b>Storage</b>                  | Store locked up.   |
| <b>Disposal</b>                 | Dispose of contents/container (in accordance with related regulations). Dispose of contents/container in accordance with local/regional/national/international regulations.  |
| <b>Other hazards</b>            | None known.  |
| <b>Supplemental information</b> | Exposure to the elements listed in Section 3 by inhalation, ingestion, and skin contact can occur when melting, casting, dross handling, pickling, chemical cleaning, heat treating, abrasive cutting, welding, grinding, sanding, polishing, milling, crushing, or otherwise heating or abrading the surface of this material in a manner which generates particulate.  |

For further information, please contact the Product Stewardship Department at +1.216.383.4019.

## 3. Composition/information on ingredients

### Mixtures

| Chemical name | Common name and synonyms | CAS number | %           |
|---------------|--------------------------|------------|-------------|
| Copper        |                          | 7440-50-8  | 96.3 - 99.5 |
| Cobalt        |                          | 7440-48-4  | 0 - 2.7     |
| Nickel        |                          | 7440-02-0  | 0 - 2.2     |
| Beryllium     |                          | 7440-41-7  | 0.15 - 2    |
| Zirconium     |                          | 7440-67-7  | 0 - 0.5     |

## 4. First-aid measures

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | If symptoms develop move victim to fresh air. For breathing difficulties, oxygen may be necessary. Breathing difficulty caused by inhalation of particulate requires immediate removal to fresh air. If breathing has stopped, perform artificial respiration and obtain medical help.   |
| <b>Skin contact</b> | Take off contaminated clothing and wash before reuse. Thoroughly wash skin cuts or wounds to remove all particulate debris from the wound. Seek medical attention for wounds that cannot be thoroughly cleansed. Treat skin cuts and wounds with standard first aid practices such as cleansing, disinfecting and covering to prevent wound infection and contamination before continuing work. Obtain medical help for persistent irritation. Material accidentally implanted or lodged under the skin must be removed. |
| <b>Eye contact</b>  | Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention if symptoms persist.  |
| <b>Ingestion</b>    | If swallowed, seek medical advice immediately and show this container or label. Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.   |

|   |   |
|---|---|
| <b>Most important symptoms/effects, acute and delayed</b>                     | May cause allergic skin reaction. May cause allergic respiratory reaction. Prolonged exposure may cause chronic effects.  |
| <b>Indication of immediate medical attention and special treatment needed</b> | Treatment of Chronic Beryllium Disease: There is no known treatment which will cure chronic beryllium disease. Prednisone or other corticosteroids are the most specific treatment currently available. They are directed at suppressing the immunological reaction and can be effective in diminishing signs and symptoms of chronic beryllium disease. In cases where steroid therapy has had only partial or minimal effectiveness, other immunosuppressive agents, such as cyclophosphamide, cyclosporine, or methotrexate, have been used. In view of the potential side effects of all the immunosuppressive medications, including steroids such as prednisone, they should be used only under the direct care of a physician. Other treatment, such as oxygen, inhaled steroids or bronchodilators, may be prescribed by some physicians and can be effective in selected cases. In general, treatment is reserved for cases with significant symptoms and/or significant loss of lung function. The decision about when and with what medication to treat is a judgment situation for individual physicians. |
| <b>General information</b>  | In their 2014 official statement on the Diagnosis and Management of Beryllium Sensitivity and Chronic Beryllium Disease, the American Thoracic Society states that "it seems prudent for workers with BeS to avoid all future occupational exposure to beryllium."<br><br>If exposed or concerned: get medical attention/advice. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. As supplied, there is no immediate medical risk with beryllium products in article form. First aid measures provided are related to particulate containing beryllium.  |
| <b>5. Fire-fighting measures</b>  |   |
| <b>Suitable extinguishing media</b>   | The product is non-combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.   |
| <b>Unsuitable extinguishing media</b>   | Do not use water to extinguish fires around operations involving molten metal due to the potential for steam explosions.  |
| <b>Specific hazards arising from the chemical</b>                             | Not applicable.   |
| <b>Special protective equipment and precautions for firefighters</b>          | Firefighters should wear full protective clothing including self contained breathing apparatus. Wear suitable protective equipment.   |
| <b>Fire fighting equipment/instructions</b>                                   | Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.  |
| <b>Specific methods</b>   | Pressure-demand self-contained breathing apparatus must be worn by firefighters or any other persons potentially exposed to the particulate released during or after a fire.  |
| <b>6. Accidental release measures</b>   |   |
| <b>Personal precautions, protective equipment and emergency procedures</b>    | In solid form this material poses no special clean-up problems. Wear appropriate protective equipment and clothing during clean-up.   |
| <b>Methods and materials for containment and cleaning up</b>                  | Clean up in accordance with all applicable regulations.   |
| <b>Environmental precautions</b>  | Avoid release to the environment. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.  |
| <b>7. Handling and storage</b>  |   |
| <b>Precautions for safe handling</b>  | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Do not breathe dust/fume. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. Wash thoroughly after handling. When using, do not eat, drink or smoke. Contaminated work clothing must not be allowed out of the workplace.   |
| <b>Conditions for safe storage, including any incompatibilities</b>           | Keep locked-up. Avoid contact with acids and alkalis. Avoid contact with oxidizing agents.  |

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

| Components                | Type | Value  | Form                |
|---------------------------|------|--|---------------------|
| Beryllium (CAS 7440-41-7) | TWA  | 0.00005 mg/m <sup>3</sup> (as Inhalable fraction. beryllium) |                     |
| Cobalt (CAS 7440-48-4)    | TWA  | 0.02 mg/m <sup>3</sup>                                       |                     |
| Copper (CAS 7440-50-8)    | TWA  | 1 mg/m <sup>3</sup>  | Dust and mist.      |
|                           |      | 0.2 mg/m <sup>3</sup>  | Fume.               |
| Nickel (CAS 7440-02-0)    | TWA  | 1.5 mg/m <sup>3</sup>  | Inhalable fraction. |
| Zirconium (CAS 7440-67-7) | STEL | 10 mg/m <sup>3</sup>   |                     |
|                           | TWA  | 5 mg/m <sup>3</sup>  |                     |

#### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

| Components                | Type | Value                   | Form           |
|---------------------------|------|-------------------------|----------------|
| Beryllium (CAS 7440-41-7) | STEL | 0.01 mg/m <sup>3</sup>  |                |
|                           | TWA  | 0.002 mg/m <sup>3</sup> |                |
| Cobalt (CAS 7440-48-4)    | TWA  | 0.02 mg/m <sup>3</sup>  |                |
| Copper (CAS 7440-50-8)    | TWA  | 1 mg/m <sup>3</sup>     | Dust and mist. |
|                           |      | 0.2 mg/m <sup>3</sup>   | Fume.          |
| Nickel (CAS 7440-02-0)    | TWA  | 1.5 mg/m <sup>3</sup>   |                |
| Zirconium (CAS 7440-67-7) | STEL | 10 mg/m <sup>3</sup>    |                |
|                           | TWA  | 5 mg/m <sup>3</sup>     |                |

#### Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

| Components                | Type | Value                     | Form           |
|---------------------------|------|---------------------------|----------------|
| Beryllium (CAS 7440-41-7) | TWA  | 0.00005 mg/m <sup>3</sup> | Inhalable      |
| Cobalt (CAS 7440-48-4)    | TWA  | 0.02 mg/m <sup>3</sup>    |                |
|                           |      | 0.02 mg/m <sup>3</sup>    | Total          |
| Copper (CAS 7440-50-8)    | TWA  | 1 mg/m <sup>3</sup>       | Dust and mist. |
|                           |      | 0.2 mg/m <sup>3</sup>     | Fume.          |
| Nickel (CAS 7440-02-0)    | TWA  | 0.05 mg/m <sup>3</sup>    |                |
| Zirconium (CAS 7440-67-7) | STEL | 10 mg/m <sup>3</sup>      |                |
|                           | TWA  | 5 mg/m <sup>3</sup>       |                |

#### Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

| Components                | Type | Value                     | Form                |
|---------------------------|------|---------------------------|---------------------|
| Beryllium (CAS 7440-41-7) | TWA  | 0.00005 mg/m <sup>3</sup> | Inhalable fraction. |
| Cobalt (CAS 7440-48-4)    | TWA  | 0.02 mg/m <sup>3</sup>    |                     |
| Copper (CAS 7440-50-8)    | TWA  | 1 mg/m <sup>3</sup>       | Dust and mist.      |
|                           |      | 0.2 mg/m <sup>3</sup>     | Fume.               |
| Nickel (CAS 7440-02-0)    | TWA  | 1.5 mg/m <sup>3</sup>     | Inhalable fraction. |
| Zirconium (CAS 7440-67-7) | STEL | 10 mg/m <sup>3</sup>      |                     |
|                           | TWA  | 5 mg/m <sup>3</sup>       |                     |

#### Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

| Components                | Type | Value                     | Form                |
|---------------------------|------|---------------------------|---------------------|
| Beryllium (CAS 7440-41-7) | TWA  | 0.00005 mg/m <sup>3</sup> | Inhalable fraction. |
| Cobalt (CAS 7440-48-4)    | TWA  | 0.02 mg/m <sup>3</sup>    |                     |

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

| Components                | Type | Value                 | Form                |
|---------------------------|------|-----------------------|---------------------|
| Copper (CAS 7440-50-8)    | TWA  | 1 mg/m <sup>3</sup>   | Dust and mist.      |
|                           |      | 0.2 mg/m <sup>3</sup> | Fume.               |
| Nickel (CAS 7440-02-0)    | TWA  | 1 mg/m <sup>3</sup>   | Inhalable fraction. |
| Zirconium (CAS 7440-67-7) | STEL | 10 mg/m <sup>3</sup>  |                     |
|                           | TWA  | 5 mg/m <sup>3</sup>   |                     |

**Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)**

| Components                | Type | Value                     | Form           |
|---------------------------|------|---------------------------|----------------|
| Beryllium (CAS 7440-41-7) | TWA  | 0.00015 mg/m <sup>3</sup> |                |
| Cobalt (CAS 7440-48-4)    | TWA  | 0.02 mg/m <sup>3</sup>    |                |
| Copper (CAS 7440-50-8)    | TWA  | 1 mg/m <sup>3</sup>       | Dust and mist. |
|                           |      | 0.2 mg/m <sup>3</sup>     | Fume.          |
| Nickel (CAS 7440-02-0)    | TWA  | 1 mg/m <sup>3</sup>       |                |
| Zirconium (CAS 7440-67-7) | STEL | 10 mg/m <sup>3</sup>      |                |
|                           | TWA  | 5 mg/m <sup>3</sup>       |                |

**Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)**

| Components                | Type      | Value                   | Form                |
|---------------------------|-----------|-------------------------|---------------------|
| Beryllium (CAS 7440-41-7) | 15 minute | 0.01 mg/m <sup>3</sup>  |                     |
|                           | 8 hour    | 0.002 mg/m <sup>3</sup> |                     |
| Cobalt (CAS 7440-48-4)    | 15 minute | 0.06 mg/m <sup>3</sup>  |                     |
|                           | 8 hour    | 0.02 mg/m <sup>3</sup>  |                     |
| Copper (CAS 7440-50-8)    | 15 minute | 3 mg/m <sup>3</sup>     | Dust and mist.      |
|                           |           | 0.6 mg/m <sup>3</sup>   | Fume.               |
|                           | 8 hour    | 1 mg/m <sup>3</sup>     | Dust and mist.      |
| Nickel (CAS 7440-02-0)    | 15 minute | 0.2 mg/m <sup>3</sup>   | Fume.               |
|                           |           | 3 mg/m <sup>3</sup>     | Inhalable fraction. |
|                           | 8 hour    | 1.5 mg/m <sup>3</sup>   | Inhalable fraction. |
| Zirconium (CAS 7440-67-7) | 15 minute | 10 mg/m <sup>3</sup>    |                     |
|                           | 8 hour    | 5 mg/m <sup>3</sup>     |                     |

**Biological limit values****ACGIH Biological Exposure Indices**

| Components             | Value   | Determinant | Specimen | Sampling Time |
|------------------------|---------|-------------|----------|---------------|
| Cobalt (CAS 7440-48-4) | 15 µg/l | Cobalt      | Urine    | *             |

\* - For sampling details, please see the source document.

**Exposure guidelines****Canada - British Columbia OELs: Skin designation**

Beryllium (CAS 7440-41-7) Can be absorbed through the skin.

**Appropriate engineering controls** Ensure adequate ventilation, especially in confined areas.

Whenever possible, the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne particulate. Where utilized, exhaust inlets to the ventilation system must be positioned as close as possible to the source of airborne generation. Avoid disruption of the airflow in the area of a local exhaust inlet by equipment such as a man-cooling fan. Check ventilation equipment regularly to ensure it is functioning properly. Provide training on the use and operation of ventilation to all users. Use qualified professionals to design and install ventilation systems.

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Wear approved safety glasses, goggles, face shield and/or welder's helmet when risk of eye injury is present, particularly during operations that generate dust, mist or fume.

**Skin protection**

**Hand protection** Wear gloves to prevent contact with particulate or solutions. Wear gloves to prevent metal cuts and skin abrasions during handling.

**Other** Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Protective overgarments or work clothing must be worn by persons who may become contaminated with particulate during activities. Skin contact with this material may cause, in some sensitive individuals, an allergic dermal response. Particulate that becomes lodged under the skin has the potential to induce sensitization and skin lesions.

**Respiratory protection** When airborne exposures exceed or have the potential to exceed the occupational exposure limits, approved respirators must be used as specified by an Industrial Hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of tight fitting respirators must be clean shaven on those areas of the face where the respirator seal contacts the face. Use pressure-demand airline respirators when performing jobs with high potential exposures such as changing filters in a baghouse air cleaning device.

**Thermal hazards** Not applicable.

**General hygiene considerations** Handle in accordance with good industrial hygiene and safety practice.

**9. Physical and chemical properties**

**Appearance**

**Physical state** Solid.

**Form** Various shapes.

**Color** Copper.

**Odor** Not applicable.

**Odor threshold** Not applicable.

**pH** Not applicable.

**Melting point/freezing point** 1600 - 1960 °F (871.11 - 1071.11 °C) / Not applicable.

**Initial boiling point and boiling range** Not applicable.

**Flash point** Not applicable.

**Evaporation rate** Not applicable.

**Flammability (solid, gas)** Not available.

**Upper/lower flammability or explosive limits**

**Flammability limit - lower (%)** Not applicable.

|  |                                  |
|--|----------------------------------|
| <b>Flammability limit - upper (%)</b>          | Not applicable.                  |
| <b>Explosive limit - lower (%)</b>             | Not applicable.                  |
| <b>Explosive limit - upper (%)</b>             | Not applicable.                  |
| <b>Vapor pressure</b>                          | 0.77 hPa estimated               |
| <b>Vapor density</b>                           | Not applicable.                  |
| <b>Relative density</b>                        | Not applicable.                  |
| <b>Solubility(ies)</b>                         |                                  |
| <b>Solubility (water)</b>                      | Not applicable.                  |
| <b>Partition coefficient (n-octanol/water)</b> | Not available.                   |
| <b>Auto-ignition temperature</b>               | Not applicable.                  |
| <b>Decomposition temperature</b>               | Not applicable.                  |
| <b>Viscosity</b>                               | Not applicable.                  |
| <b>Other information</b>                       |                                  |
| <b>Density</b>                                 | 8.80 g/cm <sup>3</sup> estimated |
| <b>Flammability</b>                            | Not applicable.                  |
| <b>Specific gravity</b>                        | 8.8 estimated                    |

## 10. Stability and reactivity

|   |  |
|---|--|
| <b>Reactivity</b>                         | The product is stable and non-reactive under normal conditions of use, storage and transport.        |
| <b>Chemical stability</b>                 | Material is stable under normal conditions.  |
| <b>Possibility of hazardous reactions</b> | No dangerous reaction known under conditions of normal use. Hazardous polymerization does not occur. |
| <b>Conditions to avoid</b>                | Avoid dust formation. Contact with acids. Contact with alkalis.                                      |
| <b>Incompatible materials</b>             | Strong acids, alkalies and oxidizing agents.   |
| <b>Hazardous decomposition products</b>   | No hazardous decomposition products are known.   |

## 11. Toxicological information

### Information on likely routes of exposure

**Inhalation** May cause sensitization by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause damage to organs (respiratory system) through prolonged or repeated exposure.

**Skin contact** May cause an allergic skin reaction.

**Eye contact** Not likely, due to the form of the product.

**Ingestion** Not likely, due to the form of the product.

**Symptoms related to the physical, chemical and toxicological characteristics** Respiratory disorder.

### Information on toxicological effects

**Acute toxicity** May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction.

**Skin corrosion/irritation** Not likely, due to the form of the product.

**Serious eye damage/eye irritation** Harmful in contact with eyes.

## Respiratory or skin sensitization

### ACGIH sensitization

BERYLLIUM AND COMPOUNDS, SOLUBLE AND INSOLUBLE COMPOUNDS, AS BE, INHALABLE FRACTION (CAS 7440-41-7) Respiratory sensitization  
Cobalt and inorganic compounds, as Co (CAS 7440-48-4) Dermal sensitization  
Respiratory sensitization

### Canada - Manitoba OELs Hazard: Dermal sensitization

Cobalt (CAS 7440-48-4) Dermal sensitization

### Canada - Manitoba OELs Hazard: Respiratory sensitization

Beryllium (CAS 7440-41-7) Respiratory sensitization  
Cobalt (CAS 7440-48-4) Respiratory sensitization

### Canada - Quebec OELs: Sensitizer

Beryllium (CAS 7440-41-7) Sensitizer.  
Cobalt (CAS 7440-48-4) Sensitizer.

**Respiratory sensitization** May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Skin sensitization** May cause an allergic skin reaction.

**Germ cell mutagenicity** Due to lack of data the classification is not possible.

**Carcinogenicity** Cancer hazard.

### ACGIH Carcinogens

Cobalt (CAS 7440-48-4) A2 Suspected human carcinogen.

### Canada - Alberta OELs: Carcinogen category

Beryllium (CAS 7440-41-7) Confirmed human carcinogen.

### Canada - Manitoba OELs: carcinogenicity

Beryllium (CAS 7440-41-7) Confirmed human carcinogen.  
Cobalt (CAS 7440-48-4) Confirmed animal carcinogen with unknown relevance to humans.  
Suspected human carcinogen.  
Nickel (CAS 7440-02-0) Not suspected as a human carcinogen.  
Zirconium (CAS 7440-67-7) Not classifiable as a human carcinogen.

### Canada - Quebec OELs: Carcinogen category

Beryllium (CAS 7440-41-7) Detected carcinogenic effect in humans.  
Cobalt (CAS 7440-48-4) Detected carcinogenic effect in animals.

### IARC Monographs. Overall Evaluation of Carcinogenicity

Beryllium (CAS 7440-41-7) 1 Carcinogenic to humans.  
Cobalt (CAS 7440-48-4) 2B Possibly carcinogenic to humans.  
Nickel (CAS 7440-02-0) 2B Possibly carcinogenic to humans.

### US. National Toxicology Program (NTP) Report on Carcinogens

Beryllium (CAS 7440-41-7) Known To Be Human Carcinogen.  
Cobalt (CAS 7440-48-4) Reasonably Anticipated to be a Human Carcinogen.  
Nickel (CAS 7440-02-0) Known To Be Human Carcinogen.  
Reasonably Anticipated to be a Human Carcinogen.

**Reproductive toxicity** Not classified.

**Specific target organ toxicity - single exposure** May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Specific target organ toxicity - repeated exposure** May cause damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

**Aspiration hazard** Due to lack of data the classification is not possible.

**Chronic effects** May cause damage to organs through prolonged or repeated exposure.

**Further information** Symptoms may be delayed.

## 12. Ecological information

### Ecotoxicity

| Product                        |      | Species   | Test Results                    |
|--------------------------------|------|---|---------------------------------|
| Copper Beryllium Wrought Alloy |      |   |                                 |
| <b>Aquatic</b>                 |      |   |                                 |
| <i>Acute</i>                   |      |   |                                 |
| Fish                           | LC50 | Fish  | 0.0326 mg/l, 96 hours estimated |
| <b>Components</b>              |      | <b>Species</b>  | <b>Test Results</b>             |
| Copper (CAS 7440-50-8)         |      |   |                                 |
| <b>Aquatic</b>                 |      |   |                                 |
| <i>Acute</i>                   |      |   |                                 |
| Crustacea                      | EC50 | Blue crab ( <i>Callinectes sapidus</i> )                        | 0.0031 mg/l                     |
| Fish                           | LC50 | Fathead minnow ( <i>Pimephales promelas</i> )                   | 0.0219 - 0.0446 mg/l, 96 hours  |
| Nickel (CAS 7440-02-0)         |      |   |                                 |
| <b>Aquatic</b>                 |      |   |                                 |
| <i>Acute</i>                   |      |   |                                 |
| Fish                           | LC50 | Rainbow trout,donaldson trout<br>( <i>Oncorhynchus mykiss</i> ) | 0.06 mg/l, 4 days               |

\* Estimates for product may be based on additional component data not shown.

|                                      |  |
|--------------------------------------|--|
| <b>Persistence and degradability</b> | No data is available on the degradability of this product. |
| <b>Bioaccumulative potential</b>     | Not available.   |
| <b>Mobility in soil</b>              | Not available.   |
| <b>Other adverse effects</b>         | Not available.   |

## 13. Disposal considerations

|  |   |
|--|---|
| <b>Disposal instructions</b>                 | Material should be recycled if possible. Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. |
| <b>Waste from residues / unused products</b> | Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).   |
| <b>Contaminated packaging</b>                | Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.                          |

## 14. Transport information

### TDG

|                                     |                                    |
|-------------------------------------|------------------------------------|
| <b>UN number</b>                    | UN3178                             |
| <b>UN proper shipping name</b>      | FLAMMABLE SOLID, INORGANIC, N.O.S. |
| <b>Transport hazard class(es)</b>   |                                    |
| <b>Class</b>                        | 4.1                                |
| <b>Subsidiary risk</b>              | -                                  |
| <b>Packing group</b>                | III                                |
| <b>Environmental hazards</b>        | Not available.                     |
| <b>Special precautions for user</b> | Not available.                     |

### IATA

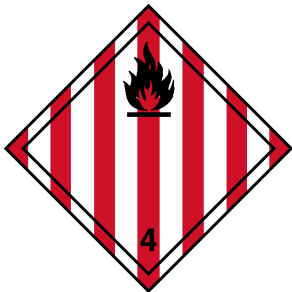
|                                   |                                    |
|-----------------------------------|------------------------------------|
| <b>UN number</b>                  | UN3178                             |
| <b>UN proper shipping name</b>    | Flammable solid, inorganic, n.o.s. |
| <b>Transport hazard class(es)</b> |                                    |
| <b>Class</b>                      | 4.1                                |
| <b>Subsidiary risk</b>            | -                                  |

|                                     |                            |
|-------------------------------------|----------------------------|
| <b>Packing group</b>                | III                        |
| <b>Environmental hazards</b>        | No.                        |
| <b>ERG Code</b>                     | 3L                         |
| <b>Special precautions for user</b> | Not available.             |
| <b>Other information</b>            |                            |
| <b>Passenger and cargo aircraft</b> | Allowed with restrictions. |
| <b>Cargo aircraft only</b>          | Allowed with restrictions. |

#### IMDG

|   |                                    |
|---|------------------------------------|
| <b>UN number</b>  | UN3178                             |
| <b>UN proper shipping name</b>  | FLAMMABLE SOLID, INORGANIC, N.O.S. |
| <b>Transport hazard class(es)</b>   |                                    |
| <b>Class</b>  | 4.1                                |
| <b>Subsidiary risk</b>  | -                                  |
| <b>Packing group</b>  | III                                |
| <b>Environmental hazards</b>  |                                    |
| <b>Marine pollutant</b>   | No.                                |
| <b>EmS</b>  | F-A, S-G                           |
| <b>Special precautions for user</b>   | Not available.                     |
| <b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b> | Not available.                     |

#### IATA; IMDG; TDG



## 15. Regulatory information

**Canadian regulations** This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

#### Controlled Drugs and Substances Act

Not regulated.

#### Export Control List (CEPA 1999, Schedule 3)

Not listed.

#### Greenhouse Gases

Not listed.

#### Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Cobalt (CAS 7440-48-4)

Copper (CAS 7440-50-8)

Nickel (CAS 7440-02-0)

#### Precursor Control Regulations

Not regulated.

## International regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work. Pregnant women should not work with the product, if there is the least risk of exposure. Regulation (EU) No 453/2010 amending Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). Regulation (EC) No 1272/2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

### Stockholm Convention

Not applicable.

### Rotterdam Convention

Not applicable.

### Kyoto protocol

Not applicable.

### Montreal Protocol

Not applicable.

### Basel Convention

Not applicable.

## International Inventories

| 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                    |
| 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)               | No                     |
| Korea                       | Existing Chemicals List (ECL)  | Yes                    |
| New Zealand                 | New Zealand Inventory  | Yes                    |
| Philippines                 | Philippine Inventory of Chemicals and Chemical Substances (PICCS)      | Yes                    |
| Taiwan                      | Taiwan Chemical Substance Inventory (TCSI)                             | Yes                    |
| 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).

## 16. Other information

|                     |   |
|---------------------|---|
| Issue date          | 03-09-2017  |
| Revision date       | 08-28-2023  |
| Version #           | 05  |
| Further information | Transportation Emergency<br>Call Chemtrec at:<br>US: 800.424.9300<br>International: 703.741.5970<br>Spain: 900.868.538<br>Switzerland: 0800.564.402<br>Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059<br>South Korea Toll-free Number – 080-880-0468 |

## Disclaimer

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