



SAFETY DATA SHEET

MATERION

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture Beryllium Aluminum Silicate

Synonyms None.

Document number C25

Issue date 09-August-2016

Version number 01

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Not available.

Uses advised against Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Consumer uses: Private households (= general public = consumers)

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Brush Inc.
Address 6070 Parkland Boulevard
Mayfield Heights, OH 44124
United States

Division

Telephone 1.216.383.4019
e-mail ehs@materion.com
Contact person Theodore Knudson

1.4. Emergency telephone number 1.216.383.4019

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Acute toxicity, oral	Category 3	H301 - Toxic if swallowed.
Acute toxicity, inhalation	Category 2	H330 - Fatal if inhaled.
Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.
Skin sensitisation	Category 1	H317 - May cause an allergic skin reaction.
Carcinogenicity	Category 1B	H350 - May cause cancer.
Specific target organ toxicity - repeated exposure	Category 1 (Respiratory system)	H372 - Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

Hazard summary Fatal if inhaled. Toxic if swallowed. Causes damage to organs through prolonged or repeated exposure. May cause cancer. Causes serious eye irritation. Causes skin irritation. May cause an allergic skin reaction. May cause irritation to the respiratory system. Prolonged exposure may cause chronic effects. Occupational exposure to the substance or mixture may cause adverse health effects.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Aluminium oxide, Beryllium Oxide, Silicon dioxide

Hazard pictograms



Signal word

Danger

Hazard statements

H301	Toxic if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H350	May cause cancer.
H372	Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

Precautionary statements

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	Wear respiratory protection.

Response

P301 + P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.
P320	Specific treatment is urgent (see this label).
P330	Rinse mouth.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage

P405	Store locked up.
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Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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Supplemental label information

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

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Silicon dioxide	67	60676-86-0 262-373-8	-	-	
Classification:	STOT SE 3;H335, STOT RE 2;H373				
Aluminium oxide	19	1344-28-1 215-691-6	-	-	
Classification:	-				

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Beryllium Oxide	14	1304-56-9 215-133-1	-	004-003-00-8	
Classification:	Acute Tox. 3;H301, Resp. Sens. 1;H334, Carc. 1B;H350, Carc. 1B;H350i, STOT RE 2;H373				

SECTION 4: First aid measures

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 oxide ceramic products in article form. First aid measures provided are related to particulate containing beryllium oxide.
4.1. Description of first aid measures	
Inhalation	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.
Skin contact	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.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention if symptoms persist.
Ingestion	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.
4.2. Most important symptoms and effects, both 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. Inhaling particulate containing beryllium oxide can cause a serious, chronic lung disease called Chronic Beryllium Disease (CBD) in some individuals.
4.3. Indication of any immediate medical attention and special treatment needed	<p>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. These latter agents remain investigational. Further, 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. In general, these medications should be reserved for cases with significant symptoms and/or significant loss of lung function. Other symptomatic treatment, such as oxygen, inhaled steroids or bronchodilators, may be prescribed by some physicians and can be effective in selected cases.</p> <p>The decision about when and with what medication to treat is a judgment situation for individual physicians. For the most part, treatment is reserved for those persons with symptoms and measurable loss of lung function. The value of starting oral steroid treatment, before signs or symptoms are evident, remains a medically unresolved issue.</p> <p>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.</p>

SECTION 5: Firefighting measures

General fire hazards	Not available.
5.1. Extinguishing media	
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.
5.2. Special hazards arising from the substance or mixture	Not available.

5.3. Advice for firefighters

Special protective equipment for firefighters

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

Special firefighting procedures

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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

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

For emergency responders

Not available.

6.2. 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.

6.3. Methods and material for containment and cleaning up

Clean up in accordance with all applicable regulations.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimise 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.

7.2. Conditions for safe storage, including any incompatibilities

Keep locked-up. Avoid contact with acids and alkalis. Avoid contact with oxidising agents.

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	MAK	5 mg/m ³	Respirable fraction.
		5 mg/m ³	Respirable fume.
	STEL	10 mg/m ³	Inhalable fraction.
		20 mg/m ³	Inhalable fraction.
		10 mg/m ³	Respirable fraction.
Silicon dioxide (CAS 60676-86-0)	MAK	10 mg/m ³	Respirable fume.
		0,3 mg/m ³	Respirable fraction.

Austria. TRK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Material	Type	Value	Form
Beryllium Aluminum Silicate	STEL	0,008 mg/m ³	Inhalable fraction.
	TWA	0,002 mg/m ³	Inhalable fraction.
Components	Type	Value	Form
Beryllium Oxide (CAS 1304-56-9)	STEL	0,008 mg/m ³	Inhalable fraction.
	TWA	0,002 mg/m ³	Inhalable fraction.

Belgium. Exposure Limit Values.

Material	Type	Value
Beryllium Aluminum Silicate	STEL	0,01 mg/m ³
	TWA	0,002 mg/m ³

Belgium. Exposure Limit Values.

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	1 mg/m ³	Respirable fraction.
Beryllium Oxide (CAS 1304-56-9)	STEL	0,01 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TWA	0,002 mg/m ³	
	TWA	2 mg/m ³	Respirable fraction.
		0,1 mg/m ³	Respirable dust.

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	10 mg/m ³	Dust.
Beryllium Oxide (CAS 1304-56-9)	TWA	1,5 mg/m ³	Respirable fraction.
		0,002 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TWA	10 mg/m ³	Inhalable fraction.
		0,07 mg/m ³	Respirable fraction.

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

Material	Type	Value	Form
Beryllium Aluminum Silicate	MAC	0,002 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	MAC	4 mg/m ³	Respirable dust.
Beryllium Oxide (CAS 1304-56-9)	MAC	10 mg/m ³	Total dust.
		0,002 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	MAC	0,08 mg/m ³	Respirable dust.

Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.

Material	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,002 mg/m ³	
Components	Type	Value	Form
Beryllium Oxide (CAS 1304-56-9)	TWA	0,002 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TWA	2 mg/m ³	

Czech Republic. OELs. Government Decree 361

Material	Type	Value	Form
Beryllium Aluminum Silicate	Ceiling	0,002 mg/m ³	
	TWA	0,001 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	0,1 mg/m ³	Respirable dust.
Beryllium Oxide (CAS 1304-56-9)	Ceiling	0,002 mg/m ³	
	TWA	0,001 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TWA	4 mg/m ³	Dust.
	TWA		

Denmark. Exposure Limit Values

Material	Type	Value	Form
Beryllium Aluminum Silicate	TLV	0,001 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TLV	5 mg/m ³	Total
		2 mg/m ³	Respirable.

Denmark. Exposure Limit Values Components

Type	Value	Form
Beryllium Oxide (CAS 1304-56-9)	TLV	0,001 mg/m3
Silicon dioxide (CAS 60676-86-0)	TLV	0,1 mg/m3 Respirable.

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

Material Components	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,002 mg/m3	
Aluminium oxide (CAS 1344-28-1)	TWA	4 mg/m3	Respirable dust.
Beryllium Oxide (CAS 1304-56-9)	TWA	10 mg/m3 0,002 mg/m3	Total dust.
Silicon dioxide (CAS 60676-86-0)	TWA	2 mg/m3	Respirable dust.

Finland. Workplace Exposure Limits

Material Components	Type	Value
Beryllium Aluminum Silicate	STEL	0,0004 mg/m3
Beryllium Oxide (CAS 1304-56-9)	STEL	0,0004 mg/m3
Silicon dioxide (CAS 60676-86-0)	TWA TWA	0,0001 mg/m3 5 mg/m3

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Material Components	Type	Value
Beryllium Aluminum Silicate	VME	0,002 mg/m3
Aluminium oxide (CAS 1344-28-1)	VME	10 mg/m3
Beryllium Oxide (CAS 1304-56-9)	VME	0,002 mg/m3

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	4 mg/m3	Inhalable dust.
Silicon dioxide (CAS 60676-86-0)	TWA	1,5 mg/m3 0,3 mg/m3	Respirable dust. Respirable fraction.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	AGW	10 mg/m3	Inhalable fraction.
Silicon dioxide (CAS 60676-86-0)	AGW	1,25 mg/m3 0,3 mg/m3	Respirable fraction. Respirable fraction.

Greece. OELs (Decree No. 90/1999, as amended)

Material Components	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,005 mg/m3	
Aluminium oxide (CAS 1344-28-1)	TWA	5 mg/m3	Inhalable
Beryllium Oxide (CAS 1304-56-9)	TWA	10 mg/m3 0,005 mg/m3	Respirable.

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value	
Beryllium Aluminum Silicate	Ceiling	0,002 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	6 mg/m ³	Respirable.
Beryllium Oxide (CAS 1304-56-9)	Ceiling	0,002 mg/m ³	

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

Material	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,001 mg/m ³	Dust.
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	10 mg/m ³	
Beryllium Oxide (CAS 1304-56-9)	TWA	0,001 mg/m ³	Dust.
Silicon dioxide (CAS 60676-86-0)	TWA	0,1 mg/m ³	Respirable dust.

Ireland. Occupational Exposure Limits

Material	Type	Value	
Beryllium Aluminum Silicate	STEL	0,0002 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	4 mg/m ³	Respirable dust.
Beryllium Oxide (CAS 1304-56-9)	STEL	10 mg/m ³ 0,0002 mg/m ³	Total inhalable dust.
Silicon dioxide (CAS 60676-86-0)	TWA	0,00005 mg/m ³ 0,08 mg/m ³	Respirable dust.

Italy. Occupational Exposure Limits

Material	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,00005 mg/m ³	Inhalable fraction.
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	1 mg/m ³	Respirable fraction.
Beryllium Oxide (CAS 1304-56-9)	TWA	0,00005 mg/m ³	Inhalable fraction.

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	6 mg/m ³	Decomposition aerosol.
Silicon dioxide (CAS 60676-86-0)	TWA	4 mg/m ³ 1 mg/m ³	

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Material	Type	Value	
Beryllium Aluminum Silicate	TWA	0,002 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	5 mg/m ³	Inhalable fraction.
Beryllium Oxide (CAS 1304-56-9)	TWA	2 mg/m ³ 0,002 mg/m ³	Respirable fraction.

Norway. Administrative Norms for Contaminants in the Workplace

Material	Type	Value
Beryllium Aluminum Silicate	TLV	0,001 mg/m ³

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TLV	10 mg/m ³	
Beryllium Oxide (CAS 1304-56-9)	TLV	0,001 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TLV	1,5 mg/m ³	Respirable dust.

Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment

Material	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,0002 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	2,5 mg/m ³	Inhalable fraction.
		1,2 mg/m ³	Respirable fraction.
Beryllium Oxide (CAS 1304-56-9)	TWA	0,0002 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TWA	2 mg/m ³	Inhalable fraction.
		1 mg/m ³	Respirable fraction.

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

Material	Type	Value	Form
Beryllium Aluminum Silicate	STEL	0,01 mg/m ³	
	TWA	0,002 mg/m ³	
Components	Type	Value	
Aluminium oxide (CAS 1344-28-1)	TWA	10 mg/m ³	
Beryllium Oxide (CAS 1304-56-9)	STEL	0,01 mg/m ³	
	TWA	0,002 mg/m ³	

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

Material	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,002 mg/m ³	
Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	STEL	5 mg/m ³	Aerosol
		1,2 ppm	Aerosol
	TWA	2 mg/m ³	Aerosol
		0,5 ppm	Aerosol
Beryllium Oxide (CAS 1304-56-9)	TWA	0,002 mg/m ³	

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Components	Type	Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	4 mg/m ³	Inhalable fraction.
		1,5 mg/m ³	Respirable fraction.
		0,1 mg/m ³	
Silicon dioxide (CAS 60676-86-0)	TWA	0,3 mg/m ³	

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

Material	Type	Value	Form
Beryllium Aluminum Silicate	TWA	0,002 mg/m ³	Inhalable fraction.
Components	Type	Value	Form
Beryllium Oxide (CAS 1304-56-9)	TWA	0,002 mg/m ³	Inhalable fraction.
Silicon dioxide (CAS 60676-86-0)	TWA	0,3 mg/m ³	Respirable fraction.

Spain. Carcinogens and Mutagens with Limit Values (Table 2)

Material	Type	Value	
Beryllium Aluminum Silicate Components	TWA Type	0,0002 mg/m3 Value	
Beryllium Oxide (CAS 1304-56-9)	TWA	0,0002 mg/m3	
Spain. Occupational Exposure Limits			
Components	Type	Value	
Aluminium oxide (CAS 1344-28-1)	TWA	10 mg/m3	
Sweden. Occupational Exposure Limit Values			
Material	Type	Value	Form
Beryllium Aluminum Silicate Components	TWA Type	0,002 mg/m3 Value	Total dust. Form
Aluminium oxide (CAS 1344-28-1)	TWA	5 mg/m3	Total dust.
Beryllium Oxide (CAS 1304-56-9)	TWA	2 mg/m3 0,002 mg/m3	Respirable dust. Total dust.
Switzerland. SUVA Grenzwerte am Arbeitsplatz			
Material	Type	Value	Form
Beryllium Aluminum Silicate Components	TWA Type	0,002 mg/m3 Value	Inhalable dust. Form
Aluminium oxide (CAS 1344-28-1)	STEL	24 mg/m3	Fume and respirable dust.
	TWA	3 mg/m3 3 mg/m3	Fume and respirable dust. Respirable dust.
Beryllium Oxide (CAS 1304-56-9)	TWA	0,002 mg/m3	Inhalable dust.
Silicon dioxide (CAS 60676-86-0)	TWA	0,3 mg/m3	Respirable dust.
UK. EH40 Workplace Exposure Limits (WELs)			
Material	Type	Value	
Beryllium Aluminum Silicate Components	TWA Type	0,002 mg/m3 Value	Form
Aluminium oxide (CAS 1344-28-1)	TWA	4 mg/m3	Respirable dust.
Beryllium Oxide (CAS 1304-56-9)	TWA	10 mg/m3 0,002 mg/m3	Inhalable dust.
Silicon dioxide (CAS 60676-86-0)	TWA	0,08 mg/m3	Respirable dust.

Biological limit values

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

Recommended monitoring procedures

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.

Derived no-effect level (DNEL)

Not available.

Predicted no effect concentrations (PNECs)

Not available.

8.2. Exposure controls

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.

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.

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

Environmental exposure controls Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Solid.

Form Powder.

Colour White.

Odour Not applicable.

Odour threshold Not applicable.

pH Not applicable.

Melting point/freezing point 1710 °C (3110 °F) estimated

Initial boiling point and boiling range 2230 °C (4046 °F) estimated

Flash point Not applicable.

Evaporation rate Not applicable.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not applicable.

Flammability limit - upper (%) Not applicable.

Explosive limit - lower (%) Not applicable.

Explosive limit – upper (%) Not applicable.

Vapour pressure 9,34 hPa estimated

Vapour density Not applicable.

Relative density Not applicable.

Solubility(ies)

Solubility (water) Not applicable.

Solubility (other) Not applicable.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not applicable.

Decomposition temperature Not applicable.

Viscosity Not applicable.

Explosive properties Not explosive.

Oxidising properties Not oxidising.

9.2. Other information

Density 3,58 g/cm³ estimated

Flammability Not applicable.

Specific gravity 3,58 estimated

SECTION 10: Stability and reactivity

10.1. Reactivity Not available.

10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	Hazardous polymerisation does not occur.
10.4. Conditions to avoid	Avoid dust formation. Contact with acids. Contact with alkalis.
10.5. Incompatible materials	Strong acids, alkalies and oxidizing agents.
10.6. Hazardous decomposition products	No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation	May cause sensitisation by inhalation. May cause damage to organs (respiratory system) through prolonged or repeated exposure.
Skin contact	May cause an allergic skin reaction.
Eye contact	Harmful in contact with eyes.
Ingestion	Toxic if swallowed.

Symptoms Respiratory disorder.

11.1. Information on toxicological effects

Acute toxicity	May cause respiratory irritation. 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 sensitisation	May cause respiratory irritation.
Skin sensitisation	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 Oxide (CAS 1304-56-9)	1 Carcinogenic to humans.
Silicon dioxide (CAS 60676-86-0)	3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity	Not classified.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
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.
Mixture versus substance information	Not available.
Other information	Symptoms may be delayed.

SECTION 12: Ecological information

12.1. Toxicity	No toxicity data noted for the ingredient(s).
12.2. Persistence and degradability	No data is available on the degradability of this product.
12.3. Bioaccumulative potential	Not available.
Partition coefficient n-octanol/water (log Kow)	Not available.
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	Not available.
12.5. Results of PBT and vPvB assessment	Not a PBT or vPvB substance or mixture.
12.6. Other adverse effects	Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	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	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.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company. Waste codes should be assigned by the user based on the application for which the product was used.
Disposal methods/information	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.

SECTION 14: Transport information

ADR

14.1. UN number	UN1566
14.2. UN proper shipping name	Beryllium compound, n.o.s.
14.3. Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	6.1(PGI, II)
Label(s)	6.1
Hazard No. (ADR)	60
Tunnel restriction code	D/E
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not available.

RID

14.1. UN number	UN1566
14.2. UN proper shipping name	Beryllium compound, n.o.s.
14.3. Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	6.1(PGI, II)
Label(s)	6.1
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not available.

ADN

14.1. UN number	UN1566
14.2. UN proper shipping name	Beryllium compound, n.o.s.
14.3. Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	6.1(PGI, II)
Label(s)	6.1
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not available.

IATA

14.1. UN number	UN1566
14.2. UN proper shipping name	Beryllium compound, n.o.s.
14.3. Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	-
14.4. Packing group	II
14.5. Environmental hazards	No.
ERG Code	6L

14.6. Special precautions for user Not available.

Other information

Passenger and cargo aircraft Allowed.

Cargo aircraft only Allowed.

IMDG

14.1. UN number UN1566

14.2. UN proper shipping name BERYLLIUM COMPOUND, N.O.S.

14.3. Transport hazard class(es)

Class 6.1(PGI, II)

Subsidiary risk -

14.4. Packing group II

14.5. Environmental hazards

Marine pollutant No.

EmS F-A, S-A

14.6. Special precautions for user Not available.

ADN; ADR; RID



IATA; IMDG



SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended

Beryllium Oxide (CAS 1304-56-9)

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

Not listed.

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use

Beryllium Oxide (CAS 1304-56-9)

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Beryllium Oxide (CAS 1304-56-9)

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Beryllium Oxide (CAS 1304-56-9)

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

Beryllium Oxide (CAS 1304-56-9)

Directive 94/33/EC on the protection of young people at work, as amended

Beryllium Oxide (CAS 1304-56-9)

Other 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, as amended.

National regulations

Follow national regulation for work with chemical agents. 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, as amended.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Further information

Transportation Emergency
Call Chemtrec at:
Domestic: 800.424.9300
International: 703.527.3887

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