SAFETY DATA SHEET

MATERION

Version #: 05
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

Registration number -

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

1.1. Product identifier

Trade name or designation of the mixture AlBeMet® Powder

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

Identified uses Scientific research and development
Manufacture of computer, electronic and optical products, electrical equipment

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

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

Document number M20

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

Physical hazards		
Flammable solids	Category 1	H228 - Flammable solid.
Health hazards		
Carcinogenicity	Category 1B	H350 - May cause cancer by inhalation.
Specific target organ toxicity - repeated exposure	Category 1 (Respiratory system)	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: Aluminium, Beryllium

Hazard pictograms

Signal word Danger

Hazard statements

H228 Flammable solid.

H350	May cause cancer by inhalation.
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.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P284	Wear respiratory protection.

Response

P302 + P350	If on skin: Wash with plenty of water.
P304 + P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P308 + P313	If exposed or concerned: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTRE/doctor.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P370 + P378	In case of fire: Use appropriate media to extinguish.

Storage

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.
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.

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
Aluminium	38 - 80	7429-90-5 231-072-3	01-2119529243-45-0056	013-002-00-1	
Classification:	Flam. Sol. 1;H228, Pyr. Sol. 1;H250, Water-React. 2;H261				
Beryllium	20 - 62	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				

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. Wash contaminated clothing before reuse.

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

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 Flammable solid.

5.1. Extinguishing media

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry Sand, Graphite Powder, Dry Sodium Chloride Based Extinguishers. DO NOT use water if avoidable.

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

5.3. Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Firefighters should wear full protective clothing including self contained breathing apparatus.

Special firefighting procedures In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. 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	Keep unnecessary personnel away. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.
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.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. 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. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not breathe dust/fume. Explosion-proof general and local exhaust ventilation. 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. 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. Keep away from heat, sparks and open flame. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS). 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
Aluminium (CAS 7429-90-5)	MAK	5 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.
	STEL	20 mg/m3	Inhalable fraction.
		10 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	MAK	0,0006 mg/m3	Inhalable fraction.
	STEL	0,0002 mg/m3	Inhalable fraction.

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

Material	Type	Value	Form
AlBeMet® Powder	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
AlBeMet® Powder	STEL	0,01 mg/m3
	TWA	0,002 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	STEL	0,01 mg/m3	
	TWA	0,00005 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	
AlBeMet® Powder	TWA	0,002 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TWA	2 mg/m3	
		10 mg/m3	Inhalable fraction.
		1,5 mg/m3	Respirable fraction.

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	
AlBeMet® Powder	MAC	0,002 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	MAC	4 mg/m3	Respirable dust.
		10 mg/m3	Total dust.
Beryllium (CAS 7440-41-7)	MAC	0,0006 mg/m3	

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

Material	Type	Value
AlBeMet® Powder	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	
AlBeMet® Powder	Ceiling	0,002 mg/m3	
	TWA	0,001 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TWA	10 mg/m3	Dust.
Beryllium (CAS 7440-41-7)	Ceiling	0,002 mg/m3	Aerosol, inhalable.
		0,002 mg/m3	
	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	
AlBeMet® Powder	TLV	0,001 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TLV	5 mg/m3	Fume.
		5 mg/m3	Dust and fume.
		2 mg/m3	Respirable dust and/or fume.
Beryllium (CAS 7440-41-7)	TLV	0,00002 mg/m3	

Estonia

Material	Type	Value
AlBeMet® Powder	TWA	0,002 mg/m3

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	4 mg/m3	Fine dust, respiratory fraction
		10 mg/m3	Total dust.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.

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
AlBeMet® Powder	STEL	0,0004 mg/m3
	TWA	0,0001 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1,5 mg/m3	Welding fume.
Beryllium (CAS 7440-41-7)	STEL	0,004 mg/m3	
	TWA	0,0001 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
AlBeMet® Powder	VME	0,002 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	VME	5 mg/m3	Welding fume.
Regulatory status: Indicative limit (VL)			
		5 mg/m3	Dust.
Regulatory status: Indicative limit (VL)			
		10 mg/m3	
Regulatory status: Indicative limit (VL)			
Beryllium (CAS 7440-41-7)	VME	0,0006 mg/m3	Inhalable fraction.
Regulatory status: Regulatory binding (VRC)			

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	4 mg/m3	Inhalable dust.
		1,5 mg/m3	Respirable dust.

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	AGW	10 mg/m3	Inhalable fraction.
		1,25 mg/m3	Respirable fraction.
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
AlBeMet® Powder	TWA	0,005 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Welding fume.
		10 mg/m3	Pyrophoric powder.
		10 mg/m3	Inhalable

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value
AlBeMet® Powder	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
AlBeMet® Powder	TWA	0,001 mg/m3	Dust.
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	STEL	10 mg/m3	Dust.
	TWA	5 mg/m3	Dust.
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	Inhalable fraction.

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

Material	Type	Value	
AlBeMet® Powder	TWA	0,0002 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.

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

Material	Type	Value	Form
AlBeMet® Powder	TWA	0,00005 mg/m3	Inhalable fraction.
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable 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
AlBeMet® Powder	TWA	0,001 mg/m3
Components	**Type**	**Value**
Aluminium (CAS 7429-90-5)	TWA	2 mg/m3
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	
AlBeMet® Powder	TWA	0,002 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3	Inhalable fraction.
		2 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	
		0,0006 mg/m3	Inhalable fraction.

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	
AlBeMet® Powder	TLV	0,001 mg/m3	
Components	**Type**	**Value**	**Form**
Aluminium (CAS 7429-90-5)	TLV	5 mg/m3	Pyrophoric powder.
		5 mg/m3	Welding fume.

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

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

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

Material	Type	Value
AlBeMet® Powder	TWA	0,0002 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	2,5 mg/m3	Inhalable fraction.
		1,2 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	Inhalable fraction.

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

Material	Type	Value
AlBeMet® Powder	STEL	0,01 mg/m3
	TWA	0,002 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.

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
AlBeMet® Powder	TWA	0,002 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	STEL	3 mg/m3	Fume.
		10 mg/m3	Dust.
	TWA	3 mg/m3	Dust.
		1 mg/m3	Fume.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.

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	Form
Aluminium (CAS 7429-90-5)	TWA	4 mg/m3	Inhalable fraction.
		1,5 mg/m3	Respirable fraction.

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

Material	Type	Value
AlBeMet® Powder	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, Ann. I 100/2001), as amended

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	KTV	20 mg/m3	Inhalable fraction.
		2,5 mg/m3	Respirable fraction.

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
AlBeMet® Powder	TWA	0,002 mg/m3	Inhalable fraction.

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	10 mg/m3	Inhalable fraction.
		1,25 mg/m3	Respirable fraction.

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

Material	Type	Value
AlBeMet® Powder	TWA	0,0002 mg/m3

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,0002 mg/m3	

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

Material	Type	Value	Form
AlBeMet® Powder	TWA	0,002 mg/m3	Total dust.

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3	Total dust.
		2 mg/m3	Respirable dust.
Beryllium (CAS 7440-41-7)	TWA	0,0006 mg/m3	Inhalable fraction.

Switzerland. SUVA Grenzwerte am Arbeitsplatz: Aktuelle MAK-Werte

Material	Type	Value	Form
AlBeMet® Powder	TWA	0,002 mg/m3	Inhalable dust.

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	3 mg/m3	Respirable fraction.
Beryllium (CAS 7440-41-7)	TWA	0,002 mg/m3	Inhalable fraction.

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

Material	Type	Value
AlBeMet® Powder	TWA	0,002 mg/m3

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.
Beryllium (CAS 7440-41-7)	TWA	0,002 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

Croatia. BELs (BGV). Regulation on Protection of Workers against Exposure to Dangerous Chemicals at Work, OELs and BELs, Annex IV (NN 91/2018), as amended

Components	Value	Determinant	Specimen	Sampling Time
Aluminium (CAS 7429-90-5)	200 mg/l	Aluminium	Urine	*

* - For sampling details, please see the source document.

Germany. TRGS 903, BAT List (Biological Limit Values)

Components	Value	Determinant	Specimen	Sampling Time
Aluminium (CAS 7429-90-5)	50 µg/g	Aluminium	Creatinine in urine	*

* - For sampling details, please see the source document.

Hungary. BELs. Decree on protection of workers exposed to chemical agents (5/2020. (II.6)), Annex 3&4, as amended

Components	Value	Determinant	Specimen	Sampling Time
Aluminium (CAS 7429-90-5)	0,25 µmol/mmol	Aluminium	Creatinine in urine	*
	0,06 mg/g	Aluminium	Creatinine in urine	*

* - For sampling details, please see the source document.

Slovakia. BLVs (Biological Limit Value). Regulation no. 355/2006 concerning protection of workers exposed to chemical agents, Annex 2

Components	Value	Determinant	Specimen	Sampling Time
Aluminium (CAS 7429-90-5)	60 µg/g	Aluminium	Creatinine in urine	*

* - For sampling details, please see the source document.

Switzerland. SUVA Grenzwerte am Arbeitsplatz: Aktuelle BAT-Werte

Components	Value	Determinant	Specimen	Sampling Time
Aluminium (CAS 7429-90-5)	50 µg/g	Aluminium	Creatinine in urine	*

* - For sampling details, please see the source document.

Recommended monitoring procedures

Follow standard monitoring procedures.
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.

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.

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 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

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.

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

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	Not available.
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	660 °C (1220 °F) estimated
Boiling point or initial boiling point and boiling range	2327 °C (4220,6 °F) estimated
Flammability	Flammable solid.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not applicable.
	Not applicable.
Explosive limit – upper (%)	Not applicable.
	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	3,29 hPa estimated
Density and/or relative density	
Density	2,33 g/cm3 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.
Partition coefficient (oil/water)	Not applicable.
Specific gravity	2,33 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 Heat, flames and sparks. Contact with incompatible materials. Avoid dust formation. Contact with acids. Contact with alkalis.

10.5. Incompatible materials Acids. Strong oxidising agents. Caustics. Chlorinated hydrocarbons. 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.

Skin contact No adverse effects due to skin contact are expected.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms Coughing.

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

Acute toxicity Due to partial or complete lack of data the classification is not possible.

Skin corrosion/irritation Due to partial or complete lack of data the classification is not possible.

Serious eye damage/eye irritation Due to partial or complete lack of data the classification is not possible.

Respiratory sensitisation Not a respiratory sensitiser.

Skin sensitisation This product is not expected to cause skin sensitisation.

Germ cell mutagenicity Due to partial or complete lack of data the classification is not possible.

Carcinogenicity May cause cancer.

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 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.

Aspiration hazard Due to partial or complete lack of data the classification is not possible.

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 Not available.

SECTION 12: Ecological information

12.1. Toxicity Based on available data, the classification criteria are not met for hazardous to the aquatic environment.

Product		Species	Test Results
AlBeMet® Powder			
Aquatic			
Acute			
Fish	LC50	Fish	0,325 mg/l, 96 hours estimated

Components		Species	Test Results
Aluminium (CAS 7429-90-5)			
Aquatic			
Acute			
Fish	LC50	Grass carp, white amur (Ctenopharyngodon idella)	0,21 - 0,31 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

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 UN1567

14.2. UN proper shipping name Beryllium powder

14.3. Transport hazard class(es)

Class 6.1

Subsidiary risk	4.1
Label(s)	6.1 +4.1
Hazard No. (ADR)	64
Tunnel restriction code	D/E
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN1567
14.2. UN proper shipping name	Beryllium powder
14.3. Transport hazard class(es)	
Class	6.1
Subsidiary risk	4.1
Label(s)	6.1+4.1
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN1567
14.2. UN proper shipping name	Beryllium powder
14.3. Transport hazard class(es)	
Class	6.1
Subsidiary risk	4.1
Label(s)	6.1+4.1
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number	UN1567
14.2. UN proper shipping name	Beryllium powder
14.3. Transport hazard class(es)	
Class	6.1
Subsidiary risk	4.1
14.4. Packing group	II
14.5. Environmental hazards	No.
ERG Code	6F
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

14.1. UN number	UN1567
14.2. UN proper shipping name	BERYLLIUM POWDER
14.3. Transport hazard class(es)	
Class	6.1
Subsidiary risk	4.1
14.4. Packing group	II
14.5. Environmental hazards	
Marine pollutant	No.

EmS	F-G, S-G
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN; ADR; IATA; IMDG; RID

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

Aluminium (CAS 7429-90-5)

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

Aluminium (CAS 7429-90-5) ALUMINIUM, POWDERS

This product is regulated by Regulation (EU) 2019/1148: all suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point. Please see https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/crisis-and-terrorism/explosives/explosives-precursors/docs/list_of_competent_authorities_and_national_contact_points_en.pdf.

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

Contains a substance which is included on the TRGS 905 list of carcinogenic, germ cell mutagenic and reproductive toxic substances

Aluminium (CAS 7429-90-5)	Anorganische Faserstäube, soweit nicht erwähnt (ausgenommen Gipsfasernund Wollastonitfasern)

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

H228 Flammable solid.
H250 Catches fire spontaneously if exposed to air.
H261 In contact with water releases flammable gases.
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
South Korea Toll-free Number – 080-880-0468

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