



## MATERION

### 1. Chemical and company identification

**Name of chemical (Product name)** Beryllium Hydroxide

**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** D03

### 2. Hazards identification

#### GHS classification

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

**Health hazards**

Sensitization, respiratory	Category 1
Sensitization, skin	Category 1
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 by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes damage to organs (respiratory system) through prolonged or repeated exposure. May cause long lasting harmful effects to aquatic life.

#### 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. 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: Get medical advice/attention. 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

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

## Main symptoms and emergency overview

**Main symptoms** Discomfort in the chest. Shortness of breath. Coughing. Skin irritation. Rash. Sensitization. Prolonged exposure may cause chronic effects.

**Emergency overview** DANGER

Fatal if inhaled. Very toxic. Harmful if absorbed through skin. Harmful in contact with eyes. Cancer hazard. May cause an allergic skin reaction. May cause sensitization by inhalation and skin contact. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Possible reproductive hazard. Causes damage to organs. Danger of serious damage to health by prolonged exposure. Dangerous for the environment if discharged into watercourses.

## 3. Composition/information on ingredients

**Substance or mixture** Substance

<b>Chemical name or generic name</b>	<b>CAS Number</b>	<b>Gazette notification</b>		<b>Concentration (%)</b>
		<b>ENCS no.</b>	<b>ISHL no.</b>	
Beryllium Hydroxide	13327-32-7	(1)-595	(1)-595	100

**Chemical formula** Be.H2-O2 (13327-32-7)

## 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** May cause allergic skin reaction. May cause allergic respiratory reaction. Prolonged exposure may cause chronic effects.

**Protection of first-aid responders** If exposed or concerned: get medical attention/advice. Get medical attention if symptoms occur. Wash contaminated clothing before reuse.

**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** Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

**Extinguishing media to avoid** Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards** During fire, gases hazardous to health may be formed.

<b>Special fire fighting procedures</b>	Use water spray to cool unopened containers.
<b>Protection of fire-fighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe dust. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.
<b>Environmental precautions</b>	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.
<b>Methods and materials for containment and cleaning up</b>	Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Stop the flow of material, if this is without risk. Collect dust using a vacuum cleaner equipped with HEPA filter.  Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Prevent product from entering drains. Following product recovery, flush area with water.  Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.  Never return spills to original containers for re-use.

## 7. Handling and storage

### Handling

<b>Technical measures (e.g. Local and general ventilation)</b>	Provide appropriate exhaust ventilation at places where dust is formed.
<b>Safe handling advice</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid prolonged exposure. Should be handled in closed systems, if possible. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.
<b>Hygiene measures</b>	Handle in accordance with good industrial hygiene and safety practice.

### Storage

<b>Safe storage conditions</b>	Store locked up. Keep container tightly closed. Store in a well-ventilated place.
<b>Safe packaging materials</b>	Store in original tightly closed container.

## 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 Hydroxide (CAS 13327-32-7)	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 Hydroxide (CAS 13327-32-7)	TWA	0.002 mg/m <sup>3</sup>

#### US. ACGIH Threshold Limit Values

Material	Type	Value	Form
Beryllium Hydroxide (CAS 13327-32-7)	TWA	0.00005 mg/m <sup>3</sup>	Inhalable fraction.

## 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.

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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## 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

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.

## 9. Physical and chemical properties

Physical state	Solid.
Form	Wet cake
Color	White.
Odor	Not applicable.
Odor threshold	Not applicable.
Melting point/freezing point	Not applicable.
Boiling point, initial boiling point, and boiling range	Not available.
Combustibility	Flammable solid.
<b>Lower and upper explosion limit / flammability limit</b>	
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.
<b>Solubility(ies)</b>	
Solubility (water)	Not applicable.
Solubility (other)	Soluble in acids and strong bases.
Partition coefficient (n-octanol/water) (log value)	Not available.
Vapor pressure	Not applicable.
<b>Density and/or relative density</b>	
Density	1.92 g/cm <sup>3</sup> estimated
Relative density	Not applicable.
Vapor density	Not applicable.
Particle characteristics	Not available.
<b>Other information</b>	
Evaporation rate	Not applicable.
Explosive properties	Not explosive.
Molecular formula	Be.H <sub>2</sub> -O <sub>2</sub>
Molecular weight	43.03 g/mol
Oxidizing properties	Not oxidizing.
Specific gravity	1.92
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** May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction.

**Skin corrosion/irritation** May cause allergic skin reaction.

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

### Respiratory or skin sensitization

#### Japan Society for Occupational Health: Respiratory sensitizer

Beryllium Hydroxide (CAS 13327-32-7) 1 Known respiratory sensitizer.

#### Japan Society for Occupational Health: Skin sensitizer

Beryllium Hydroxide (CAS 13327-32-7) 2 Probable skin 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.

#### IARC Monographs. Overall Evaluation of Carcinogenicity

Beryllium Hydroxide (CAS 13327-32-7) 1 Carcinogenic to humans.

#### Japan Society for Occupational Health: Carcinogen

Beryllium Hydroxide (CAS 13327-32-7) 1 Carcinogenic to humans.

**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.

**Other information** Symptoms may be delayed.

## 12. Ecological information

**Ecotoxicity** May cause long lasting harmful effects to aquatic life.

**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

**Residual waste** Dispose of in accordance with local regulations. 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).

**Contaminated packaging** Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

**Local disposal regulations** Contract with a disposal operator licensed by the Law on Disposal and Cleaning. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

## 14. Transport information

### IATA

UN number	1566
UN proper shipping name	Beryllium compound, n.o.s.
Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	6L
Special precautions for user	Not available.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

### IMDG

UN number	1566
UN proper shipping name	BERYLLIUM COMPOUND, N.O.S.
Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-A
Special precautions for user	Not available.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

### IATA; IMDG



National regulations	Follow regulation in section 15 for domestic transportation.
Emergency Response Guide Number	154

## 15. Regulatory information

### Industrial Safety and Health Act

#### Specified substances regulation

##### Class 1 designated chemical substances

BERYLLIUM AND ITS COMPOUNDS

#### Notifiable substances

BERYLLIUM AND ITS COMPOUNDS

Table 9 Ordinance No. VI

#### Labeling substances

BERYLLIUM AND ITS COMPOUNDS

Table 3-1 Ordinance No. 6

### Poisonous and Deleterious Substances Control Act

#### Specified poisonous substances

Not regulated.

#### Poisonous substances

Not regulated.



**Deleterious substances**

Not regulated.

**Act on the Regulation of Manufacture and Evaluation of Chemical Substances****Class I specified chemical substances**

Not regulated.

**Class II specified chemical substances**

Not regulated.

**Monitoring chemical substances**

Not regulated.

**Priority Assessment Chemical Substances (PACs)**

Not regulated.

**Reporting Exempted Substances**

Not regulated.

**Law concerning Pollutant Release and Transfer Register****Specified class 1 substances (substance name, ordinance number and content)**

BERYLLIUM AND ITS COMPOUNDS                      Ordinance No. 394                      (Beryllium Hydroxide)

**Class 1 substances (substance name, ordinance number and content)**

Not regulated.

**Class 2 substances (substance name, ordinance number and content)**

Not regulated.

**Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule**                      Toxic substances

**Air Law, Enforcement Rule**                      Toxic substances

**Explosives Control Act**

Not regulated.

**16. Other information****Bibliography**

HSDB® - Hazardous Substances Data Bank  
IARC Monographs. Overall Evaluation of Carcinogenicity  
Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits  
Japan Chemical Industry Association (JCIA) GHS Guideline, June 2012  
JIS Z 7252:2014 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"  
JIS Z 7253:2012 Hazard communication of chemicals based on GHS – Labelling and Safety Data Sheet (SDS)

**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  
Other information: Further information