

SAFETY DATA SHEET

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

1.1. Product identifier	
Name of the substance	Barium Niobate (Ba(NO3)2
Identification number	056-002-00-7 (Index number)
Synonyms	Barium niobium oxide (BaNb2O6) * Barium diniobate
Document number	1DA
Materion Code	1DA
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 substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

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

Health hazards		
Acute toxicity, oral	Category 4 H302 - Harmful if sw	
Acute toxicity, inhalation	Category 4	H332 - Harmful if inhaled.
Hazard summary	Harmful if inhaled. Harmful if swallowed.	
2.2. Label elements		
Label according to Regulation	(EC) No. 1272/2008 as amended	
Contains:	Barium Niobate (Ba(NO3)2	
Hazard pictograms	\wedge	
Signal word	Warning	
Hazard statements		
H302	Harmful if swallowed.	
H332	Harmful if inhaled.	
Precautionary statements		
Prevention		
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.	

Response					
P301 + P312 P304 + P340 P312 P330	IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell. Rinse mouth.				
Storage	Not available.				
Disposal					
P501	Dispose of content	s/container in acco	rdance with local/regional/na	ational/internationa	al regulations.
Supplemental label information	None.				
2.3. Other hazards	None known.				
SECTION 3: Compositio	n/information o	n ingredients			
3.1. Substances					
General information					
Chemical name	%	CAS-No. / EC No.	REACH Registration No	INDEX No.	Notes
Barium Niobate (Ba(NO3)2	90 - 100	12009-14-2	-	056-002-00-7	#

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.

Classification:

#: This substance has been assigned Community workplace exposure limit(s).

Acute Tox. 4;H302, Acute Tox. 4;H332

Composition comments

General information

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

234-543-1

SECTION 4: First aid measures

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).

4.1. Description of first aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 POISON CENTRE or doctor/physician if you feel unwell.
Skin contact	Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. Get medical advice/attention if you feel unwell. Rinse mouth.
I.2. Most important	Not available.

symptoms and effects, both acute and delayed

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4.3. Indication of any Provide general supportive measures and treat symptomatically. Treat symptomatically. In case of shortness of breath, give oxygen. 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.

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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. Wear appropriate personal protective equipment. 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	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. Following product recovery, flush area with water.
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 taste or swallow. Avoid breathing dust. Avoid prolonged exposure. Use only outdoors or in a well-ventilated area. When using, do not eat, drink or smoke. Wash hands thoroughly after handling.
7.2. Conditions for safe storage, including any incompatibilities	Keep container tightly closed. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Keep out of the reach of children.
7.3. Specific end use(s)	Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Belgium. Exposure Limit Values. Material	Туре	Value
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3
Bulgaria. OELs. Regulation No 13 (Material	on protection of workers a Type	gainst risks of exposure to chemical agents at work Value
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3
Croatia. Dangerous Substance Exp 13/09	osure Limit Values in the	Workplace (ELVs), Annexes 1 and 2, Narodne Novine,
Material	Туре	Value
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	MAC	0,5 mg/m3
Czech Republic. OELs. Governmen Material	t Decree 361 Type	Value
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	Ceiling	2,5 mg/m3
	TWA	0,5 mg/m3
Estonia. OELs. Occupational Expos September 2001)	sure Limits of Hazardous S	ubstances. (Annex of Regulation No. 293 of 18
Material	Туре	Value
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3
Finland. Workplace Exposure Limi	ts	
Material	Туре	Value
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3

Material name: Barium Niobate (Ba(NO3)2

1DA Version #: 01 Issue date: 10-January-2018

France. Threshold Limit Values (VLEP) 1 Material	for Occupational Expo Type	osure to Chemicals in France Value	e, INRS ED 984
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	VME	0,5 mg/m3	
Germany. DFG MAK List (advisory OELs). Commission for the	e Investigation of Health Ha	zards of Chemical
Compounds in the Work Area (DFG) Material	Туре	Value	Form
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	Inhalable fraction.
Germany. TRGS 900, Limit Values in the Material	e Ambient Air at the V Type	Vorkplace Value	Form
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	AGW	0,5 mg/m3	Inhalable fraction.
Greece. OELs (Decree No. 90/1999, as a Material	amended) Type	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Hungary. OELs. Joint Decree on Chemic Material	al Safety of Workplac Type	ces Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Ireland. Occupational Exposure Limits Material	Туре	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Italy. Occupational Exposure Limits Material	Туре	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Latvia. OELs. Occupational exposure lin Material	nit values of chemical Type	substances in work enviro Value	nment
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Lithuania. OELs. Limit Values for Chem Material	ical Substances, Gene Type	eral Requirements Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Luxembourg. Binding Occupational exp Material	osure limit values (A Type	nnex I), Memorial A Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Malta. OELs. Occupational Exposure Lin 424), Schedules I and V)	nit Values (L.N. 227. o	of Occupational Health and	Safety Authority Act (CAP
Material	Туре	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Netherlands. OELs (binding) Material	Туре	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TWA	0,5 mg/m3	
Norway. Administrative Norms for Cont Material	aminants in the Worl Type	kplace Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)	TLV	0,5 mg/m3	

Material		Туре	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
Portugal. OELs. Decree-La Material	iw n. 290/200:	1 (Journal of the R Type	epublic - 1 Series A, n.266) Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
Portugal. VLEs. Norm on o Material	occupational ex	oposure to chemica Type	al agents (NP 1796) Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
Romania. OELs. Protection Material	n of workers fr	om exposure to ch Type	emical agents at the workplac Value	ce
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
. ,	n No. 300/200	7 concerning prote Type	ection of health in work with c Value	hemical agents
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
Spain. Occupational Expos Material	sure Limits	Туре	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
,	ronment Autho	ority (AV), Occupat Type	ional Exposure Limit Values (/ Value	AFS 2015:7) Form
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	Total dust.
Switzerland. SUVA Grenzv Material	verte am Arbei	itsplatz Type	Value	Form
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		STEL	4 mg/m3	Inhalable dust.
. ,		TWA	0,5 mg/m3	Inhalable dust.
UK. EH40 Workplace Expo Material	sure Limits (W	/ELs) Type	Value	
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
EU. Indicative Exposure Li Material	imit Values in I	Directives 91/322/ Type	/EEC, 2000/39/EC, 2006/15/ Value	EC, 2009/161/EU
Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)		TWA	0,5 mg/m3	
logical limit values	No biological	exposure limits noted	I for the ingredient(s).	
commended monitoring cedures	Follow standa	rd monitoring proced	lures.	
ived no effect levels IELs)	Not available.			
dicted no effect centrations (PNECs)	Not available.			
. Exposure controls				
propriate engineering trols	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates sho be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or othe engineering controls to maintain airborne levels below recommended exposure limits. If exposur limits have not been established, maintain airborne levels to an acceptable level.			
	limits have no	t been established. n	naintain airdorne ieveis to an acce	plable level.
ividual protection measure				
ividual protection measure General information				ptable level.

Skin protection	
- Hand protection	Not normally needed.
- Other	Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Not available.
Hygiene measures	When using, do not eat, drink or smoke. 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.	
рН	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.Nb.O	

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.
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.

Tufammatian an libela namba af			
Information on likely routes of Inhalation	exposure Harmful if inhaled.		
Skin contact			
	Due to lack of data the classification is not possible.		
Eye contact	Due to lack of data the classification is not possible.		
Ingestion	Harmful if swallowed.		
Symptoms	Not available.		
11.1. Information on toxicolog	ical effects		
Acute toxicity	Harmful if inhaled. Harmful if swallowed.		
Skin corrosion/irritation	Due to lack of data the classification is not possible.		
Serious eye damage/eye irritation	Due to lack of data the classification is not possible.		
Respiratory sensitisation	Due to lack of data the classification is not possible.		
Skin sensitisation	Due to lack of data the classification is not possible.		
Germ cell mutagenicity	Due to lack of data the classification is not possible.		
Carcinogenicity	Due to lack of data the classification is not possible.		
at work (as amended)	dinance on protection against and preventing risk relating to exposure to carcinogens		
Not listed.			
Reproductive toxicity	Due to lack of data the classification is not possible.		
Specific target organ toxicity - single exposure	Due to lack of data the classification is not possible.		
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	Not available.		
SECTION 12: Ecological i	nformation		
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.		
12.7. Additional information			
Estonia Dangerous substances in groundwater Data			
Barium Niobate (Ba(NO3)	-		
Ectonia Dangerous substar			

Estonia Dangerous substances in soil Data

Barium Niobate (Ba(NO3)2 (CAS 12009-14-2)

Barium (Ba) 2000 mg/kg Barium (Ba) 500 mg/kg Barium (Ba) 750 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.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. 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.

SECTION 14: Transport information

ADR

ADR		
14.1. UN number	UN1564	
14.2. UN proper shipping	Barium compounds, n.o.s.	
name		
14.3. Transport hazard clas	ss(es)	
Class	6.1(PGIII)	
Subsidiary risk	-	
Label(s)	6.1	
Hazard No. (ADR)	Not available.	
Tunnel restriction	Not available.	
code		
14.4. Packing group	III	
14.5. Environmental hazards	No.	
14.6. Special precautions	Not available	
for user		
RID		
14.1. UN number	UN1564	
14.2. UN proper shipping	Barium compounds, n.o.s.	
name	· · · · · · · · · · · · · · · · · · ·	
14.3. Transport hazard class(es)		
Class	6.1(PGIII)	
Subsidiary risk	-	
Label(s)	6.1	
14.4. Packing group	III	
14.5. Environmental	No.	
hazards		
14.6. Special precautions	Not available.	
for user		
ADN		
14.1. UN number	UN1564	
14.2. UN proper shipping	Barium compounds, n.o.s.	
name 14.3. Transport hazard clas		
Class	6.1(PGIII)	
Subsidiary risk	-	
Label(s)	6.1	
14.4. Packing group	III	
14.5. Environmental	No.	
hazards		
14.6. Special precautions	Not available.	
for user		
ΙΑΤΑ		
14.1. UN number	UN1564	
14.2. UN proper shipping	Barium compounds, n.o.s.	
name		
14.3. Transport hazard clas		
Class	6.1(PGIII)	
Subsidiary risk	-	
Label(s)	6.1	
14.4. Packing group	III	
14.5. Environmental hazards	No.	
11azai us		

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

6

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

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.
Disclaimer	This document the information

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