

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 1 of 12

Print date: 26/11/2019

SECTION 1: IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY/UNDERTAKING.

1.1 Product identifier.

Product Name: BARIUM CARBONATE
Product Code: 401A

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

Manufacture of matches, pyrotechnics, explosives, oxidant in the chemical industry.

Uses advised against:

Uses other than those recommended.

1.3 Details of the supplier of the safety data sheet.

Company: **NITROPARIS S. L.**
Address: POL. IND. LA MINA
City: 12520 - NULES
Province: (Castellón) ESPAÑA
Telephone: TEL.+34 964 67 39 27
Fax: +34 964 67 49 84
E-mail: info@nitroparis.com
Web: www.nitroparis.com

1.4 Emergency telephone number: +34 964 67 39 27 (Only available during office hours; Monday-Friday; 08:00-18:00)

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the mixture.

In accordance with Regulation (EU) No 1272/2008:

Acute Tox. 4 : Harmful if swallowed.

2.2 Label elements.

Labelling in accordance with Regulation (EU) No 1272/2008:

Pictograms:



Signal Word:

Warning

H statements:

H302 Harmful if swallowed.

P statements:

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/... if you feel unwell.
P330 Rinse mouth.
P501 Dispose of contents/container in accordance with local legislation/ National

Contains:

Barium carbonate

2.3 Other hazards.

The product may have the following additional risks:

Dustiness.

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 2 of 12

Print date: 26/11/2019

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.

Not Applicable.

3.2 Mixtures.

Substances posing a danger to health or the environment in accordance with the Regulation (EC) No. 1272/2008, assigned a Community exposure limit in the workplace, and classified as PBT/vPvB or included in the Candidate List:

Identifiers	Name	Concentrate	(*)Classification - Regulation (EC) No 1272/2008	
			Classification	specific concentration limit
Index No: 056-003-00-2 CAS No: 513-77-9 EC No: 208-167-3 Registration No: 01-2119489177-25-XXXX	[1] Barium carbonate	>= 75%	Acute Tox. 4 *, H302	-
CAS No: 7727-43-7 EC No: 231-784-4 Registration No: 01-2119491274-35-XXXX	[1] barium sulfate	>= 2,5% < 10%	-	-

(*) The complete text of the H phrases is given in section 16 of this Safety Data Sheet.

* See Regulation (EC) No. 1272/2008, Annex VI, section 1.2.

[1] Substance with a Community workplace exposure limit (see section 8.1).

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.

In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Inhalation.

Take the victim into open air; keep them warm and calm. If breathing is irregular or stops, perform artificial respiration.

Eye contact.

Remove contact lenses, if present and if it is easy to do. Wash eyes with plenty of clean and cool water for at least 10 minutes while pulling eyelids up, and seek medical assistance. Don't let the person to rub the affected eye.

Skin contact.

Remove contaminated clothing. Wash skin vigorously with water and soap or a suitable skin cleaner. NEVER use solvents or thinners.

Ingestion.

If accidentally ingested, seek immediate medical attention. Keep calm. NEVER induce vomiting.

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

Harmful Product, prolonged exposure due to inhalation may cause anaesthetic effects and the need for immediate medical assistance.

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

In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious. Do not induce vomiting. If the person vomits, clear the respiratory tract.

SECTION 5: FIREFIGHTING MEASURES.

The product does not present any particular risk in case of fire.

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 3 of 12

Print date: 26/11/2019

5.1 Extinguishing media.

Suitable extinguishing media:

Extinguisher powder or CO₂. In case of more serious fires, also alcohol-resistant foam and water spray.

Unsuitable extinguishing media:

Do not use a direct stream of water to extinguish. In the presence of electrical voltage, you cannot use water or foam as extinguishing media.

5.2 Special hazards arising from the mixture.

Special risks.

Fire can cause thick, black smoke. As a result of thermal decomposition, dangerous products can form: carbon monoxide, carbon dioxide. Exposure to combustion or decomposition products can be harmful to your health.

5.3 Advice for firefighters.

Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account. Prevent the products used to fight the fire from going into drains, sewers, or waterways.

Fire protection equipment.

According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and boots.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures.

For exposure control and individual protection measures, see section 8.

6.2 Environmental precautions.

Prevent the contamination of drains, surface or subterranean waters, and the ground.

6.3 Methods and material for containment and cleaning up.

The contaminated area should be immediately cleaned with an appropriate de-contaminator. Pour the decontaminator on the remains in an opened container and let it act various days until no further reaction is produced.

6.4 Reference to other sections.

For exposure control and individual protection measures, see section 8.

For later elimination of waste, follow the recommendations under section 13.

SECTION 7: HANDLING AND STORAGE.

7.1 Precautions for safe handling.

For personal protection, see section 8.

In the application area, smoking, eating, and drinking must be prohibited.

Follow legislation on occupational health and safety.

Never use pressure to empty the containers. They are not pressure-resistant containers. Keep the product in containers made of a material identical to the original.

7.2 Conditions for safe storage, including any incompatibilities.

Store according to local legislation. Observe indications on the label. Store the containers between 5 and 25° C, in a dry and well-ventilated place, far from sources of heat and direct solar light. Keep far away from ignition points. Keep away from oxidising agents and from highly acidic or alkaline materials. Do not smoke. Prevent the entry of non-authorised persons. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.

The product is not affected by Directive 2012/18/EU (SEVESO III).

7.3 Specific end use(s).

Not available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 4 of 12

Print date: 26/11/2019

Work exposure limit for:

Name	CAS No.	Country	Limit value	ppm	mg/m ³
Barium carbonate	513-77-9	European Union [1]	Eight hours		0,5
			Short term		
		United States [2] (Cal/OSHA)	Eight hours		0.5 soluble compounds (as Ba)
			Short term		
		United States [3] (NIOSH)	Eight hours		0.5 soluble compounds (as Ba)
			Short term		
		United States [4] (OSHA)	Eight hours		0.5 soluble compounds (as Ba)
			Short term		
barium sulfate	7727-43-7	European Union [1]	Eight hours		0,5
			Short term		
		United Kingdom [5]	Eight hours		10 (inhalable dust) 4 (respirable dust)
			Short term		
		United States [2] (Cal/OSHA)	Eight hours		10 (Total dust) 5 (Respirable fraction)
			Short term		
		United States [3] (NIOSH)	Eight hours		10 (Total dust) 5 (Respirable fraction)
			Short term		
		United States [4] (OSHA)	Eight hours		15 (Total dust) 5 (Respirable fraction)
			Short term		

[1] According both Binding Occupational Exposure Limits (BOELVs) and Indicative Occupational Exposure Limits (IOELVs) adopted by Scientific Committee for Occupational Exposure Limits to Chemical Agents (SCOEL).

[2] California Division of Occupational Safety and Health (Cal/OSHA) Permissible Exposure Limits (PELs).

[3] National Institute for Occupational Safety and Health. NIOSH Recommendations for occupational safety and health, Compendium of Policy Documents and Statements, January, 1992, DHHS (NIOSH) Publication No. 92-100.

[4] Occupational Safety and Health Administration, United States Department of Labor. Permissible Exposure limits (PELs), California Division of Occupational Safety and Health (Cal/OSHA) Permissible Exposure Limits (PELs).

[5] According Limit Value (IOELV) list in 2nd Indicative Occupational Exposure adopted by Health and Safety Executive.

The product does NOT contain substances with Biological Limit Values.

Concentration levels DNEL/DMEL:

Name	DNEL/DMEL	Type	Value
Barium carbonate CAS No: 513-77-9 EC No: 208-167-3	DMEL (Workers)	Dermal, Long-term, Systemic effects	41 (mg/kg)
	DMEL (Workers)	Inhalation, Long-term, Systemic effects	6,9 (mg/m ³)
	DMEL (General population)	Inhalation, Long-term, Systemic effects	2,1 (g/m ³)
	DMEL (Workers)	Inhalation, Long-term, Local effects	0,72 (mg/m ³)
	DMEL (General population)	Inhalation, Long-term, Local effects	0,12 (mg/m ³)
	DMEL (General population)	Oral, Long-term, Systemic effects	3,5 (mg/kg)
	DMEL (Workers)	Inhalation, Long-term, Systemic effects	10 (mg/m ³)
barium sulfate CAS No: 7727-43-7 EC No: 231-784-4	DNEL (General population)	Inhalation, Long-term, Systemic effects	10 (mg/m ³)
	DNEL (General population)	Inhalation, Long-term, Systemic effects	10 (mg/m ³)

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 5 of 12

Print date: 26/11/2019

	DNEL (General population)	Oral, Long-term, Systemic effects	13000 (mg/kg pc/día)
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DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.

DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.

Concentration levels PNEC:

Name	Details	Value
barium sulfate CAS No: 7727-43-7 EC No: 231-784-4	Agua dulce, como Ba	227,8 (mg/l)
	Sedimento de agua dulce, como Ba	792,7 (mg/kg)
	Suelo, como Ba	207,7 (mg/kg)
	Planta de tratamiento de aguas residuales, como Ba	50,1 (mg/l)

PNEC: Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.

8.2 Exposure controls.

Measures of a technical nature:

Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

Concentration:	100 %					
Uses:	Manufacture of matches, pyrotechnics, explosives, oxidant in the chemical industry.					
Breathing protection:						
PPE:	Filter mask for protection against gases and particles.					
Characteristics:	«CE» marking, category III. The mask must have a wide field of vision and an anatomically designed form in order to be sealed and watertight.					
CEN standards:	EN 136, EN 140, EN 405					
Maintenance:	Should not be stored in places exposed to high temperatures and damp environments before use. Special attention should be paid to the state of the inhalation and exhalation valves in the face adaptor.					
Observations:	Read carefully the manufacturer's instructions regarding the equipment's use and maintenance. Attach the necessary filters to the equipment according to the specific nature of the risk (Particles and aerosols: P1-P2-P3, Gases and vapours: A-B-E-K-AX), changing them as advised by the manufacturer.					
Filter Type needed:	A2					
Hand protection:						
PPE:	Protective gloves against chemicals.					
Characteristics:	«CE» marking, category III.					
CEN standards:	EN 374-1, En 374-2, EN 374-3, EN 420					
Maintenance:	Keep in a dry place, away from any sources of heat, and avoid exposure to sunlight as much as possible. Do not make any changes to the gloves that may alter their resistance, or apply paints, solvents or adhesives.					
Observations:	Gloves should be of the appropriate size and fit the user's hand well, not being too loose or too tight. Always use with clean, dry hands.					
Material:	PVC (polyvinyl chloride)	Breakthrough time (min.):	> 480	Material thickness (mm):	0,35	
Eye protection:						
PPE:	Protective goggles with built-in frame.					
Characteristics:	«CE» marking, category II. Eye protector with built-in frame for protection against dust, smoke, fog and vapour.					
CEN standards:	EN 165, EN 166, EN 167, EN 168					
Maintenance:	Visibility through lenses should be ideal. Therefore, these parts should be cleaned daily. Protectors should be disinfected periodically following the manufacturer's instructions.					
Observations:	Some signs of wear and tear include: yellow colouring of the lenses, superficial scratching of the lenses, scraping etc.					
Skin protection:						
PPE:	Anti-static protective clothing.					
Characteristics:	«CE» marking, category II. Protective clothing should not be too tight or loose in order not to obstruct the user's movements.					
CEN standards:	EN 340, EN 1149-1, EN 1149-2, EN 1149-3, EN 1149-5					

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 6 of 12

Print date: 26/11/2019

Maintenance:	In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer.
Observations:	The protective clothing should offer a level of comfort in line with the level of protection provided in terms of the hazard against which it protects, bearing in mind environmental conditions, the user's level of activity and the expected time of use.
PPE:	Anti-static safety footwear.
Characteristics:	«CE» marking, category II.
CEN standards:	EN ISO 13287, EN ISO 20344, EN ISO 20346
Maintenance:	The footwear should be checked regularly
Observations:	The level of comfort during use and acceptability are factors that are assessed very differently depending on the user. Therefore, it is advisable to try on different footwear models and, if possible, different widths.



SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

9.1 Information on basic physical and chemical properties.

Appearance: crystalline powder

Colour: White

Odour: n.a

Odour threshold: n.a

pH: 5-7

Melting point: >900 °C

Boiling Point: 1560 °C

Flash point: N.A./N.A.

Evaporation rate: n.a

Inflammability (solid, gas): Non flammable

Lower Explosive Limit: n.a

Upper Explosive Limit: Not explosive

Vapour pressure: n.a

Vapour density: n.a

Relative density: 4.31

Solubility: Soluble

Liposolubility: n.a

Hydrosolubility: 14 mg/l (20°C)

Partition coefficient (n-octanol/water): n.a

Auto-ignition temperature: n.a°C

Decomposition temperature: 1380°C

Viscosity: n.a

Explosive properties: Not explosive

Oxidizing properties: It is not considered as oxidising

N.A./N.A. = Not Available/Not Applicable due to the nature of the product

9.2 Other information.

Dropping point: n.a

Blink: n.a

Kinematic viscosity: n.a

N.A./N.A. = Not Available/Not Applicable due to the nature of the product

SECTION 10: STABILITY AND REACTIVITY.

10.1 Reactivity.

Contact with acids causes a release of CO₂, sometimes violent.

10.2 Chemical stability.

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions.

No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid.

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3
Revision date: 26/11/2019



Page 7 of 12
Print date: 26/11/2019

None

10.5 Incompatible materials.

- Acids

10.6 Hazardous decomposition products.

- Barium oxide
- Other dangerous products of decomposition may form.

SECTION 11: TOXICOLOGICAL INFORMATION.

11.1 Information on toxicological effects.

Repeated or prolonged contact with the product can cause the elimination of oil from the skin, giving rise to non-allergic contact dermatitis and absorption of the product through the skin.
Splatters in the eyes can cause irritation and reversible damage.

Toxicological information about the substances present in the composition.

Name	Acute toxicity			
	Type	Test	Kind	Value
Barium carbonate CAS No: 513-77-9 EC No: 208-167-3	Oral	LD50	Rat	418 mg/kg bw
	Dermal			
	Inhalation			
barium sulfate CAS No: 7727-43-7 EC No: 231-784-4	Oral	DL50	rat	15000 mg/kg
	Dermal			
	Inhalation			

A) acute toxicity;

Rated Product:

Acute oral toxicity, Category 4: Harmful if swallowed.

LD50: 1,690 mg / kg - Rat, male and female

Method: 401 OECD Test Guidelines

This product is classified as category 4 acute toxicity

LD50: 30,700 mg / kg male

Not classified as harmful if swallowed

Bibliographic data

Acute inhalation toxicity. No data available

Acute cutaneous toxicity. By analogy

LD50:> 2000 mg / kg - Rat

Method: OECD Test Guidelines 402

Acute Skin Toxicity: Not classified as dangerous according to the criteria of the GHS.

By analogy

Skin LD50:> 2000 mg / kg

Not classified as harmful by skin contact

Bibliographic data

B) skin corrosion or irritation;

Non-conclusive data for classification.

By analogy

Does not irritate the skin

Method: OECD Test Guidelines 439. Unpublished internal reports

Does not irritate the skin

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 8 of 12

Print date: 26/11/2019

By analogy

In vitro assay. Unpublished reports

C) serious eye damage or eye irritation;

Non-conclusive data for classification.

Rabbit

Does not irritate the eyes

Method: 405 OECD Test Guidelines

Unpublished internal reports

Rabbit

Does not irritate the eyes

Unpublished reports

D) respiratory or skin sensitization;

Non-conclusive data for classification.

By analogy. Local lymph node test - Mouse

Does not cause skin sensitization.

Method: OECD Test Guidelines 429

Unpublished internal reports.

By analogy. Test of the local lymph node - Negative mouse

Not classified as sensitizing by skin contact

Unpublished reports.

E) germ cell mutagenicity;

Non-conclusive data for classification.

By analogy

Ames Test

With or without metabolic activation

negative

Method: OECD Test Guidelines 471

Bibliographic data

In vitro tests showed no mutagenic effects

By analogy

Chromosomal aberration test in vitro

Breed, strain: CHO

With or without metabolic activation

negative

Method: OECD TG 473

Bibliographic data

In vitro tests showed no mutagenic effects

Gene Mutation Assays in Mammalian Cells.

Breed, strain: Mouse

With or without metabolic activation

negative

Method: OECD TG 476

Bibliographic data

In vitro tests showed no mutagenic effects

By analogy

In vitro tests showed no mutagenic effects

Bibliographic data

Unpublished reports

F) carcinogenicity;

Non-conclusive data for classification.

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 9 of 12

Print date: 26/11/2019

By analogy

Rat

Oral

NOAEL: 91mg / kg

No carcinogenic effects have been observed

Bibliographic data

By analogy

Mouse

Oral

NOAEL: 91mg / kg

No carcinogenic effects have been observed

Bibliographic data

By analogy

No carcinogenic effects have been observed

Bibliographic data

G) reproductive toxicity;

Non-conclusive data for classification.

By analogy

Rat, males and females

Oral

NOAEL Parent: 258 - 290 mg / kg

Bibliographic data

By analogy

Mouse, males and females

Oral

NOAEL Parent: 258 - 290 mg / kg

Bibliographic data

(H) specific organ toxicity (STOT) - single exposure;

Non-conclusive data for classification.

(I) specific organ toxicity (STOT) - repeated exposure;

Non-conclusive data for classification.

The substance or mixture is not classified as toxic to a target organ

Following repeated exposures according to the EMS criteria.

Inhalation 90 Days - Rat, males and females

NOAEL: 61 - 81 mg / kg

Substance test: Bario

Target Organs: Cardiovascular System, Hematologic System, Gland
adrenal

Bibliographic data

Oral 90 Days - Mouse, Male and Female

NOAEL: 61 - 81 mg / kg

Substance test: Bario

Target Organs: Cardiovascular System, Hematologic System, Gland
adrenal

Bibliographic data.

Oral Repeated Exposure - Mouse

Target Organs: Cardiovascular System, Hematologic System, Kidney, Gland
adrenal

Oral 92 Days - Rat

NOAEL: 61-81 ppm

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 10 of 12

Print date: 26/11/2019

Substance test: Bario

Target Organs: Cardiovascular System, Hematologic System, Kidney, Gland adrenal

Oral 92 Days - Mouse

NOAEL: 61-81 ppm

Substance test: Bario

Target Organs: Cardiovascular System, Hematologic System, Kidney, Gland adrenal

By analogy

Oral presentation 90 d - Rat, in males and females

NOAEL: > 104 mg / kg

drinking water

Bibliographic data

By analogy

Inhalation 90 d - Rat

NOAEC: 0.250 mg / l

Bibliographic data

J) aspiration hazard;

Non-conclusive data for classification.

SECTION 12: ECOLOGICAL INFORMATION.

12.1 Toxicity.

Name	Ecotoxicity			
	Type	Test	Kind	Value
barium sulfate	Fish	CL50	salmo gairdneri	76000 mg/L (96h)
	Aquatic invertebrates			
	Aquatic plants			
CAS No: 7727-43-7 EC No: 231-784-4				

12.2 Persistence and degradability.

No information is available regarding the biodegradability of the substances present.

No information is available on the degradability of the substances present. No information is available about persistence and degradability of the product.

12.3 Bioaccumulative potential.

No information is available regarding the bioaccumulation of the substances present.

12.4 Mobility in soil.

No information is available about the mobility in soil.

The product must not be allowed to go into sewers or waterways.

Prevent penetration into the ground.

12.5 Results of PBT and vPvB assessment.

No information is available about the results of PBT and vPvB assessment of the product.

12.6 Other adverse effects.

No information is available about other adverse effects for the environment.

SECTION 13: DISPOSAL CONSIDERATIONS.

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 11 of 12

Print date: 26/11/2019

13.1 Waste treatment methods.

Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.

Follow the provisions of Directive 2008/98/EC regarding waste management.

SECTION 14: TRANSPORT INFORMATION.

Transportation is not dangerous. In case of road accident causing the product's spillage, proceed in accordance with point 6.

14.1 UN number.

Transportation is not dangerous.

14.2 UN proper shipping name.

Description:

ADR: Transportation is not dangerous.

IMDG: Transportation is not dangerous.

ICAO/IATA: Transportation is not dangerous.

14.3 Transport hazard class(es).

Transportation is not dangerous.

14.4 Packing group.

Transportation is not dangerous.

14.5 Environmental hazards.

Transportation is not dangerous.

14.6 Special precautions for user.

,Transportation is not dangerous.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code.

Transportation is not dangerous.

SECTION 15: REGULATORY INFORMATION.

15.1 Safety, health and environmental regulations/legislation specific for the mixture.

The product is not affected by the Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

The product is not affected by Directive 2012/18/EU (SEVESO III).

The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.

The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

15.2 Chemical safety assessment.

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

Available Product Exposure Scenario.

SECTION 16: OTHER INFORMATION.

Complete text of the H phrases that appear in section 3:

H302 Harmful if swallowed.

Classification codes:

-Continued on next page.-

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2015/830)

401A-BARIUM CARBONATE

Version: 3

Revision date: 26/11/2019



Page 12 of 12

Print date: 26/11/2019

Acute Tox. 4 : Acute toxicity (Oral), Category 4

Classification and procedure used to derive the classification for mixtures according to Regulation (EC)

1272/2008 [CLP]:

Physical hazards	On basis of test data
Health hazards	Calculation method
Environmental hazards	Calculation method

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Available Product Exposure Scenario.

Abbreviations and acronyms used:

CEN:	European Committee for Standardization.
DMEL:	Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.
DNEL:	Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
EC50:	Half maximal effective concentration.
PPE:	Personal protection equipment.
LC50:	Lethal concentration, 50%.
LD50:	Lethal dose, 50%.
PNEC:	Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.

Key literature references and sources for data:

<http://eur-lex.europa.eu/homepage.html>

<http://echa.europa.eu/>

Regulation (EU) 2015/830.

Regulation (EC) No 1907/2006.

Regulation (EU) No 1272/2008.

The information given in this Safety Data Sheet has been drafted in accordance with COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.

Annex

Scenario List

1. ES1 : Industrial use, Manufacture of other barium substances, Formulation.....	17
2. ES2 : Industrial use, Use as reactive processing aid.....	34
3. ES3 : Industrial use, Manufacture of glass, Manufacture of ceramics.....	45
4. ES4 : Industrial use, soldering, welding, brazing.....	61
5. ES5 : Industrial use, Use in the preparation of slurry.....	72
6. ES6 : Industrial use, Manufacture of pyrotechnical products.....	87
7. ES7 : Industrial use, soldering, welding, brazing.....	98
8. ES8 : Professional use, soldering, welding, brazing.....	101
9. ES9 : Professional use, Manufacture of pyrotechnical products.....	104

1. ES1 : Industrial use, Manufacture of other barium substances, Formulation

1.1. Scenario description

Main User Groups	:	SU 3	Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
		SU9	Manufacture of fine chemicals
		SU 10	Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
		SU13	Manufacture of other non-metallic mineral products, e.g. plasters, cement
		SU15	Manufacture of fabricated metal products, except machinery and equipment
		SU16	Manufacture of computer, electronic and optical products, electrical equipment
		SU17	General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
		SU19	Building and construction work
		SU20	Health services
Environmental release category	:	ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
Process category	:	PROC1	Use in closed process, no likelihood of exposure
		PROC2	Use in closed, continuous process with occasional controlled exposure
		PROC3	Use in closed batch process (synthesis or formulation)
		PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
		PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
		PROC7	Industrial spraying
		PROC8a	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
		PROC8b	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
		PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
		PROC10	Roller application or brushing
		PROC13	Treatment of articles by dipping and pouring
		PROC14	Production of preparations or articles by tableting, compression,

Product category	:		extrusion, pelletisation
		PROC15	Use as laboratory reagent
		PROC22	Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting
		PROC23	Open processing and transfer operations with minerals/ metals at elevated temperature
		PROC24	High (mechanical) energy work-up of substances bound in materials and/ or articles
		PROC25	Other hot work operations with metals
		PROC26	Handling of solid inorganic substances at ambient temperature
		PROC21	Low energy manipulation of substances bound in materials and/ or articles
		PC7	Base metals and alloys
		PC19	Intermediate
		PC21	Laboratory chemicals
		PC2	Adsorbents
		PC9a	Coatings and paints, thinners, paint removers
		PC9b	Fillers, putties, plasters, modelling clay
		PC12	Fertilizers
		PC14	Metal surface treatment products, including galvanic and electroplating products
		PC15	Non-metal-surface treatment products
		PC20	Products such as pH-regulators, flocculants, precipitants, neutralization agents
		PC25	Metal working fluids
		PC26	Paper and board dye, finishing and impregnation products: including bleaches and other processing aids
		PC29	Pharmaceuticals
		PC35	Washing and cleaning products (including solvent based products)
		PC37	Water treatment chemicals
		PC38	Welding and soldering products (with flux coatings or flux cores.), flux products

1.2. Conditions of use affecting exposure

1.2.1 Contributing scenario controlling environmental exposure for: ERC6a Industrial use resulting in manufacture of another substance (use of intermediates), Scenario 1

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount

Annual amount per site : 323 t
Daily amount per site : 10,8 t
Maximum daily local emission to air : 3,23 kg
Local daily emission to waste water : 2,15 kg

Environmental factors

Flow rate : 18.000 m3/d
Dilution Factor (River) : 10

Other given operational conditions affecting environmental exposure

Number of emission days per year : 30

Technical conditions and measures / Organizational measures

Air : Wet scrubber for dust elimination of waste gases
Fabric filter(Effectiveness (of a measure): 90 %)
Water : Chemical Precipitation

Sedimentation
Filtration(Effectiveness (of a measure): 90 %)

Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant : none

Conditions and measures related to external treatment of waste for disposal

Remarks : No waste from process

1.2.2 Contributing scenario controlling environmental exposure for: ERC6a Industrial use resulting in manufacture of another substance (use of intermediates), Scenario 2**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount

Annual amount per site : 3736 t
Daily amount per site : 11,3 t
Maximum daily local emission to air : 3,4 kg
Local daily emission to waste water : 2,3 kg

Environmental factors

Flow rate : 18.000 m3/d
Dilution Factor (River) : 10

Other given operational conditions affecting environmental exposure

Number of emission days per year : 330

Technical conditions and measures / Organizational measures

Air : Wet scrubber for dust elimination of waste gases
Fabric filter(Effectiveness (of a measure): 90 %)
Water : Chemical Precipitation
Sedimentation
Filtration(Effectiveness (of a measure): 90 %)

Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant : none

Conditions and measures related to external treatment of waste for disposal

Remarks : No waste from process

1.2.3 Contributing scenario controlling environmental exposure for: ERC6a Industrial use resulting in manufacture of another substance (use of intermediates), Scenario 3**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount

Annual amount per site : 7185 t
Daily amount per site : 22 t
Local daily emission to waste water : 0 kg
Maximum daily local emission to air : 6,5 kg

Other given operational conditions affecting environmental exposure

Number of emission days per year : 330

Technical conditions and measures / Organizational measures

Air : Wet scrubber for dust elimination of waste gases
Fabric filter(Effectiveness (of a measure): 90 %)

Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant : none

Conditions and measures related to external treatment of waste for disposal

Remarks : No waste from process

1.2.4 Contributing scenario controlling worker exposure for: Aqueous solution, PROC1 Use in closed process, no likelihood of exposure, PROC2 Use in closed, continuous process with occasional controlled exposure, PROC3 Use in closed batch process (synthesis or formulation), PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises, PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, PROC8b Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing), PROC10 Roller application or brushing, PROC13 Treatment of articles by dipping and pouring, PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation, PROC15 Use as laboratory reagent

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Aqueous solution

Frequency and duration of use

Exposure duration : < 8 h

Human factors not influenced by risk management

Breathing volume : 10 m3

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.
Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace.
Wear suitable working clothes., Safety shoes

1.2.5 Contributing scenario controlling worker exposure for: Aqueous solution, PROC7 Industrial spraying

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Aqueous solution

Frequency and duration of use

Exposure duration : < 8 h

Human factors not influenced by risk management

Breathing volume : 10 m3

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

with local exhaust ventilation (Effectiveness (of a measure): 78 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.

Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace.

Wear suitable working clothes., Safety shoes

respiratory protection equipment (Effectiveness (of a measure): 94 %)

1.2.6 Contributing scenario controlling worker exposure for: OC1 Solid, low dustiness, PROC1 Use in closed process, no likelihood of exposure, PROC2 Use in closed, continuous process with occasional controlled exposure, PROC3 Use in closed batch process (synthesis or formulation), PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises, PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, PROC8b Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing), PROC10 Roller application or brushing, PROC13 Treatment of articles by dipping and pouring, PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation, PROC15 Use as laboratory reagent, PROC21 Low energy manipulation of substances bound in materials and/ or articles, PROC26 Handling of solid inorganic substances at ambient temperature

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, low dustiness

Frequency and duration of use

Exposure duration	: < 8 h
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Human factors not influenced by risk management

Breathing volume	: 10 m3
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Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.

Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace., Do not create a powder cloud by using a brush or compressed air.

Wear suitable working clothes., Safety shoes

1.2.7 Contributing scenario controlling worker exposure for: OC1 Solid, low dustiness, PROC7 Industrial spraying, PROC23 Open processing and transfer operations with minerals/ metals at elevated temperature, PROC25 Other hot work operations with metals

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
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Physical Form (at time of use) : Solid, low dustiness

Frequency and duration of use

Exposure duration : < 8 h

Human factors not influenced by risk management

Breathing volume : 10 m³

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

with local exhaust ventilation (Effectiveness (of a measure): 78 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.
Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace., Do not create a powder cloud by using a brush or compressed air.
Wear suitable working clothes., Safety shoes

1.2.8 Contributing scenario controlling worker exposure for: OC1 Solid, low dustiness, PROC22 Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid, low dustiness

Frequency and duration of use

Exposure duration : < 8 h

Human factors not influenced by risk management

Breathing volume : 10 m³

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

with local exhaust ventilation (Effectiveness (of a measure): 78 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.
Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace., Do not create a powder cloud by using a brush or compressed air.
Wear suitable working clothes., Safety shoes
respiratory protection equipment (Effectiveness (of a measure): 80 %)

1.2.9 Contributing scenario controlling worker exposure for: OC1 Solid, low dustiness, PROC24 High (mechanical) energy work-up of substances bound in materials and/ or articles

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, low dustiness

Frequency and duration of use

Exposure duration	: < 8 h
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Human factors not influenced by risk management

Breathing volume	: 10 m3
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Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.
Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace., Do not create a powder cloud by using a brush or compressed air.
Wear suitable working clothes., Safety shoes
respiratory protection equipment (Effectiveness (of a measure): 80 %)

1.2.10 Contributing scenario controlling worker exposure for: OC2 Solid, medium dustiness, PROC1 Use in closed process, no likelihood of exposure, PROC2 Use in closed, continuous process with occasional controlled exposure, PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing), PROC10 Roller application or brushing, PROC15 Use as laboratory reagent

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, medium dustiness

Frequency and duration of use

Exposure duration	: < 8 h
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Human factors not influenced by risk management

Breathing volume	: 10 m3
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Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented., Regular cleaning of work area, Regular cleaning of equipment

Conditions and measures related to personal protection, hygiene and health evaluation

Do not inhale spray vapour., Smoking, eating and drinking should be prohibited in the application area.
Remove and wash contaminated clothing before re-use., Contaminated work clothing should not be allowed out of the workplace., Do not create a powder cloud by using a brush or compressed air.
Wear suitable working clothes., Safety shoes