SAFETY DATA SHEET

1. Identification of the chemical and information about the manufacturer or supplier

1.1 Identification of the chemical products

1.1.1 Technical name **Beryllium Solid**

Other means of identification

SDS number M10

CAS number 7440-41-7

Synonyms Metallic Beryllium, Be, Glucinium * Metallic Beryllium, Glucinium, I220H, IF-1®, S200F, S200FH, S200FC, SR200, S65, PS-200®, PF10, PF-60®, O-30, O-30H, I-70, I-70H, UHP Beryllium, ,9999 Beryllium, B-26D, Be, IS-50M®

1.1.2 Recommended use of the chemical and restrictions on use

Recommended use 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

Limitations on use None known.

1.2 Manufacturer/Importer/Supplier/Distributor information

1.2.1 Manufacturer

Company name Materion Brush Inc.

1.2.2 Address (post and legal) 6070 Parkland Boulevard
Mayfield Heights, OH 44124
United States

Website www.materion.com

Contact person Product Stewardship Director

1.2.3 Telephone, including Emergency consultations and time limits

Telephone	1.216.383.4019	Not available.
Emergency phone number	1.216.383.4019	

1.2.4 Fax

1.2.5 E-mail Materion-PS@materion.com

2. Hazard(s) identification

2.1. Hazard identification of chemical product as a whole (classification according to GOST 12.1.007-76 and GHS)

Classification according to GOST 12.1.007-76 The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies. Class 1 (extremely hazardous substance)

GHS classification

Physical hazards	Not classified.	
Health hazards	Carcinogenicity	Category 1B
	Specific target organ toxicity, repeated exposure	Category 1 (Respiratory system)
Environmental hazards	Not classified.	

2.2 Labeling elements in compliance with GOST 31340-2013

2.2.1 Signal word Danger

2.2.2 Symbols

2.2.3 Hazard statement

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

Precautionary statement

Prevention

	Minimize 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.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P234	Keep only in original container.
P272	Contaminated work clothing should not be allowed out of the workplace.

Response

P302 + P350	If on skin: Wash with plenty of water.
P363	Wash contaminated clothing before reuse.
P304 + P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P342 + P311	If experiencing respiratory symptoms: Call a poison center/doctor.
P308 + P313	If exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage

P405	Store locked up.

Disposal

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

Other hazards None known.

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

3. Composition/information on ingredients

3.1 Information on product as a whole

3.1.1 Chemical name (IUPAC)	None.
3.1.2 Chemical formula	Be (7440-41-7)
3.1.3 General description of the composition (taking into account the brand assortment; preparation method)	Not available.

3.2 Components

		Hygienic standards in the working area				
Components	**Concentration by weight (%)**	**MAC, mg/m3**	**TSEL, mg/m3**	**Hazard classification**	**CAS-No.**	**EC No.**
Beryllium	100	0.003 Aerosol.	0.001 Aerosol.	1	7440-41-7	231-150-7

Class 1 (extremely hazardous substance)

4. First-aid measures

4.1. Observed symptoms

4.1.1 In case of exposure via inhalation	May cause damage to organs (respiratory system) through prolonged or repeated exposure.

4.1.2 In contact with skin	Not likely, due to the form of the product.
4.1.3 In contact with eyes	Not likely, due to the form of the product.
4.1.4 In case of exposure via ingestion	Not likely, due to the form of the product.

4.2 First-aid measures to be provided to victims

4.2.1 In case of exposure via 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.
4.2.2 In contact with 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.
4.2.3 In contact with 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.
4.2.4 In case of exposure via 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.
4.2.5 Contraindications	Not available.
General advice	If exposed or concerned: get medical attention/advice. 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.

5. Fire-fighting and explosion safety measures and means

5.1 General characteristics of fire-explosion properties	No unusual fire or explosion hazards noted.
5.2 Fire-explosion indicators	For detailed information see section 9.
5.3 Combustion and/or thermal destruction products and hazards arising from these	During fire, gases hazardous to health may be formed.
5.4 Recommended extinguishing media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product is non-combustible.
5.5 Forbidden extinguishing media	Do not use water to extinguish fires around operations involving molten metal due to the potential for steam explosions.
5.6 Special protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus. Wear suitable protective equipment.
5.7 Specific extinguishing 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.
Special fire fighting 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.

6. Accident and emergency prevention and response measures and their consequences

6.1 Measures to prevent harmful effects on people, environment, buildings, constructions, etc. in case of accidents and emergencies

6.1.1 General required actions in case of an accident or emergency	Wear appropriate personal protective equipment.
6.1.2 Personal protection equipment in case of the accident	Keep unnecessary personnel away. Ensure adequate ventilation. Wear appropriate chemical resistant gloves. Use of an impervious apron is recommended. Local authorities should be advised if significant spillages cannot be contained.

6.2 Procedures for the elimination of accidents and emergencies

6.2.1 Procedures in case of leaks, spills, splashes	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. For waste disposal, see section 13 of the SDS.
6.2.2 Actions in case of fire	For detailed information see section 5.

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.

7. Storage and handling requirements of chemicals during loading and unloading

7.1 Safety precautions when handling chemical products

7.1.1 Technical safety measures No specific recommendations.

7.1.2 Environmental protection measures Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment.

7.1.3 Recommended safe handling and transportation advice Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Avoid contact with skin. Avoid prolonged exposure. Avoid contact during pregnancy/while nursing. Should be handled in closed systems, if possible. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Use personal protection recommended in Section 8 of the SDS.

Local and general ventilation In case of insufficient ventilation, wear suitable respiratory equipment. Provide adequate ventilation.

7.2 Chemical storage requirements

7.2.1 Terms and conditions for safe storage Store locked up. Store away from incompatible materials (see Section 10 of the SDS).

7.2.2 Packaging Store in original tightly closed container.

7.3 Safety measures and storage requirements at domestic use No specific recommendations. The product is not intended for domestic use.

8. Equipment for monitoring exposure and personal protective equipment

8.1 Parameters of the working area that require monitoring

Occupational exposure limits

Maximum allowable concentration (MAC) of harmful substances in workplace air (GN 2.2.5.3532-18; GN 2.2.5.3393-16 and GN 2.2.5.3391-16)

Material	Type	Value	Form
Beryllium (CAS 7440-41-7)	Ceiling	0,003 mg/m3	Aerosol.
	TWA	0,001 mg/m3	Aerosol.

8.2 Measures to ensure the content of harmful substances in the working area below the exposure level concentration Not available.

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

8.3 Worker personal protective equipment

8.3.1 General recommendations Use personal protective equipment as required.

8.3.2 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.

8.3.3 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.

Hand protection Wear gloves to prevent metal cuts and skin abrasions during handling.

Other Use of an impervious apron is recommended. 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.

Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
8.3.4 Personal protection equipment in case of domestic use	The product is not intended for domestic use.
General hygiene considerations	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.

9. Physical and chemical properties

9.1 Physical appearance

Physical state	Solid.
Form	Solid. Various shapes.
Color	Grey
Odor	None.
Odor threshold	Not applicable.

9.2 Parameters characterizing basic properties of the product

pH	Not applicable
Melting point/freezing point	2348,6 °F (1287 °C)
Initial boiling point and boiling range	5378 °F (2970 °C)
Flash point	Not applicable
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	6,67 hPa estimated
Vapor density	Not applicable
Density	1,85 g/cm3 2 estimated
Viscosity	Not applicable.

Solubility(ies)

Solubility (water)	Not applicable.
Partition coefficient (n-octanol/water)	Not applicable.

Other data

Explosive properties	Not explosive.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Not available.
Molecular formula	Be
Molecular weight	9,01 g/mol
Oxidizing properties	Not oxidizing.
Relative density	Not applicable.
Specific gravity	1,85 estimated

10. Stability and reactivity

10.1 Chemical stability	Material is stable under normal conditions.
Hazardous decomposition products	No hazardous decomposition products are known.
10.2 Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.3 Conditions to avoid	Contact with incompatible materials. Avoid dust formation. Contact with acids. Contact with alkalis.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Incompatible materials	Acids. Caustics. Chlorinated hydrocarbons. Strong acids, alkalies and oxidizing agents.

11. Toxicological information

11.1 General exposure characteristics Coughing. Respiratory disorder.

11.2 Routes of exposure Inhalation.

11.3 Affected/target organs, tissues and systems of humans

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.

11.4 Information on health hazards in case of direct exposure to the product and its effect

Effect on upper respiratory tract irritation May cause damage to organs (respiratory system) through prolonged or repeated exposure.

Respiratory or skin sensitization

Hygiene Norm GN 2.2.5.1313-03. Executive No. 76 of 30 April 2003. Maximum allowable concentration (MAC) of harmful substances in the air of working zones, as amended

Beryllium (CAS 7440-41-7)	Allergenic.

Respiratory sensitization May cause damage to organs (respiratory system) through prolonged or repeated exposure.

Skin sensitization Not a skin sensitizer.

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.

Aspiration hazard Not an aspiration hazard.

11.5 Information on long-term hazardous health effects

Carcinogenicity Cancer hazard.

IARC Monographs. Overall Evaluation of Carcinogenicity

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

Sanitary-Epidemiological Rules,1.2.2353-08, Chemical substances, mixtures and products which are carcinogenic factors, 21 April 2008

Beryllium (CAS 7440-41-7)	Inhalation

Reproductive toxicity Not classified.

Mutagenicity Due to lack of data the classification is not possible.

Cumulativeness Not available.

Chronic effects Causes damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects.

11.6 Acute toxicity data Based on available data, the classification criteria are not met.

Further information Symptoms may be delayed.

12. Environmental impact information

12.1 General description of the impact on the environment An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

12.2 Routes of exposure to environment Adverse effects may be caused by large spill in the environment as a result of accidents during transportation, storage, use, handling, depressurization of the container or/and the uncontrolled waste disposal.

12.3 The most important characteristics of the environmental impact

12.3.1 Hygienic standards Not available.

12.3.2 Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.3.3 Biomigration and transformation of the environment due to the biodegradation or other processes

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

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.

13. Recommendations for waste (residues) disposal

13.1 Safety precautions when handling the waste generated during use, storage, transportation	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.
13.2 Information on the location and disposal methods, recycling or disposal of product waste, including packaging	Dispose in accordance with all applicable 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).
13.3 Recommendation on the waste disposal generated during its domestic use	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.

14. Transport information

ADR

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. National and international regulatory information

15.1 National legislation

15.1.1 Laws of the Russian Federation	On technical regulation. On sanitary and epidemiological welfare of the population. On Environmental Protection. On Air Protection.

15.1.2 Information about the documentation, regulatory requirements for the protection of human health and environment

Sanitary-Epidemiological Rules,1.2.2353-08, Chemical substances, mixtures and products which are carcinogenic factors, 21 April 2008

Beryllium (CAS 7440-41-7)	Inhalation

15.2 International Conventions and Agreements

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Montreal Protocol

Not applicable.

Kyoto protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

16.1 Information on revision of the SDS

Issue date	10-15-2020
Revision date	05-13-2024
Version #	03
Previous SDS number	Revised information in Section 16.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.
16.2 List of references used in compiling the safety data sheet	GOST 19433-88. Dangerous goods. Classification and marking. GOST 12.1.004-91. Occupational safety standards system. Fire safety. General requirements. GOST 12.1.044-89. Occupational safety standards system. Fire and explosion hazard of substances and materials. Nomenclature of substances and materials. Nomenclature of indices and methods of their determination. GOST 31340-2013 Labeling of chemicals. General requirements. GOST 32419-2013 Classification of chemical products. General requirements. GOST 30333-2007 Chemical production safety passport. General requirements. GOST 32424-2013 Classification of chemicals for environmental hazards. General principles. GOST 12.1.007-76 Occupational safety standard system. Noxious substances. Classification and general safety requirements. Hygiene Norm GN 2.2.5.1313-03. Executive No. 76 of 30 April 2003. Maximum allowable concentration (MAC) of harmful substances in the air of working zones, as amended.
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
List of abbreviations	Not available.