1. Chemical and company identification

Name of chemical (Product name)	**AlBeMet® Powder**

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	1.216.383.4019
e-mail address	ehs@materion.com
Emergency telephone number	1.216.383.4019
Reference number	M20

2. Hazards identification

GHS classification

Physical hazards	Flammable solids	Category 2
Health hazards	Sensitization, skin	Category 1
	Carcinogenicity	Category 1B
	Specific target organ toxicity, repeated exposure (inhalation)	Category 1 (Respiratory system)
Environmental hazards	The product is not classified according to GHS.	

GHS label elements

Pictograms

Signal words Danger

Hazard statement Flammable solid. May cause an allergic skin reaction. May cause cancer by inhalation. Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. 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 INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Call a POISON CENTER/doctor. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Take off contaminated clothing and wash it before reuse.

Storage Store locked up.

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

Other hazards which do not result in classification None known.

Supplemental information

Exposure to the elements listed in Section 3 by inhalation, ingestion, and skin contact can occur when melting, casting, 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.

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

Main symptoms and emergency overview

Main symptoms

May cause an allergic skin reaction. Prolonged exposure may cause chronic effects.

Emergency overview

Flammable Solid. May cause sensitization by skin contact. May cause cancer by inhalation. Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

3. Composition/information on ingredients

Substance or mixture

Mixture

Chemical name or generic name	CAS Number	Gazette notification ENCS no.	Gazette notification ISHL no.	Concentration (%)
Aluminum	7429-90-5			38 - 80
Beryllium	7440-41-7			20 - 62

Synonym(s)

Aluminum Beryllium Matrix, AlBeMet® 120, AlBeMet® 130, AlBeMet® 140, AlBeMet® 150, AlBeMet® 160, AlBeMet® 162, AlBeMet® 562

Chemical formula

Al (7429-90-5), Be (7440-41-7)

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 Dry sand, graphite powder, dry sodium chloride based extinguishers Class D. DO NOT use water if avoidable. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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

Specific hazards Hazardous dust or fumes containing beryllium may be released during a fire.

Special fire fighting procedures Move containers from fire area if you can do so without risk.

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

General fire hazards Flammable solid.

Specific methods Pressure-demand self-contained breathing apparatus must be worn by firefighters or any other persons potentially exposed to the particulate released during or after a fire.

6. Accidental release measures

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

Environmental precautions Avoid release to the environment. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

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

7. Handling and storage

Handling

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

Safe handling advice Not available.

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

Storage

Safe storage conditions Not available.

Safe packaging materials Keep in original container.

8. Exposure controls/personal protection

Control parameters Not available.

Occupational exposure limits

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

Material	Type	Value	
AlBeMet® Powder	TLV	0.001 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminum (CAS 7429-90-5)	TLV	0.025 mg/m3	Dust.
Beryllium (CAS 7440-41-7)	TLV	0.001 mg/m3	

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

Material	Type	Value	
AlBeMet® Powder	TWA	0.002 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminum (CAS 7429-90-5)	TWA	2 mg/m3	Total dust.
		0.5 mg/m3	Respirable dust.
Beryllium (CAS 7440-41-7)	TWA	0.002 mg/m3	

US. ACGIH Threshold Limit Values

Material	Type	Value	Form
AlBeMet® Powder	TWA	0.00005 mg/m3 (as beryllium)	Inhalable fraction.

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0.00005 mg/m3 (as beryllium)	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.

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.

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.

Personal protective equipment

Respiratory protection

When airborne exposures exceed or have the potential to exceed the occupational exposure limits, approved respirators must be used as specified by an Industrial Hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of tight fitting respirators must be clean shaven on those areas of the face where the respirator seal contacts the face. Use pressure-demand airline respirators when performing jobs with high potential exposures such as changing filters in a baghouse air cleaning device.

Hand protection	Wear gloves to prevent contact with particulate or solutions. Wear gloves to prevent metal cuts and skin abrasions during handling.
Eye protection	Wear approved safety glasses, goggles, face shield and/or welder's helmet when risk of eye injury is present, particularly during operations that generate dust, mist or fume.
Skin and body protection	Protective overgarments or work clothing must be worn by persons who may become contaminated with particulate during activities. Skin contact with this material may cause, in some sensitive individuals, an allergic dermal response. Particulate that becomes lodged under the skin has the potential to induce sensitization and skin lesions.

9. Physical and chemical properties

Physical state	Solid.
Form	Various shapes.
Color	Grey.
Odor	None.
Odor threshold	Not applicable.
Melting point/freezing point	1220 °F (660 °C) estimated
Boiling point, initial boiling point, and boiling range	4220.6 °F (2327 °C) estimated
Combustibility	Flammable solid.
Lower and upper explosion limit / flammability limit	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Flash point	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
pH	Not applicable.
Kinematic viscosity	Not available.
Solubility(ies)	
Solubility (water)	Not applicable.
Partition coefficient (n-octanol/water) (log value)	Not applicable.
Vapor pressure	3.29 hPa estimated
Density and/or relative density	
Density	2.33 g/cm3 estimated
Relative density	Not applicable.
Vapor density	Not applicable.
Particle characteristics	Not available.
Other information	
Evaporation rate	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Partition coefficient (oil/water)	Not applicable.
Specific gravity	2.33 estimated
Viscosity (Coefficient of viscosity)	Not applicable.

10. Stability and reactivity

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

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

11. Toxicological information

Acute toxicity	Fatal if inhaled. Toxic if swallowed.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

ACGIH sensitization

BERYLLIUM AND COMPOUNDS, SOLUBLE AND INSOLUBLE COMPOUNDS, AS BE, INHALABLE FRACTION (CAS 7440-41-7)	Respiratory sensitization

Japan Society for Occupational Health: Respiratory sensitizer

Beryllium (CAS 7440-41-7)	1 Known respiratory sensitizer.

Japan Society for Occupational Health: Skin sensitizer

Beryllium (CAS 7440-41-7)	2 Probable skin sensitizer.

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	May cause cancer.

ACGIH Carcinogens

Aluminum (CAS 7429-90-5)	A4 Not classifiable as a human carcinogen.
Beryllium (CAS 7440-41-7)	A1 Confirmed human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

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

Japan Society for Occupational Health: Carcinogen

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

NTP Report on Carcinogens

Beryllium (CAS 7440-41-7)	Known To Be Human Carcinogen.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure	Causes damage to organs (Respiratory system) through prolonged or repeated exposure by inhalation.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	Not available.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulation	Not available.
Mobility in soil	Not available.
Hazardous to the ozone layer	Not available.

13. Disposal considerations

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.
Local disposal 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.

14. Transport information

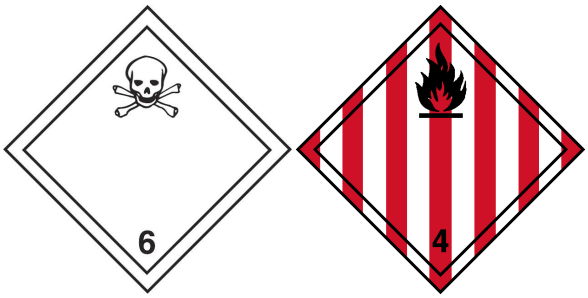
IATA

UN number	1567
UN proper shipping name	Beryllium powder
Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	4.1
Packing group	II
Environmental hazards	No.
ERG Code	6F
Special precautions for user	Not available.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	1567
UN proper shipping name	BERYLLIUM POWDER
Transport hazard class(es)	
Class	6.1(PGI, II)
Subsidiary risk	4.1
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-G, S-G
Special precautions for user	Not available.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available.

IATA; IMDG



National regulations	Follow regulation in section 15 for domestic transportation.
Emergency Response Guide Number	134

15. Regulatory information

Industrial Safety and Health Act

Specified substances regulation

Class 1 designated chemical substances

BERYLLIUM AND ITS COMPOUNDS

Notifiable substances

ALUMINUM	Table 9 Ordinance No. 37	38 - 80 %
BERYLLIUM AND ITS COMPOUNDS	Table 9 Ordinance No. VI	20 - 62 %

Labeling substances

ALUMINIUM AND ITS WATER-SOLUBLE SALTS	38 - 80 %
BERYLLIUM AND ITS COMPOUNDS	20 - 62 %

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	62 %	(Beryllium)

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

Further information

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

Disclaimer

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Other information

Revised information in Section 16.