PRODUCT INFORMATION SHEET

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

Registration number 01-2119487146-32-000

Synonyms None.

1.1. Product identifier

Trade name or designation of the mixture Beryllium Solid Coated with Tungsten

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

Identified uses

Industrial uses: Uses of substances as such or in preparations at industrial sites
Offshore industries
Manufacture of basic metals, including alloys
Manufacture of computer, electronic and optical products, electrical equipment
General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Electricity, steam, gas water supply and sewage treatment
Scientific research and development
Other: Manufacture of medical and defense equipment

Uses advised against

Consumer uses: Private households (= general public = consumers) Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Casting, grinding or polishing of beryllium-containing alloys by artists;
Casting, grinding or polishing of beryllium-containing alloys for dental crowns, appliances or prosthetics;
Casting, grinding or polishing of beryllium-containing alloys for jewelry.

1.3. Details of the supplier of the product information sheet

Materion Brush Inc.
6070 Parkland Boulevard
Mayfield Heights, OH 44124
United States
ehs@materion.com
www.materion.com
+1.216.383.4019

Document number M48

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 classificatior applies.

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

Health hazards

Carcinogenicity	Category 1B	H350i - May cause cancer by inhalation.
Specific target organ toxicity - repeated exposure	Category 1	H372 - Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

2.2. Label elements

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

Contains: Beryllium, Tungsten

Hazard pictograms

Signal word Danger

Hazard statements

H350i	May cause cancer by inhalation.
H372	Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

Precautionary statements

Prevention

	Minimise dust generation and accumulation.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume.
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.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response

P330	Rinse mouth.
P302 + P350	If on skin: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342 + P311	If experiencing respiratory symptoms: Call a poison centre/doctor.
P308 + P313	If exposed or concerned: Get medical advice/attention.
P320	Specific treatment is urgent (see this label).
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal

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

Supplemental label information

Restricted to professional users.
For further information, please contact the Product Stewardship Department at +1.216.383.4019.

2.3. Other hazards

This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII. The mixture does not contain any substances included in the list established in accordance with REACH Article 59(1) for having endocrine disrupting properties at a concentration equal to or greater than 0.1% by weight.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Beryllium	88 - 92	7440-41-7 231-150-7	01-2119487146-32-0000	004-001-00-7	#
Classification: Skin Sens. 1;H317, Carc. 1B;H350i, STOT SE 3;H335, STOT RE 1;H372					
Tungsten	8 - 12	7440-33-7 231-143-9	-	-	
Classification: -					

List of abbreviations and symbols that may be used above

ATE: Acute toxicity estimate.
M: M-factor
vPvB: very persistent and very bioaccumulative substance.
PBT: persistent, bioaccumulative and toxic substance.
#: This substance has been assigned Union workplace exposure limit(s).
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments

The full text for all H-statements is displayed in section 16.

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 products in article form. First aid measures provided are related to particulate containing beryllium.

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

4.3. Indication of any 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 sensitizec 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.

SECTION 5: Firefighting measures

General fire hazards No unusual fire or explosion hazards noted.

5.1. Extinguishing media

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

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 During fire, gases hazardous to health may be formed.

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. Use water spray to cool unopened containers. Water runoff can cause environmental damage. Do not use water to extinguish fires around operations involving molten metal due to the potential for steam explosions.

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 Wear appropriate personal protective equipment.

For emergency responders	Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the Product Information Sheet. Use personal protection recommended in Section 8 of the PIS.
6.2. Environmental precautions	In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. 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.
6.3. Methods and material for containment and cleaning up	Clean up in accordance with all applicable regulations. Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Put material in suitable, covered, labeled containers.
6.4. Reference to other sections	For personal protection, see section 8 of the Product Information Sheet. For waste disposal, see section 13 of the Product Information Sheet.

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. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. Avoid prolonged exposure. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash thoroughly after handling. Observe good industrial hygiene practices.
7.2. Conditions for safe storage, including any incompatibilities	Keep locked-up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the Product Information Sheet). Store away from incompatible materials (see Section 10 of the PIS). Avoid contact with acids and alkalies. Avoid contact with oxidising agents.
7.3. Specific end use(s)	Observe industrial sector guidance on best practices.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

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

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	MAK	0,0006 mg/m3	Inhalable fraction.
	STEL	0,0002 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	MAK	5 mg/m3	Inhalable fraction.
	STEL	10 mg/m3	Inhalable fraction.

Austria. OELs. TRK List, Grenzwerteverordnung, BGBl. II, no. 429/2011, as amended

Material	Type	Value	Form
Beryllium	STEL	0,008 mg/m3	Inhalable fraction.
	TWA	0,002 mg/m3	Inhalable fraction.

Belgium. OEL. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1 - Chemical agents, as amended

Material	Type	Value
Beryllium	STEL	0,01 mg/m3
	TWA	0,002 mg/m3

Components	Type	Value
Beryllium (CAS 7440-41-7)	STEL	0,01 mg/m3
	TWA	0,00005 mg/m3
Tungsten (CAS 7440-33-7)	STEL	10 mg/m3
	TWA	5 mg/m3

Bulgaria. OEL values of carcinogens and mutagens at work (Reg. 10/2003 on prot. from carcinogens and mutagens at work, Ann. 1), as amended

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	Inhalable fraction.

Bulgaria. OELs. Ordinance No 13 on protection of workers against risks of exposure to chemical agents at work, as amended

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Bulgaria. OELs. Ordinance No 13 on protection of workers against risks of exposure to chemical agents at work, as amended

Components	Type	Value
Tungsten (CAS 7440-33-7)	STEL	3 mg/m3
	TWA	1 mg/m3

Croatia. OELs (GVI). Regulation on Protection of Workers against Exposure to Dangerous Chemicals at Work, OELs and Biological Limit Values, Annex I (NN 91/2018), as amended

Material	Type	Value
Beryllium	MAC	0,002 mg/m3

Components	Type	Value
Beryllium (CAS 7440-41-7)	MAC	0,0006 mg/m3
Tungsten (CAS 7440-33-7)	MAC	5 mg/m3
	STEL	3 mg/m3

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

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Czech Republic. Occupational exposure limit values of chemicals at work (Decree on protection of health at work, 361/2007, Annex 2, Part A & Annex 3, Part A, as amended)

Material	Type	Value	
Beryllium	Ceiling	0,002 mg/m3	
	TWA	0,001 mg/m3	

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	Ceiling	0,002 mg/m3	
		0,002 mg/m3	Aerosol, inhalable.
	TWA	0,0006 mg/m3	Aerosol, inhalable.
		0,0002 mg/m3	

Denmark. Work Environment Authority. Exposure Limits for Substances & Materials, Annex 2

Material	Type	Value
Beryllium	TLV	0,001 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TLV	0,00002 mg/m3	
Tungsten (CAS 7440-33-7)	TLV	5 mg/m3	Dust.

Estonia

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances (Regulation No. 105/2001, Annex), as amended

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3	

Finland. Government Decree on Work-related Cancer Risks

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Respirable dust.

Finland. HTP-arvot, App 3., Binding Limit Values, Social Affairs and Ministry of Health

Material	Type	Value
Beryllium	STEL	0,0004 mg/m3
	TWA	0,0001 mg/m3

Components	Type	Value
Beryllium (CAS 7440-41-7)	STEL	0,004 mg/m3
	TWA	0,0001 mg/m3

Finland. HTP-arvot, App 3., Binding Limit Values, Social Affairs and Ministry of Health

Components	Type	Value
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3

France. OELs. Occupational Exposure Limits as Prescribed by Art. R.4412-149 of Labor Code, as amended

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	VME	0,0006 mg/m3	Inhalable fraction.

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

Material	Type	Value
Beryllium	VME	0,002 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	VME	0,0006 mg/m3	Inhalable fraction.

Regulatory status: Regulatory binding (VRC)

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

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	AGW	0,00014 mg/m3	Inhalable fraction.
		0,00006 mg/m3	Respirable fraction.

Greece. OELs, Presidential Decree No. 307/1986, as amended

Material	Type	Value
Beryllium	TWA	0,005 mg/m3

Hungary. OELs. Decree on protection of workers exposed to chemical agents (5/2020. (II.6)), Annex 1&2, as amended

Components	Type	Value
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value
Beryllium	Ceiling	0,002 mg/m3

Iceland. OELs. Regulation 390/2009 on Pollution Limits and Measures to Reduce Pollution at the Workplace, as amended

Material	Type	Value	Form
Beryllium	TWA	0,001 mg/m3	Dust.

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3	Dust.

Ireland. OELVs, Schedules 1 & 2, Code of Practice for Chemical Agents and Carcinogens Regulations

Material	Type	Value
Beryllium	STEL	0,0002 mg/m3
	TWA	0,00005 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	STEL	10 mg/m3	
	TWA	5 mg/m3	

Italy. OELs (Legislative Decree n.81, 9 April 2008), as amended

Material	Type	Value	Form
Beryllium	TWA	0,00005 mg/m3	Inhalable fraction.

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	3 mg/m3	Respirable fraction.

Latvia. OELs. Occupational Exposure Limits of Chemical Substances at Workplace (Reg. No. 325/ 2007, L.V. 80, Annex 1), as amended

Material	Type	Value
Beryllium	TWA	0,001 mg/m3

Components	Type	Value
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3

Lithuania. OELs. Occupational Exposure Limit Values for Chemical Substances (Hygiene Norm HN 23:2011; Order No. V-824/A1-389), as amended

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	
		0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3	

Netherlands. OELs per Annex XIII of Working Conditions Regulation (Staatscourant no. 252, 29 December 2006), as amended

Components	Type	Value
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3

Norway. Regulation No. 1358 on Measures and Limit Values for Physical and Chemical Factors in Work Environment and Infection Groups for Biological Factors, as amended

Material	Type	Value
Beryllium	TLV	0,001 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	STEL	0,0002 mg/m3	Inhalable
	TLV	0,00002 mg/m3	Inhalable
Tungsten (CAS 7440-33-7)	TLV	5 mg/m3	

Poland. Maximum permissible concentrations and intensities of harmful factors in the work environment (Dz.U.Poz. 1286/2018, Annex 1)

Material	Type	Value
Beryllium	TWA	0,0002 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3	Inhalable fraction.

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796-2014)

Material	Type	Value
Beryllium	STEL	0,01 mg/m3
	TWA	0,002 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	STEL	10 mg/m3	
	TWA	5 mg/m3	

Romania. OELs. Limit Values of Chemical Agents at Workplace (Regulation 1.218/2006, M.O 845, Annex 1, 3&4, as amended)

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	STEL	6 mg/m3	
	TWA	2 mg/m3	

Slovakia. OELs for carcinogens and mutagens. Regulation No. 356/2006 on carcinogenic and mutagenic substances, as amended

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.

Slovakia. OELs. Maximum permissible exposure limits for chemical factors in workplace air (Regulation No 355/2006, Annex 1, Table 1, as amended)

Components	Type	Value
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3

Slovenia. CMR. Protection of workers from exposure to carcinogen and mutagen agents (ULRS 101/2005, as amended)

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Slovenia. OELs. Occupational Exposure Limits of Chemicals at Workplace (Reg. on Protection of Workers from Risks due to Exp. to Chemicals at Work, Annex I), as amended

Material	Type	Value	Form
Beryllium	TWA	0,002 mg/m3	Inhalable fraction.

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

Material	Type	Value
Beryllium	TWA	0,0002 mg/m3

Spain. OELs. INSST, Límites de Exposición Profesional Para Agentes Químicos, Table 1-Valores Límites Ambientales (VLAs)

Components	Type	Value
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3
Tungsten (CAS 7440-33-7)	STEL	10 mg/m3
	TWA	5 mg/m3

Sweden. OELs (Annex 1). Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2018:1), as amended

Material	Type	Value	Form
Beryllium	TWA	0,002 mg/m3	Total dust.

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3	Total dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz: Aktuelle MAK-Werte

Material	Type	Value	Form
Beryllium	TWA	0,002 mg/m3	Inhalable dust.

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,002 mg/m3	Inhalable fraction.
Tungsten (CAS 7440-33-7)	TWA	5 mg/m3	Inhalable fraction.

UK. OELs. Workplace Exposure Limits (WELs) (EH40/2005 (Fourth Edition 2020)), Table 1

Material	Type	Value
Beryllium	TWA	0,002 mg/m3

Components	Type	Value
Beryllium (CAS 7440-41-7)	TWA	0,002 mg/m3
Tungsten (CAS 7440-33-7)	STEL	10 mg/m3
	TWA	5 mg/m3

EU. OELs, Directive 2004/37/EC on carcinogen and mutagens from Annex III, Part A

Components	Type	Value	Form
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	Inhalable fraction.

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.
Follow standard monitoring procedures.
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.

Derived no effect levels (DNELs)

Not available.

Predicted no effect concentrations (PNECs)

Not available.

Exposure guidelines

Belgium OELs: Skin designation

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

Croatia ELVs: Skin designation

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

Finland Exposure Limit Values: Skin designation

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

Hungary OELs: Skin designation

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

Iceland OELs: Skin designation

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

Latvia OELs: Skin designation

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

Romania OELs: Skin designation

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

8.2. Exposure controls

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

Individual protection measures, such as personal protective equipment

General information	Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the 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	Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
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

Physical state	Solid.
Form	Solid. Various shapes.
Colour	Grey
Odour	None.
Odour threshold	Not applicable.
Melting point/freezing point	1287 °C (2348,6 °F)
Boiling point or initial boiling point and boiling range	2970 °C (5378 °F)
Flammability	Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)	Not applicable.
	Not applicable
Explosive limit - lower (%) temperature	Not applicable
Explosive limit – upper (%)	Not applicable
	Not applicable.
Explosive limit - upper (%) temperature	Not applicable
Flash point	Not applicable
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
pH	Not applicable
Kinematic viscosity	Not available.

Solubility

Solubility (water)	Not applicable.
Partition coefficient (n-octanol/water) (log value)	Not applicable.
Vapour pressure	6,67 hPa estimated

Density and/or relative density

Density	1,85 g/cm3 2 estimated
Relative density	Not applicable.
Vapour density	Not applicable
Particle characteristics	Not available.

9.2. Other information

9.2.1. Information with regard to physical hazard classes	No relevant additional information available.

9.2.2. Other safety characteristics

Evaporation rate	Not applicable.
Flammability (temperature)	Not applicable
Molecular formula	Be , W
Molecular weight	9,01 g/mol
Specific gravity	1,85 estimated
Viscosity	Not applicable.

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
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	Contact with incompatible materials.
10.5. Incompatible materials	Acids. Caustics. Chlorinated hydrocarbons. Chlorine. Fluorine. 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	Prolonged inhalation may be harmful. May cause damage to organs (respiratory system) through prolonged or repeated exposure.
Skin contact	Not likely, due to the form of the product.
Eye contact	Not likely, due to the form of the product.
Ingestion	Not likely, due to the form of the product.
Symptoms	Coughing. Respiratory disorder.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	Based on available data, the classification criteria are not met.
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 sensitisation	May cause damage to organs (respiratory system) through prolonged or repeated exposure
Skin sensitisation	Not a skin sensitiser.
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.
Carcinogenicity	Cancer hazard.

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Beryllium (CAS 7440-41-7)

IARC Monographs. Overall Evaluation of Carcinogenicity

Beryllium (CAS 7440-41-7)	1 Carcinogenic to humans.

Slovenia. CMR. Protection of workers from exposure to carcinogen and mutagen agents (ULRS 101/2005, as amended)

Beryllium (CAS 7440-41-7)	Carcinogenic, Category 1B.

Reproductive toxicity	Due to partial or complete lack of data the classification is not possible.
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	Not an aspiration hazard.
Mixture versus substance information	No information available.

11.2. Information on other hazards

Endocrine disrupting properties	This mixture does not contain any substances having endocrine disrupting properties with respect to human health as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.
Other information	Symptoms may be delayed.

SECTION 12: Ecological information

12.1. Toxicity	Based on available data, the classification criteria are not met for hazardous to the aquatic environment, acute hazard. The product is not classified as environmentally hazardous. Due to partial or complete lack of data the classification for hazardous to the aquatic environment, long term hazard, is not possible.
12.2. Persistence and degradability	No data is available on the degradability of this product.
12.3. Bioaccumulative potential	No data available.
Partition coefficient n-octanol/water (log Kow)	Not available.
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
12.5. Results of PBT and vPvB assessment	This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.
12.6. Endocrine disrupting properties	This mixture does not contain any substances having endocrine disrupting properties with respect to the environment as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.
12.7. Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

12.8. Additional information

Estonia Dangerous substances in soil Data

Beryllium (CAS 7440-41-7)	Beryllium (Be) 10 mg/kg Beryllium (Be) 2 mg/kg Beryllium (Be) 50 mg/kg

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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	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	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Discourage sewage disposal. Waste should not be disposed of by release to sewers. Dispose of contents/container in accordance with local/regional/national/international regulations. 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.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
Hazard No. (ADR)	Not assigned.
Tunnel restriction code	Not assigned.
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

RID

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

ADN

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

IATA

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

IMDG

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.

Subsidiary risk -

14.4. Packing group -

14.5. Environmental hazards

Marine pollutant No.

EmS Not assigned.

14.6. Special precautions for user Not assigned.

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 (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

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

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended - Conditions of restriction given for the associated entry number should be considered

Beryllium (CAS 7440-41-7) 28

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

Beryllium (CAS 7440-41-7)

Regulation 2019/1148 on Marketing and Use of Explosive Precursors, Annex I, as amended

Not listed.

Regulation 2019/1148 on Marketing and Use of Explosive Precursors, Annex II, as amended

Not listed.

Other regulations The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended.

National regulations 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.
According to Directive 92/85/EEC as amended, pregnant women should not work with the product, if there is the least risk of exposure.

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 Use of this product by young persons under the age of 18 is not allowed in accordance with the Management of Health and Safety at Work Regulations 1999 [SI 1999/3242], as amended. Follow national regulation on the protection of workers from the risks of exposure to carcinogens and mutagens at work, in accordance with Directive 2004/37/EC, as amended.

France regulations

France INRS Table of Occupational Diseases

Beryllium (CAS 7440-41-7) Maladies professionnelles dues au béryllium et à ses composés 33

15.2. Chemical safety assessment Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.
AGW: Occupational threshold limit value (Arbeitsplatzgrenzwert – Germany).
CAS: Chemical Abstract Service.
CEN: European Committee for Standardization.
IATA: International Air Transport Association.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
IMDG: International Maritime Dangerous Goods.
MAC: Maximum Allowed Concentration.
MARPOL: International Convention for the Prevention of Pollution from Ships.
PBT: Persistent, bioaccumulative and toxic.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
STEL: Short term exposure limit.
TLV: Threshold Limit Value.
TWA: Time Weighted Average.
VLE: Exposure Limit Value.
VME: Exposure Average Value.
vPvB: Very persistent and very bioaccumulative.

References Not available.

Information on evaluation method leading to the classification of mixture The classification for health and environmental hazards is derived by a combination of calculatior methods and test data, if available.

Full text of any statements, which are not written out in full under sections 2 to 15

H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H350i May cause cancer by inhalation.
H372 Causes damage to organs (respiratory system) through prolonged or repeated exposure.

Revision information This document has undergone significant changes and should be reviewed in its entirety.

Training information Follow training instructions when handling this material.

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
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