



## MATERION

### 1. Chemical and company identification

**Name of chemical (Product name)** Beryllium Oxide Ceramic Product

**Supplier's company name, address and phone number**

**Company name** Materion Brush Inc.

**Address** 6070 Parkland Boulevard  
Mayfield Heights, OH 44124 United States

**Contact person** Theodore Knudson

**Telephone** 1.800.862.4118

**e-mail address** ehs@materion.com

**Emergency telephone number** 1.800.862.4118

**Reference number** C10

### 2. Hazards identification

#### GHS classification

**Physical hazards** The product is not classified according to GHS.

**Health hazards** Carcinogenicity Category 1  
Specific target organ toxicity, repeated exposure Category 1 (Respiratory system)

**Environmental hazards** The product is not classified according to GHS.

#### GHS label elements

##### Pictograms



##### Signal words

Danger

##### Hazard statement

May cause cancer. 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. Do not breathe dust/fume. 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.

##### Response

If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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 or doctor/physician. Wash contaminated clothing before reuse.

##### Storage

Store locked up.

##### Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

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

None known.

#### Supplemental information

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 +1.216.383.4019.

#### Main symptoms and emergency overview

**Main symptoms** Prolonged exposure may cause chronic effects.

**Emergency overview**

Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

**3. Composition/information on ingredients**

Substance or mixture	Substance	Gazette notification			
		CAS Number	ENCS no.	ISHL no.	Concentration (%)
Beryllium Oxide Ceramic Product		1304-56-9	(1)-94	(1)-94	100

**Synonym(s)** Beryllium Oxide, Beryllia, Thermalox® 995, BW 1000®, BW3250®, Thermalox® CR

**Chemical formula** Be-O (1304-56-9)

**4. First aid measures**

**If inhaled** 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.

**If on skin** 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.

**If in eyes** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention if symptoms persist.

**If swallowed** 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.

**Most important symptoms/effects, acute and delayed** The beryllium oxide in the product is not known to cause acute health effects. Inhaling particulate containing beryllium oxide can cause a serious, chronic lung disease called Chronic Beryllium Disease (CBD) in some individuals.

**Protection of first-aid responders** 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.

**Notes to physician** 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."

**5. Fire-fighting measures**

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

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

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

**Protection of fire-fighters** Firefighters should wear full protective clothing including self contained breathing apparatus. Wear suitable protective equipment.

**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.

**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.

**Methods and materials for containment and cleaning up** Clean up in accordance with all applicable regulations.

## 7. Handling and storage

### Handling

**Technical measures (e.g. Local and general ventilation)** Not available.

**Safe handling advice** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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.

**Hygiene measures** Handle in accordance with good industrial hygiene and safety practice.

### Storage

**Safe storage conditions** Store locked up. Avoid contact with acids and alkalis. Avoid contact with oxidizing agents.

**Safe packaging materials** Not applicable.

## 8. Exposure controls/personal protection

### Control parameters

**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.

## Occupational exposure limits

### Japan. OELs - ISHL. (Workplace Environment Assessment Standards)

Material	Type	Value
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	TLV	0.001 mg/m <sup>3</sup>

### Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

Material	Type	Value
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	TWA	0.002 mg/m <sup>3</sup>

### US. ACGIH Threshold Limit Values

Material	Type	Value	Form
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	TWA	0.00005 mg/m <sup>3</sup> (as Inhalable fraction. beryllium)	

## Engineering measures

**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.

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.

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**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.

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## Personal protective equipment

### 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.

### Hand protection

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

### Eye 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 and body protection

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.

## 9. Physical and chemical properties

Physical state	Solid.
Form	Various shapes.
Color	White.
Odor	Not applicable.
Odor threshold	Not applicable.
Melting point/freezing point	4586 °F (2530 °C)
Boiling point, initial boiling point, and boiling range	7052 °F (3900 °C)
Combustibility	Not applicable.
Lower and upper explosion limit / flammability limit	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Flash point	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
pH	Not applicable.
Kinematic viscosity	Not available.
Solubility(ies)	
Solubility (water)	Not applicable.
Partition coefficient (n-octanol/water) (log value)	Not available.
Vapor pressure	6.67 kPa at 25°C estimated
Density and/or relative density	
Density	3.01 g/cm <sup>3</sup> estimated
Relative density	Not applicable.
Vapor density	Not applicable.
Particle characteristics	Not available.
Other information	
Evaporation rate	Not applicable.
Molecular formula	Be-O
Molecular weight	25.01 g/mol

Specific gravity	1.85 estimated
Viscosity (Coefficient of viscosity)	Not applicable.

## 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	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

## 11. Toxicological information

Acute toxicity	Not available.
Skin corrosion/irritation	Not likely, due to the form of the product.
Serious eye damage/eye irritation	Not likely, due to the form of the product.
Respiratory or skin sensitization	
<b>Japan Society for Occupational Health: Respiratory sensitizer</b>	
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	1 Known respiratory sensitizer.
<b>Japan Society for Occupational Health: Skin sensitizer</b>	
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	2 Probable skin sensitizer.
Respiratory sensitization	May cause damage to organs (respiratory system) through prolonged or repeated exposure.
Skin sensitization	Not a skin sensitizer.
Germ cell mutagenicity	Due to lack of data the classification is not possible.
Carcinogenicity	Cancer hazard.
<b>ACGIH Carcinogens</b>	
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	A1 Confirmed human carcinogen.
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>	
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	1 Carcinogenic to humans.
<b>Japan Society for Occupational Health: Carcinogen</b>	
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	1 Carcinogenic to humans.
<b>NTP Report on Carcinogens</b>	
Beryllium Oxide Ceramic Product (CAS 1304-56-9)	Known To Be Human Carcinogen.
Reproductive toxicity	Not classified.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	May cause damage to organs (respiratory system) through prolonged or repeated exposure.
Aspiration hazard	Due to lack of data the classification is not possible.

## 12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulation	No data available.
Mobility in soil	No data available.
Hazardous to the ozone layer	No data available.
Other hazardous effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

### 13. Disposal considerations

<b>Residual waste</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.
<b>Local disposal regulations</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.

### 14. Transport information

<b>IATA</b>	Not regulated as dangerous goods.
<b>IMDG</b>	Not regulated as dangerous goods.
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not available.
<b>National regulations</b>	Follow regulation in section 15 for domestic transportation.
<b>Emergency Response Guide Number</b>	154

### 15. Regulatory information

<b>Industrial Safety and Health Act</b>	
<b>Specified substances regulation</b>	
<b>Class 1 designated chemical substances</b>	
BERYLLIUM AND ITS COMPOUNDS	
<b>Notifiable substances</b>	
BERYLLIUM AND ITS COMPOUNDS	Table 9 Ordinance No. VI
<b>Labeling substances</b>	
BERYLLIUM AND ITS COMPOUNDS	
<b>Poisonous and Deleterious Substances Control Act</b>	
<b>Specified poisonous substances</b>	
Not regulated.	
<b>Poisonous substances</b>	
Not regulated.	
<b>Deleterious substances</b>	
Not regulated.	
<b>Act on the Regulation of Manufacture and Evaluation of Chemical Substances</b>	
<b>Class I specified chemical substances</b>	
Not regulated.	
<b>Class II specified chemical substances</b>	
Not regulated.	
<b>Monitoring chemical substances</b>	
Not regulated.	
<b>Priority Assessment Chemical Substances (PACs)</b>	
Not regulated.	
<b>Reporting Exempted Substances</b>	
Not regulated.	
<b>Law concerning Pollutant Release and Transfer Register</b>	
<b>Specified class 1 substances (substance name, ordinance number and content)</b>	
BERYLLIUM AND ITS COMPOUNDS	Ordinance No. 394 (Beryllium Oxide Ceramic Product)
<b>Class 1 substances (substance name, ordinance number and content)</b>	
Not regulated.	
<b>Class 2 substances (substance name, ordinance number and content)</b>	
Not regulated.	

**Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule** Not regulated.

**Air Law, Enforcement Rule** Not regulated.

**Explosives Control Act**  
Not regulated.

## 16. Other information

**Further information** Transportation Emergency  
Call Chemtrec at:  
International: 703.741.5970  
Spain: 900.868.538  
Switzerland: 0800.564.402

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**Revision information** Hazards identification: Prevention  
Exposure controls/personal protection: Engineering measures  
Other information: Further information