



SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Name of the substance	Barium Molybdate (BaMoO ₄) powder
Identification number	056-002-00-7 (Index number)
Synonyms	Barium molybdate
Document number	1CZ
Materion Code	1CZ
Issue date	10-January-2018
Version number	01

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

Identified uses	Not available.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name	Materion Advanced Chemicals Inc.
Address	407 N. 13th Street 1316 W. St. Paul Avenue Milwaukee, WI 53233 United States
Division	Milwaukee
Telephone	414.212.0257
e-mail	advancedmaterials@materion.com
Contact person	Noreen Atkinson

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The product has been assessed and/or tested for its physical, health and environmental hazards following the regulations ABN1 NBR 14725-4: (Safety data sheet for chemicals (SDS)) (Aug. 26, 2009) The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies. According to GHS criteria.

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

Health hazards

Acute toxicity, oral	Category 4	H302 - Harmful if swallowed.
Acute toxicity, inhalation	Category 4	

Hazard summary

DANGER

CAUTION

TOXIC. Harmful if inhaled. Harmful if absorbed through skin. Harmful by inhalation and if swallowed. Cancer hazard. Causes skin irritation. Causes serious eye irritation. May cause irritation to the respiratory system. Prolonged exposure may cause chronic effects.

2.2. Label elements

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

Contains: Barium molybdate

Hazard pictograms



Signal word Warning

Hazard statements

H302	Harmful if swallowed.
H302 + H332	Harmful if swallowed or if inhaled

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements

Prevention

P280 Wear eye/face protection.
P261 Avoid breathing dust/fume.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves.

Response

P301 + P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311 Call a poison centre/doctor.
P321 Specific treatment (see this label).
P330 Rinse mouth.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P337 + P313 If eye irritation persists: Get medical advice/attention.

Storage

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

Disposal

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

Supplemental label information

None.

2.3. Other hazards

The Safety Information Sheet Chemicals of hazardous chemical can be obtained through phone, email or on the company website.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Barium molybdate	90 - 100	7787-37-3 232-111-7	-	056-002-00-7	
Classification:	Acute Tox. 4;H302, Skin Irrit. 2;H315, Eye Irrit. 2;H319, STOT SE 3;H335				1,A

List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.
DSD: Directive 67/548/EEC.
M: M-factor
vPvB: very persistent and very bioaccumulative substance.
PBT: persistent, bioaccumulative and toxic substance.
*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret. #: This substance has been assigned Community workplace exposure limit(s).

Composition comments

The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First aid measures

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Get medical attention if symptoms occur. Show this safety data sheet to the doctor in attendance. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Wash contaminated clothing before reuse.

4.1. Description of first aid measures

Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Move to fresh air. If symptoms develop move victim to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control centre immediately.

Skin contact	Before washing use a dry brush to remove dust from skin. Remove contaminated clothing. Remove and isolate contaminated clothing and shoes. Wash the skin immediately with soap and water. Immediately flush skin with plenty of water. Call a physician or poison control centre immediately. Get medical attention if irritation develops and persists. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Rinse cautiously with water for several minutes. Flush eyes with water as a precaution. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately. Call a physician or poison control centre immediately.
Ingestion	IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician. If swallowed, seek medical advice immediately and show this container or label. IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. Rinse mouth. Rinse mouth thoroughly. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If ingestion of a large amount does occur, call a poison control centre immediately.

4.2. Most important symptoms and effects, both acute and delayed

Irritation of eyes and mucous membranes.

4.3. Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Treat symptomatically. In case of shortness of breath, give oxygen. Oxygen, if needed. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards	No unusual fire or explosion hazards noted.
5.1. Extinguishing media	
Suitable extinguishing media	Water.
Unsuitable extinguishing media	None known.
5.2. Special hazards arising from the substance or mixture	Not available.
5.3. Advice for firefighters	
Special protective equipment for firefighters	Wear suitable protective equipment.
Special firefighting procedures	In the event of fire, cool tanks with water spray.
Specific methods	Cool containers exposed to flames with water until well after the fire is out.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Local authorities should be advised if significant spillages cannot be contained. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Fully encapsulating, vapour protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.
6.2. Environmental precautions	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	Stop the flow of material, if this is without risk. Dike far ahead of spill for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Minimise dust generation and accumulation. Do not breathe dust. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Avoid prolonged exposure. Do not get this material on clothing. Use only outdoors or in a well-ventilated area. Wear personal protective equipment. When using, do not eat, drink or smoke. Wash thoroughly after handling. Handle and open container with care.

7.2. Conditions for safe storage, including any incompatibilities

CAUTION

Keep locked up. Store in a closed container away from incompatible materials. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Keep away from food, drink and animal feeding stuffs. Keep out of the reach of children. Use care in handling/storage.

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

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

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	MAK	10 mg/m ³	Inhalable fraction.
	STEL	20 mg/m ³	Inhalable fraction.

Belgium. Exposure Limit Values.

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	TWA	10 mg/m ³

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

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	TWA	10 mg/m ³

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

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	MAC	10 mg/m ³
	STEL	20 mg/m ³

Czech Republic. OELs. Government Decree 361

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	Ceiling	25 mg/m ³
	TWA	5 mg/m ³

Denmark. Exposure Limit Values

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	TLV	10 mg/m ³

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

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	5 mg/m ³	Respirable dust.
		10 mg/m ³	Total dust.

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

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	TWA	15 mg/m ³

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	STEL	60 mg/m ³
	TWA	15 mg/m ³

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

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	TWA	10 mg/m ³

Ireland. Occupational Exposure Limits

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	3 mg/m ³	Respirable fraction.
		10 mg/m ³	Inhalable fraction.

Italy. Occupational Exposure Limits

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	3 mg/m ³	Respirable fraction.
		10 mg/m ³	Inhalable fraction.

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

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	5 mg/m ³	Respirable fraction.
		10 mg/m ³	Inhalable fraction.

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	STEL	10 mg/m ³
	TWA	4 mg/m ³

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

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	3 mg/m ³	Respirable fraction.
		10 mg/m ³	Inhalable fraction.

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

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	STEL	10 mg/m ³
	TWA	5 mg/m ³

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

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	5 mg/m ³	Respirable fraction.
		10 mg/m ³	Inhalable fraction.

Sweden. OELs. Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2015:7)

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	5 mg/m ³	Respirable dust.
		10 mg/m ³	Total dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Material	Type	Value	Form
Barium molybdate (CAS 7787-37-3)	TWA	10 mg/m ³	Inhalable dust.

UK. EH40 Workplace Exposure Limits (WELs)

Material	Type	Value
Barium molybdate (CAS 7787-37-3)	STEL	20 mg/m ³
	TWA	10 mg/m ³

Biological limit values

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

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no effect levels (DNELs)	Not available.
Predicted no effect concentrations (PNECs)	Not available.
Exposure guidelines	No exposure standards allocated.
8.2. Exposure controls	
Appropriate engineering controls	Ensure adequate ventilation, especially in confined areas. Provide eyewash station.
Individual protection measures, such as personal protective equipment	
General information	Eye wash fountain is recommended.
Eye/face protection	Chemical goggles are recommended. Face-shield. Eye wash fountain is recommended.
Skin protection	
- Hand protection	Wear protective gloves. Not normally needed.
- Other	Wear suitable protective clothing. Chemical resistant gloves. Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Respiratory protection	Wear positive pressure self-contained breathing apparatus (SCBA).
Thermal hazards	Not available.
Hygiene measures	When using, do not eat, drink or smoke. Do not breathe dust. Do not get in eyes. Do not get this material in contact with skin. Avoid contact with clothing. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practices.
Environmental exposure controls	Not available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state	Solid.
Form	Solid.
Colour	Not available.

Odour Not available.

Odour threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range Not available.

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Vapour pressure Not available.

Vapour density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

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

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Explosive properties Not available.
Oxidising properties Not available.

9.2. Other information

Molecular formula Ba.MoO4

SECTION 10: Stability and reactivity

10.1. Reactivity Not available.
10.2. Chemical stability Material is stable under normal conditions.
10.3. Possibility of hazardous reactions No dangerous reaction known under conditions of normal use. Hazardous polymerisation does not occur.
10.4. Conditions to avoid None under normal conditions.
10.5. Incompatible materials None known.
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 Harmful if inhaled.

Skin contact Causes skin irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Eye contact Causes serious eye irritation.

Ingestion Harmful if swallowed.

Symptoms Irritant effects.

11.1. Information on toxicological effects

Acute toxicity Harmful if inhaled. Harmful if swallowed. May cause respiratory irritation.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory sensitisation Due to lack of data the classification is not possible.

Skin sensitisation Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Due to lack of data the classification is not possible.

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

Carcinogenicity Hazardous by WHMIS criteria. Cancer hazard.

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

Not listed.

Reproductive toxicity Due to lack of data the classification is not possible.

Specific target organ toxicity - single exposure Respiratory tract irritation.

Specific target organ toxicity - repeated exposure Due to lack of data the classification is not possible.

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

Mixture versus substance information Not available.

Other information This product has no known adverse effect on human health.

SECTION 12: Ecological information

12.1. Toxicity No toxicity data noted for the ingredient(s).

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

12.3. Bioaccumulative potential Not available.

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

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil Not available.

12.5. Results of PBT and vPvB assessment Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste 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). Avoid discharge into water courses or onto the ground. Not applicable.

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 Contract with a disposal operator licensed by the Law on Disposal and Cleaning. This material and its container must be disposed of as hazardous waste. Incinerate the material under controlled conditions in an approved incinerator. Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of contents/container (in accordance with related regulations). Collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

SECTION 14: Transport information

ADR

14.1. UN number UN1564
14.2. UN proper shipping name Barium compounds, n.o.s.
14.3. Transport hazard class(es)
Class 6.1(PGIII)
Subsidiary risk -
Label(s) 6.1
Hazard No. (ADR) Not available.
Tunnel restriction code Not available.
14.4. Packing group III
14.5. Environmental hazards No.
14.6. Special precautions for user Not available.

RID

14.1. UN number UN1564
14.2. UN proper shipping name Barium compounds, n.o.s.
14.3. Transport hazard class(es)
Class 6.1(PGIII)
Subsidiary risk -
Label(s) 6.1
14.4. Packing group III
14.5. Environmental hazards No.
14.6. Special precautions for user Not available.

ADN

14.1. UN number UN1564
14.2. UN proper shipping name Barium compounds, n.o.s.
14.3. Transport hazard class(es)
Class 6.1(PGIII)
Subsidiary risk -
Label(s) 6.1
14.4. Packing group III
14.5. Environmental hazards No.

14.6. Special precautions for user Not available.

IATA

14.1. UN number UN1564
14.2. UN proper shipping name Barium compounds, n.o.s.
14.3. Transport hazard class(es)
Class 6.1(PGIII)
Subsidiary risk -
Label(s) 6.1
14.4. Packing group III
14.5. Environmental hazards No.
14.6. Special precautions for user Not available.

IMDG

14.1. UN number UN1564
14.2. UN proper shipping name Barium compounds, n.o.s.
14.3. Transport hazard class(es)
Class 6.1(PGIII)
Subsidiary risk -
Label(s) 6.1
14.4. Packing group III
14.5. Environmental hazards
Marine pollutant No.
EmS Not available.
14.6. Special precautions for user Not available.

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 (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

Authorisations

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

Not listed.

Restrictions on use

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

Not listed.

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

Not listed.

Other EU regulations

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

Not listed.

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

National regulations

Not available.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

Information on evaluation method leading to the classification of mixture

Not available.

Further information

HMIS® is a registered trade and service mark of the NPCA.

Disclaimer

Additional information is given in the Material Safety Data Sheet.

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