



# SAFETY DATA SHEET

**MATERION**

## 1. Identification

**Product identifier** Beryllium Oxalate Trihydrate

### Other means of identification

**SDS number** M21  
**CAS number** 15771-43-4  
**Synonyms** Beryllium Compound

### Manufacturer/Importer/Supplier/Distributor information

#### Manufacturer

**Company name** Materion Brush Inc.  
**Address** 6070 Parkland Boulevard  
Mayfield Heights, OH 44124  
United States  
**Telephone** 1.800.862.4118  
**Website** www.materion.com  
**E-mail** ehs@materion.com  
**Contact person** Theodore Knudson  
**Emergency phone number** 1.800.862.4118

## 2. Hazard(s) identification

**Physical hazards** Not classified.

**Health hazards** Acute toxicity, oral Category 3  
Acute toxicity, inhalation Category 2  
Sensitization, skin Category 1  
Carcinogenicity Category 1B  
Specific target organ toxicity, repeated exposure Category 1 (Respiratory system)

**Environmental hazards** Not classified.

**OSHA defined hazards** Not classified.

### Label elements



**Signal word** Danger

**Hazard statement** Toxic if swallowed. Fatal if inhaled. May cause an allergic skin reaction. May cause cancer by inhalation. May cause respiratory irritation. Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

### Precautionary statement

#### Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Avoid breathing dust. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing must 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 swallowed: Immediately call a poison center/doctor. If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If experiencing respiratory symptoms: Call a poison center/doctor.
<b>Storage</b>	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Hazard(s) not otherwise classified (HNOC)</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, gross 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 +1.800.862.4118.

### 3. Composition/information on ingredients

#### Substances

Chemical name	Common name and synonyms	CAS number	%
Beryllium Oxalate Trihydrate	Beryllium Compound	15771-43-4	100

\*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

### 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.

**Indication of immediate medical attention and special treatment needed**

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.

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."

The effects of continued low exposure to beryllium are unknown for individuals who are sensitized to beryllium or who have a diagnosis of chronic beryllium disease. It is generally recommended that persons who are sensitized to beryllium or who have CBD terminate their occupational exposure to beryllium.

**General information**

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 massive form. First aid measures provided are related to particulate containing beryllium.

**5. Fire-fighting measures**

**Suitable extinguishing media**

The product is non-combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media**

Do not use water to extinguish fires around operations involving molten metal due to the potential for steam explosions.

**Specific hazards arising from the chemical**

Not applicable.

**Special protective equipment and precautions for firefighters**

Firefighters should wear full protective clothing including self contained breathing apparatus. Wear suitable protective equipment.

**Fire fighting equipment/instructions**

Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.

**Specific methods**

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.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

In solid form this material poses no special clean-up problems. Wear appropriate protective equipment and clothing during clean-up.

**Methods and materials for containment and cleaning up**

Clean up in accordance with all applicable regulations.

**Environmental precautions**

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.

**7. Handling and storage**

**Precautions for safe handling**

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.

Conditions for safe storage,  
including any incompatibilities

Keep locked-up. Avoid contact with acids and alkalies. Avoid contact with oxidizing agents.

## 8. Exposure controls/personal protection

### Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

#### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Material	Type	Value
Beryllium Oxalate Trihydrate (CAS 15771-43-4)	STEL	0.002 mg/m <sup>3</sup> (as beryllium)
	TWA	0.0002 mg/m <sup>3</sup> (as beryllium)

### Biological limit values

No biological exposure limits noted for the ingredient(s).

### Exposure guidelines

On July 14, 2020, the Occupational Safety and Health Administration (OSHA) issued the final Beryllium Standard for General Industry (29 CFR 1910.1024) which includes a Permissible Exposure Limit (PEL) of 0.2 µg/m<sup>3</sup> as an 8-hour TWA. The Preamble to the OSHA Beryllium Standards in 29 CFR Parts 1910, 1915 and 1926 states: "OSHA concludes that exposure to beryllium constitutes a significant risk of material impairment to health and that the final rule will substantially lower that risk. The Agency considers the level of risk remaining at the new TWA PEL to still be significant. However, OSHA did not adopt a lower TWA PEL because the Agency could not demonstrate technological feasibility of a lower TWA PEL. The Agency has adopted the STEL and ancillary provisions of the rule to further reduce the remaining significant risk."

Based on joint research conducted with the National Institute for Occupational Safety and Health (NIOSH), Materion adopted an 8 element Beryllium Worker Protection Model (BWPM) which includes the use of a recommended exposure guideline (REG) for airborne beryllium of 0.2 µg/m<sup>3</sup> as a time-weighted average (TWA) limit for an 8-hour work day. Subsequent NIOSH studies have shown that the BWPM has reduced but not eliminated the risk of beryllium sensitization and chronic beryllium disease (CBD) in workers. Therefore, Materion recommends that beryllium users not only comply with the OSHA Beryllium Standard and carefully apply all elements of the BWPM, but reduce airborne exposures to the lowest feasible level. Information on the BWPM can be found at [www.berylliumsafety.com](http://www.berylliumsafety.com) or by contacting Materion at +1 800.862.4118.

The American Conference of Governmental Industrial Hygienists (ACGIH®) is a scientific body that has developed guidelines for all listed substances. In its development documents, the ACGIH® states that "Threshold Limit Values and Biological Exposure Indices represent conditions under which ACGIH® believes that nearly all workers may be repeatedly exposed without adverse health effects. They are not fine lines between safe and dangerous exposures, nor are they a relative index of toxicology."

Specific genetic factors have been identified and shown to increase an individual's susceptibility to CBD. Medical testing is available to detect those genetic factors in individuals.

## Appropriate engineering controls

**VENTILATION:** 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.

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.

**WET METHODS:** Machining operations are usually performed under a liquid lubricant/coolant flood which assists in reducing airborne particulate. However, the cycling through of machine coolant containing finely divided particulate in suspension can result in the concentration building to a point where the particulate may become airborne during use. Certain processes such as sanding and grinding may require complete hooded containment and local exhaust ventilation. Prevent coolant from splashing onto floor areas, external structures or operators' clothing. Utilize a coolant filtering system to remove particulate from the coolant.

**WORK PRACTICES:** Develop work practices and procedures that prevent particulate from coming in contact with worker skin, hair, or personal clothing. If work practices and/or procedures are ineffective in controlling airborne exposure or visual particulate from deposition on skin, hair, or clothing, provide appropriate cleaning/washing facilities. Procedures should be written that clearly communicate the facility's requirements for protective clothing and personal hygiene. These clothing and personal hygiene requirements help keep particulate from being spread to non-production areas or from being taken home by the worker. Never use compressed air to clean work clothing or other surfaces.

Fabrication processes may leave a residue of particulate on the surface of parts, products or equipment that could result in employee exposure during subsequent material handling activities. As necessary, clean loose particulate from parts between processing steps. As a standard hygiene practice, wash hands before eating or smoking.

**HOUSEKEEPING:** Use vacuum and wet cleaning methods for particulate removal from surfaces. Be certain to de-energize electrical systems, as necessary, before beginning wet cleaning. Use vacuum cleaners with high efficiency particulate air (HEPA). Do not use compressed air, brooms, or conventional vacuum cleaners to remove particulate from surfaces as this activity can result in elevated exposures to airborne particulate. Follow the manufacturer's instructions when performing maintenance on HEPA filtered vacuums used to clean hazardous materials.

## 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

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** Crystalline.

**Color** White.

**Odor** None.

**Odor threshold** Not applicable.

**pH** Not applicable.

**Melting point/freezing point** 662 °F (350 °C) Decomposes / Not applicable.

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

**Flash point** Not applicable.

**Evaporation rate** Not applicable.

**Flammability (solid, gas)** None known.

### Upper/lower flammability or explosive limits

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

**Explosive limit - upper (%)** Not applicable.

**Vapor pressure** Not applicable.

**Vapor density** Not applicable.

**Relative density** Not applicable.

### Solubility(ies)

**Solubility (water)** Soluble

**Partition coefficient (n-octanol/water)** Not applicable.

**Auto-ignition temperature** Not applicable.

**Decomposition temperature** Not applicable.

**Viscosity** Not applicable.

### Other information

**Explosive properties** Not explosive.

**Oxidizing properties** Not oxidizing.

## 10. Stability and reactivity

**Reactivity** The product is stable and non-reactive under normal conditions of use, storage and transport.

**Chemical stability** Material is stable under normal conditions.

**Possibility of hazardous reactions** Hazardous polymerization does not occur.

**Conditions to avoid** Avoid dust formation. Contact with acids. Contact with alkalis.

**Incompatible materials** Strong acids, alkalies and oxidizing agents.

**Hazardous decomposition products** 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

**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.

### IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

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

Not listed.

**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** Hazardous by OSHA criteria. May cause damage to organs through prolonged or repeated exposure.

**Further information** Symptoms may be delayed.

## 12. Ecological information

**Ecotoxicity** No ecotoxicity data noted for the ingredient(s).

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential** Not available.

**Mobility in soil** Not available.

**Other adverse effects** 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. When this product as supplied is to be discarded as waste, it does not meet the definition of a RCRA waste under 40 CFR 261.
<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

#### DOT

<b>UN number</b>	UN1566
<b>UN proper shipping name</b>	Beryllium compounds, n.o.s.
<b>Transport hazard class(es)</b>	
<b>Class</b>	6.1
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	6.1
<b>Packing group</b>	II
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	No.
<b>Special precautions for user</b>	Not assigned.
<b>Special provisions</b>	IB8, IP2, IP4, T3, TP33
<b>Packaging exceptions</b>	153
<b>Packaging non bulk</b>	212
<b>Packaging bulk</b>	242

#### IATA

<b>UN number</b>	UN1566
<b>UN proper shipping name</b>	Beryllium compound, n.o.s.
<b>Transport hazard class(es)</b>	
<b>Class</b>	6.1
<b>Subsidiary risk</b>	-
<b>Packing group</b>	II
<b>Environmental hazards</b>	No.
<b>ERG Code</b>	6L
<b>Special precautions for user</b>	Not assigned.
<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>	UN1566
<b>UN proper shipping name</b>	BERYLLIUM COMPOUND, N.O.S.
<b>Transport hazard class(es)</b>	
<b>Class</b>	6.1
<b>Subsidiary risk</b>	-
<b>Packing group</b>	II
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	No.
<b>EmS</b>	F-A, S-A
<b>Special precautions for user</b>	Not assigned.

DOT



IATA; IMDG



## 15. Regulatory information

### US federal regulations

One or more components are not listed on TSCA.

This product is for research and development use only.

This chemical substance is for use by, or directly under the supervision of, a technically qualified individual. This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### Toxic Substances Control Act (TSCA)

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

Not regulated.

#### CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

#### SARA 304 Emergency release notification

Not regulated.

#### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

#### SARA 302 Extremely hazardous substance

Not listed.

#### SARA 311/312 Hazardous chemical

Yes

##### Classified hazard categories

Acute toxicity (any route of exposure)  
Respiratory or skin sensitization  
Carcinogenicity  
Specific target organ toxicity (single or repeated exposure)

#### SARA 313 (TRI reporting)

Not regulated.

### Other federal regulations

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

#### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

#### Safe Drinking Water Act (SDWA)

Not regulated.

**US state regulations**

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

**California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**16. Other information, including date of preparation or last revision**

**Issue date** 04-22-2016

**Revision date** 03-29-2024

**Version #** 06

**Further information** Transportation Emergency  
Call Chemtrec at:  
US: 800.424.9300  
International: 703.741.5970  
Spain: 900.868.538  
Switzerland: 0800.564.402  
Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059  
South Korea Toll-free Number – 080-880-0468

**Disclaimer** This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. Materion makes no warranties, expressed or implied, as to the accuracy of the information contained herein. Materion cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations.

**Revision information** First-aid measures: Indication of immediate medical attention and special treatment needed  
First-aid measures: General information