

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

- Trade name BARIUM CARBONATE A

1.2 Relevant identified uses of the substance or mixture and uses advised against**Uses of the Substance / Mixture**

- Use in the manufacturing of other barium substances
- Use as reactive processing aid (sulfate removal)
- Glass industry
- Manufacture of ceramic materials
- Manufacture of electro-ceramic materials
- Manufacture of glazes, frits and enamels
- Use in welding electrode coating
- Use in the preparation of slurry
- Manufacture of pyrotechnical products
- Welding in industrial and professional settings
- Contact your supplier for additional information

Uses advised against

- none

1.3 Details of the supplier of the safety data sheet**Company**

SOLVAY FLUORIDES, LLC
3333 RICHMOND AVENUE
77098-3099, HOUSTON
USA
Tel: +1-800-7658292; +1-713-5256700
Fax: +1-713-5257805

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture**HCS 2012 (29 CFR 1910.1200)**

Acute toxicity, Category 4

H302: Harmful if swallowed.

2.2 Label elements**HCS 2012 (29 CFR 1910.1200)****Pictogram****Signal Word**

- Warning

Hazard Statements

- H302 Harmful if swallowed.

Precautionary Statements**Prevention**

- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.

Response

- P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

2.3 Other hazards which do not result in classification

- None known.

SECTION 3: Composition/information on ingredients**3.1 Substance****Hazardous Ingredients and Impurities**

Chemical Name	Identification number CAS-No.	Concentration [%]
Barium carbonate	513-77-9	>= 97
Barium sulfate	7727-43-7	1 - 5

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

3.2 Mixture

Not applicable, this product is a substance.

SECTION 4: First aid measures**4.1 Description of first-aid measures****In case of inhalation**

- Move to fresh air.
- If symptoms persist, call a physician.

In case of skin contact

- Remove and wash contaminated clothing before re-use.
- Wash off with plenty of water.
- If symptoms persist, call a physician.

In case of eye contact

- Rinse thoroughly with plenty of water, also under the eyelids.
- If eye irritation persists, consult a specialist.

In case of ingestion

- Call a physician immediately.
- Take victim immediately to hospital.
- If swallowed, rinse mouth with water (only if the person is conscious).
- Artificial respiration and/or oxygen may be necessary.

4.2 Most important symptoms and effects, both acute and delayed**In case of inhalation****Effects**

- May cause irritation of the mucous membranes.
- Risk of pulmonary overload (respirable particulates)
- Possible risk of irreversible effects through inhalation.

In case of skin contact**Effects**

- Prolonged skin contact may cause skin irritation.

In case of eye contact**Effects**

- Contact with eyes may cause irritation.

In case of ingestion**Effects**

- Acute intoxication by inhalation or ingestion of water soluble barium salts causes vomiting, diarrhea, convulsive tremors and muscular paralysis.
- Risk of convulsions, pulmonary arrest.
- Risk of cardiac rhythm alteration, sudden cardiac failure.
- Risk of shock.

4.3 Indication of any immediate medical attention and special treatment needed**Notes to physician**

- Give to drink 30 grams of sodium sulfate in 250 ml of fresh water.
- Immediate medical attention is required.
- Medical examination necessary even only on suspicion of intoxication.

SECTION 5: Firefighting measures

<u>Flash point</u>	Not applicable
<u>Autoignition temperature</u>	Not applicable
<u>Flammability / Explosive limit</u>	no data available

5.1 Extinguishing media

Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

- None.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting

- Not combustible.

Hazardous combustion products:

- Barium oxide
- Other hazardous decomposition products may be formed.

5.3 Advice for firefighters

Special protective equipment for fire-fighters

- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for emergency responders

- Use personal protective equipment.
- Prevent further leakage or spillage.

Advice for non-emergency personnel

- Evacuate personnel to safe areas.
- Avoid dust formation.

6.2 Environmental precautions

- Should not be released into the environment.
- Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

- Pick up and transfer to properly labeled containers.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Keep away from incompatible products
- Ensure adequate ventilation.

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- Avoid contact with skin and eyes.
- Use only in well-ventilated areas.

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures/Storage conditions**

- Keep away from:
 - Incompatible products
- Store in original container.
- Keep in a well-ventilated place.
- Keep in a dry place.
- Keep in properly labeled containers.
- Keep container closed.

Packaging material**Suitable material**

- Paper.
- Polyethylene

7.3 Specific end use(s)

- Contact your supplier for additional information

SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters**Components with workplace occupational exposure limits**

Ingredients	Value type	Value	Basis
Barium carbonate	TWA	0.5 mg/m ³	Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
		Expressed as :Barium	
Barium carbonate	TWA	0.5 mg/m ³	American Conference of Governmental Industrial Hygienists
		Expressed as :Barium	
Barium carbonate	TWA	0.5 mg/m ³	National Institute for Occupational Safety and Health
		Expressed as :Barium	
Barium sulfate	TWA	5 mg/m ³	National Institute for Occupational Safety and Health
		Form of exposure : Respirable	

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Barium sulfate	TWA	10 mg/m3	National Institute for Occupational Safety and Health
	Form of exposure : total		
Barium sulfate	TWA	15 mg/m3	Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
	Form of exposure : total dust		
Barium sulfate	TWA	5 mg/m3	Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
	Form of exposure : respirable fraction		
Barium sulfate	TWA	5 mg/m3	American Conference of Governmental Industrial Hygienists
	Form of exposure : Inhalable fraction		

NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)

Ingredients	CAS-No.	Concentration
Barium carbonate	513-77-9	50 milligram per cubic meter

8.2 Exposure controls**Control measures****Engineering measures**

- Ensure adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.

Individual protection measures**Respiratory protection**

- Self-contained breathing apparatus.
- Respirator with a dust filter
- Use NIOSH approved respiratory protection.
- Use only respiratory protection that conforms to international/ national standards.

Hand protection

- Impervious gloves

Suitable material

- PVC
- Natural Rubber
- Neoprene

Eye protection

- Chemical resistant goggles must be worn.

Skin and body protection

- Long sleeved clothing

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.

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SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

<u>Appearance</u>	<u>Form:</u> powder, pellets <u>Physical state:</u> solid solid <u>Color:</u> white
<u>Particle size</u>	2.32 - 14.6 µm d 50, powder
<u>Odor</u>	odorless
<u>Odor Threshold</u>	no data available
<u>pH</u>	5.0 - 7.0
<u>Melting point/range</u>	>= 1652 °F (>= 900 °C) Decomposition: yes
<u>Boiling point/boiling range</u>	Thermal decomposition: yes Not applicable
<u>Flash point</u>	Not applicable
<u>Evaporation rate (Butylacetate = 1)</u>	Not applicable
<u>Flammability (solid, gas)</u>	The product is not flammable.
<u>Flammability / Explosive limit</u>	<u>Explosiveness:</u> Not explosive
<u>Autoignition temperature</u>	Not applicable
<u>Vapor pressure</u>	Not applicable
<u>Vapor density</u>	Not applicable
<u>Density</u>	<u>Bulk density:</u> 400 - 2,000 kg/m ³ <u>Relative density:</u> 4.31

<u>Solubility</u>	<u>Water solubility :</u> 14 mg/l (68 °F (20 °C)) slightly soluble
	<u>Solubility in other solvents:</u> Hydrogen chloride : soluble
	Nitric acid : soluble
	Ethanol : soluble
	Sulphuric acid : insoluble
<u>Partition coefficient: n-octanol/water</u>	Not applicable
<u>Thermal decomposition</u>	2,516 °F (1,380 °C)
<u>Viscosity</u>	no data available
<u>Explosive properties</u>	no data available
<u>Oxidizing properties</u>	Not considered as oxidizing.

9.2 Other information

<u>Molecular weight</u>	197.3 g/mol
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SECTION 10: Stability and reactivity

10.1 Reactivity

- Contact with acids liberates CO₂, sometimes violently.

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

- none

10.5 Incompatible materials

- Acids

10.6 Hazardous decomposition products

- Barium oxide
- Other hazardous decomposition products may be formed.

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity****Acute oral toxicity** LD50 : 1,690 mg/kg - Rat**Acute inhalation toxicity** LC50
study scientifically unjustified**Acute dermal toxicity**LD50 : > 2,000 mg/kg - Rat
Method: OECD Test Guideline 402
Not classified as hazardous for acute dermal toxicity according to GHS.**Acute toxicity (other routes of administration)** no data available**Skin corrosion/irritation** Rabbit
No skin irritation**Serious eye damage/eye irritation** Rabbit
No eye irritation**Respiratory or skin sensitization**Mouse
not sensitizingLocal lymph node assay - Mouse
Does not cause skin sensitization.
Method: OECD Test Guideline 429
Unpublished internal reports

Mutagenicity**Genotoxicity in vitro**

Ames test
with and without metabolic activation

negative
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
In vitro tests did not show mutagenic effects
Published data

Chromosome aberration test in vitro
Strain: CHO
with and without metabolic activation

negative
Method: OECD Test Guideline 473
In vitro tests did not show mutagenic effects
Published data

Gene mutation assays in mammalian cells.
Strain: mouse lymphoma cells
with and without metabolic activation

negative
Method: OECD Test Guideline 476
In vitro tests did not show mutagenic effects
Published data

Genotoxicity in vivo

no data available

Carcinogenicity

Rat
Oral
Exposure time: two-year
NOAEL: 91mg/kg

Animal testing did not show any carcinogenic effects.
Published data

Mouse
Oral
Exposure time: two-year
NOAEL: 91mg/kg

Animal testing did not show any carcinogenic effects.
Published data

This product does not contain any ingredient designated as probable or suspected human carcinogens by:

NTP
IARC
OSHA
ACGIH

Toxicity for reproduction and development**Toxicity to reproduction / fertility**

Repeated exposure
NOAEL parent: 258 - 290 mg/kg
Effects on fertility

Rat , male and female
Oral
NOAEL parent: 272 - 306 mg/kg
Published data

Mouse , male and female
Oral
NOAEL parent: 272 - 306 mg/kg
Published data

Developmental Toxicity/Teratogenicity

20 days - Rat , female
Application Route: Gavage
NOAEL teratogenicity: 100 mg/kg
NOAEL maternal: 30 mg/kg
Method: OECD Test Guideline 414
Unpublished internal reports

STOT**STOT-single exposure**

Routes of exposure: Oral
The substance or mixture is not classified as specific target organ toxicant, single exposure.
no observed effect

STOT-repeated exposure

inhalation (dust) Repeated exposure - Rat
NOAEL: 5.2 mg/m³
Target Organs: Cardio-vascular system, hematology system, Respiratory system
observed effect

inhalation (dust) NOAEL: 1 mg/m³

Oral Repeated exposure - Rat
NOAEL: 87.8 mg/kg
Target Organs: Cardio-vascular system, hematology system, Kidney, Adrenal gland

Oral Repeated exposure - Mouse
NOAEL: 87.8 mg/kg
Target Organs: Cardio-vascular system, hematology system, Kidney, Adrenal gland

CMR effects**Carcinogenicity**

No evidence of carcinogenicity in animal studies.

Mutagenicity

Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

<u>Aspiration toxicity</u>	no data available
<u>Further information</u>	Harmful if swallowed. The toxicity is mainly linked to the barium ion (nervous, cardiovascular, respiratory and gastro-intestinal troubles). Risk of effect on the liver, the cardiovascular system, the hematological system and the adrenals Irritating to eyes and skin.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish Aquatic toxicity is unlikely due to low solubility.

Acute toxicity to daphnia and other aquatic invertebrates.

EC50 - 48 h : 14.5 mg/l - Daphnia magna (Water flea)
static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
Not harmful to aquatic invertebrates. (EC50 > 100 mg/L)
By analogy
Published data

Toxicity to aquatic plants

NOEC - 72 h : ≥ 61 mg/l - Pseudokirchneriella subcapitata (green algae)
Growth rate

EC50 - 72 h : > 100 mg/l - Pseudokirchneriella subcapitata (green algae)
Growth rate

Toxicity to microorganisms

NOEC - 3 h : 622 mg/l - activated sludge
static test
Analytical monitoring: yes
Method: OECD Test Guideline 209
By analogy
Unpublished internal reports

Chronic toxicity to fish

NOEC: > 1.26 mg/l - 33 Days - Danio rerio (zebra fish)
semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 210
No adverse chronic effect observed up to and including the threshold of 1 mg / L.
By analogy
Unpublished internal reports

Chronic toxicity to daphnia and other aquatic invertebrates.

EC50: 2.9 mg/l - 21 Days - Daphnia magna (Water flea)

12.2 Persistence and degradability

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Abiotic degradation**Photodegradation**

slow ionization and cation precipitation in presence of sulfates or carbonates
 Medium
 Water
 Soil

Biodegradation**Biodegradability**

The methods for determining biodegradability are not applicable to inorganic substances.

Degradability assessment

Water/soil
 cation precipitation in presence of sulphates or carbonates

12.3 Bioaccumulative potential**Bioconcentration factor (BCF)**

potential accumulation of the cation

12.4 Mobility in soil**Adsorption potential (Koc)**

Water/soil
 low solubility and mobility

Air
 mobility as solid aerosols

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

no data available

Ecotoxicity assessment**Acute aquatic toxicity**

No toxicity at the limit of solubility.

Chronic aquatic toxicity

No adverse chronic effect observed up to and including the threshold of 1 mg / L.

Remarks

Ecological injuries are not known or expected under normal use., Persistent product mainly in its inert form.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product Disposal**

- In accordance with local and national regulations.
- Use a solution of sodium or magnesium sulfate or possibly a dilute solution of sulfuric acid to form a sulfate precipitate.
- Dispose of wastes in an approved waste disposal facility.

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Waste Code

- Environmental Protection Agency
- Hazardous Waste – YES

- RCRA Hazardous Waste (40 CFR 302)
- D005 - Barium

Advice on cleaning and disposal of packaging

- Containers that cannot be cleaned must be treated as waste.
- Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

SECTION 14: Transport information**DOT**

not regulated

TDG

not regulated

NOM

not regulated

IMDG

not regulated

IATA

not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

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SECTION 15: Regulatory information**15.1 Notification status**

Inventory Information	Status
United States TSCA Inventory	- Listed on Inventory
Mexico INSQ (INSQ)	- In compliance with the inventory
Canadian Domestic Substances List (DSL)	- Listed on Inventory
New Zealand. Inventory of Chemical Substances	- In compliance with the inventory
Australia Inventory of Chemical Substances (AICS)	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- Listed on Inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory

15.2 Federal Regulations**US. EPA EPCRA SARA Title III****SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370)**

Fire Hazard	no
Reactivity Hazard	no
Sudden Release of Pressure Hazard	no
Acute Health Hazard	yes
Chronic Health Hazard	no

Section 313 Toxic Chemicals (40 CFR 372.65)

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients	CAS-No.	Concentration
Barium carbonate	513-77-9	>= 97%

Section 302 Emergency Planning Extremely Hazardous Substance Threshold Planning Quantity (40 CFR 355)

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)

This material does not contain any components with a SARA 302 RQ.

Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)

This material does not contain any components with a section 304 EHS RQ.

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

This material does not contain any components with a CERCLA RQ.

15.3 State Regulations**US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)**

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information**NFPA (National Fire Protection Association) - Classification**

Health	2 moderate
Flammability	0 minimal
Instability or Reactivity	1 slight

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

Health	2 moderate
Flammability	0 minimal
Reactivity	1 slight
PPE	Determined by User; dependent on local conditions

Further information

- Product evaluated under the US GHS format.

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Key or legend to abbreviations and acronyms used in the safety data sheet

- TWA 8-hour, time-weighted average
- ACGIH American Conference of Governmental Industrial Hygienists
- OSHA Occupational Safety and Health Administration
- NTP National Toxicology Program
- IARC International Agency for Research on Cancer
- NIOSH National Institute for Occupational Safety and Health

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.