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 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

Uses advised against

- none

1.3 Details of the supplier of the safety data sheet

Company

SOLVAY & CPC BARIUM STRONTIUM GmbH & Co. KG
HANS-BOECKLER-ALLEE 20
30173, HANNOVER
GERMANY
Tel: +49-511-8570
Fax: +49-511-8572687

E-mail address

manager.sds@solvay.com

1.4 Emergency telephone number

+44(0)1235 239 671 [CareChem 24]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification (UN)

Acute toxicity, Category 4	H302: Harmful if swallowed.

2.2 Label elements

GHS label elements (UN)

Hazardous products which must be listed on the label

- CAS-No. 513-77-9 barium carbonate

Pictogram

Signal word

- Warning

Hazard statements

- H302 Harmful if swallowed.

Precautionary statements

General

- None

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/doctor if you feel unwell. Rinse mouth.

Storage

- None

Disposal

- P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

- None known.

SECTION 3: Composition/information on ingredients

3.1 Substance

Information on Components and Impurities

Chemical name	CAS-No.	GHS Classification	Concentration [%]
barium carbonate	513-77-9	Acute toxicity, Category 4 ; H302	>= 95 - < 99
Barium sulphate	7727-43-7	Not classified	>= 1 - < 5

For the full text of the H-Statements mentioned in this Section, see Section 16.

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, diarrhoea, 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 sulphate in 250 ml of fresh water.
- Immediate medical attention is required.
- Medical examination necessary even only on suspicion of intoxication.

SECTION 5: Firefighting measures

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

- Not combustible.

5.3 Advice for firefighters

Special protective equipment for firefighters

- 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 labelled 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

- 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

- Store in original container.
- Keep in a well-ventilated place.
- Keep in a dry place.
- Keep in properly labelled containers.
- Keep container closed.

- Keep away from:
- Incompatible products

Packaging material

Suitable material

- Paper.

- Polyethylene

7.3 Specific end use(s)

- Contact your supplier for additional information

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with other occupational exposure limits

Components	Value type	Value	Basis
Barium carbonate	TWA	0.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Expressed as :Barium		
Sulfuricacid,bariumsalt(1:1)	TWA	5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Form of exposure : Inhalable fraction		

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
- In case of insufficient ventilation, wear suitable respiratory equipment.
- Respirator with a dust filter
- Use only respiratory protection that conforms to international/ national standards.
- Recommended Filter type: P3 filter

Hand protection
- Impervious gloves

Suitable material
- PVC
- Natural Rubber

Eye protection
- Safety glasses with side-shields
- Dust proof goggles, if dusty.

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.

Environmental exposure controls

- Dispose of rinse water in accordance with local and national regulations.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Form: Crystalline powder Physical state: solid Colour: white Particle size: 2.32 µm d 50
Odour	odourless
Odour Threshold	no data available
Molecular weight	197.3 g/mol
pH	5.0 - 7.0 (20 °C)
Melting point/freezing point	Melting point/range: > 900 °C (1.013 hPa)
Initial boiling point and boiling range	Boiling point/boiling range: 1,560 °C Thermal decomposition: yes
Flash point	Not applicable
Evaporation rate (Butylacetate = 1)	no data available
Flammability (solid, gas)	The product is not flammable.
Flammability/Explosive limit	Explosiveness: Not explosive
Auto-ignition temperature	Not applicable
Vapour pressure	Not applicable
Vapour density	Not applicable
Density	Bulk density: 400 - 2,000 kg/m3
Relative density	4.31 (20 °C)
Solubility	Water solubility: 14 mg/l (20 °C) slightly soluble Solubility in other solvents: Hydrogen chloride : soluble Nitric acid : soluble Ethanol : soluble Sulphuric acid : insoluble

Partition coefficient: n-octanol/water	Not applicable
Decomposition temperature	1,380 °C
Viscosity	no data available
Explosive properties	Not explosive
Oxidizing properties	Not considered as oxidizing

9.2 Other information

no data available

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

barium carbonate	LD50 : 1,690 mg/kg - Rat , male and female Method: OECD Test Guideline 401 This product is classified as acute toxicity, category 4
Barium sulphate	LD50 : > 5,000 mg/kg , male Method: OECD Test Guideline 401 Not classified as harmful if swallowed Published data

Acute inhalation toxicity no data available

Acute dermal toxicity

barium carbonate	By analogy LD50 : > 2,000 mg/kg - Rat Method: OECD Test Guideline 402 Not classified as hazardous for acute dermal toxicity according to GHS.

Barium sulphate	By analogy LD50 Dermal : > 2,000 mg/kg - Rat Not classified as harmful by contact with skin Published data
Acute toxicity (other routes of administration)	no data available

Skin corrosion/irritation

barium carbonate	By analogy No skin irritation Method: OECD Test Guideline 439 Unpublished internal reports
Barium sulphate	By analogy No skin irritation in vitro assay Unpublished reports

Serious eye damage/eye irritation

barium carbonate	Rabbit No eye irritation Method: OECD Test Guideline 405 Unpublished internal reports
Barium sulphate	Rabbit No eye irritation Method: OECD Test Guideline 405 Unpublished reports

Respiratory or skin sensitisation

barium carbonate	By analogy Local lymph node assay - Mouse Does not cause skin sensitisation. Method: OECD Test Guideline 429 Unpublished internal reports
Barium sulphate	By analogy Local lymph node assay - Mouse Does not cause skin sensitisation. Method: OECD Test Guideline 429 Unpublished reports

Mutagenicity

Genotoxicity in vitro

barium carbonate	By analogy Ames test with and without metabolic activation negative Method: OECD Test Guideline 471 Published data In vitro tests did not show mutagenic effects By analogy Chromosome aberration test in vitro Strain: CHO with and without metabolic activation negative Method: OECD Test Guideline 473 Published data In vitro tests did not show mutagenic effects Gene mutation assays in mammalian cells. Strain: Mouse with and without metabolic activation negative Method: OECD Test Guideline 476 Published data In vitro tests did not show mutagenic effects
Barium sulphate	By analogy In vitro tests did not show mutagenic effects
Genotoxicity in vivo	no data available

Carcinogenicity

barium carbonate	By analogy Rat Oral Exposure duration: 2 y NOAEL: 91mg/kg No carcinogenic effects have been observed Published data By analogy Mouse Oral Exposure duration: 2 y NOAEL: 91mg/kg No carcinogenic effects have been observed Published data
Barium sulphate	By analogy Rat Mouse Oral Exposure duration: 2 y No carcinogenic effects have been observed Published data

Toxicity for reproduction and development

Toxicity to reproduction/Fertility

barium carbonate	By analogy Rat , male and female Oral NOAEL parent: 258 - 290 mg/kg Published data By analogy Mouse , male and female Oral NOAEL parent: 258 - 290 mg/kg Published data

Developmental Toxicity/Teratogenicity

barium carbonate	By analogy Rat , female Application Route: Oral NOAEL teratogenicity: >= 56.2 mg/kg NOAEL maternal: >= 16.9 mg/kg Test substance: Barium Method: OECD Test Guideline 414 Unpublished internal reports

STOT

STOT - single exposure

barium carbonate	The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.
Barium sulphate	The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.

STOT - repeated exposure

barium carbonate	The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria.
Barium sulphate	The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria.
barium carbonate	Inhalation 90 Days - Rat , male and female NOAEL: 61 - 81 mg/kg Test substance: Barium Target Organs: Cardio-vascular system, hematology system, Adrenal gland Published data Oral 90 Days - Mouse , male and female NOAEL: 61 - 81 mg/kg Test substance: Barium Target Organs: Cardio-vascular system, hematology system, Adrenal gland Published data Oral Repeated exposure - Mouse Target Organs: Cardio-vascular system, hematology system, Kidney, Adrenal gland Oral 92 Days - Rat NOAEL: 61 - 81 ppm Test substance: Barium Target Organs: Cardio-vascular system, hematology system, Kidney, Adrenal gland Oral 92 Days - Mouse NOAEL: 61 - 81 ppm Test substance: Barium Target Organs: Cardio-vascular system, hematology system, Kidney, Adrenal gland
Barium sulphate	Oral exposure 90-day - Rat , for males and females NOAEL: > 104 mg/kg Target Organs: Cardio-vascular system, hematology system, Adrenal gland drinking water Published data

CMR effects

Carcinogenicity

barium carbonate	No evidence of carcinogenicity in animal studies.

Mutagenicity

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

Aspiration toxicity no data available

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish

barium carbonate	By analogy LC50 - 96 h : > 3.5 mg/l - Danio rerio (zebra fish) static test Analytical monitoring: yes Method: OECD Test Guideline 201 Not harmful to fish (LC/LL50 > 100 mg/L) Unpublished internal reports
Barium sulphate	LC50 - 96 h : > 3.5 mg/l - Danio rerio (zebra fish) static test Analytical monitoring: yes Test substance: Barium chloride dihydrate Method: OECD Test Guideline 203 Unpublished internal reports

Acute toxicity to daphnia and other aquatic invertebrates.

barium carbonate	By analogy LC50 - 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. (EC/EL50 > 100 mg/L) Published data
Barium sulphate	EC50 - 48 h : 14.5 mg/l - Daphnia magna (Water flea) static test Analytical monitoring: yes Test substance: Barium chloride dihydrate Method: OECD Test Guideline 202 Published data

Toxicity to aquatic plants

barium carbonate	By analogy ErC50 - 72 h : > 1.15 mg/l - Pseudokirchneriella subcapitata (green algae) static test Analytical monitoring: yes Method: OECD Test Guideline 201 Not harmful to algae (EC/EL50 > 100 mg/L) Unpublished internal reports By analogy NOEC - 72 h : > 1.15 mg/l - Pseudokirchneriella subcapitata (green algae) static test Analytical monitoring: yes Method: OECD Test Guideline 201 Growth rate No adverse chronic effect observed up to and including the threshold of 1 mg/L. Unpublished internal reports
Barium sulphate	ErC50 - 72 h : > 1.15 mg/l - Pseudokirchneriella subcapitata (microalgae) static test Analytical monitoring: yes Test substance: Barium chloride dihydrate Method: OECD Test Guideline 201 Unpublished internal reports NOEC - 72 h : > 1.15 mg/l - Pseudokirchneriella subcapitata (microalgae) static test Analytical monitoring: yes End point: Growth rate Test substance: Barium chloride dihydrate Method: OECD Test Guideline 201 Unpublished internal reports

Toxicity to microorganisms

barium carbonate	By analogy NOEC - 3 h : 622 mg/l - activated sludge static test Analytical monitoring: yes Method: OECD Test Guideline 209 Unpublished internal reports
Barium sulphate	NOEC - 3 h : 622 mg/l - activated sludge Respiration inhibition Analytical monitoring: yes Test substance: Barium chloride dihydrate Method: OECD Test Guideline 209 Unpublished internal reports

Chronic toxicity to fish

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

Chronic toxicity to daphnia and other aquatic invertebrates.

barium carbonate	By analogy NOEC: 2.9 mg/l - 21 Days - Daphnia magna (Water flea) semi-static test Analytical monitoring: yes Method: OECD Test Guideline 211 Published data No adverse chronic effect observed up to and including the threshold of 1 mg/L.
Barium sulphate	NOEC: 2.9 mg/l - 21 Days - Daphnia magna (Water flea) semi-static test Analytical monitoring: yes Test substance: Barium chloride dihydrate Method: OECD Test Guideline 211 Published data

Chronic Toxicity to aquatic plants no data available

Terrestrial Compartment

Toxicity to soil dwelling organisms

Barium sulphate	By analogy NOEC: 258 mg/kg - 21 Days - Eisenia fetida (earthworms) Reproduction Test Test substance: Barium Published data By analogy NOEC: 211 mg/kg - 28 Days - Folsomia candida Reproduction Test Test substance: Barium Published data

12.2 Persistence and degradability

Abiotic degradation

Photodegradation

barium carbonate	Water/soil slow ionization and cation precipitation in presence of sulfates or carbonates

Physical- and photo-chemical elimination no data available

Biodegradation

Biodegradability

barium carbonate	Not applicable
Barium sulphate	Not applicable (inorganic substance)

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water no data available

Bioconcentration factor (BCF)

barium carbonate	potential accumulation of the cation
Barium sulphate	Not potentially bioaccumulable

12.4 Mobility in soil

Adsorption potential (Koc)

Barium sulphate	Water/soil low solubility and mobility

Known distribution to environmental compartments

barium carbonate	Ultimate destination of the product : Water Soil

12.5 Results of PBT and vPvB assessment no data available

12.6 Other adverse effects no data available

Ecotoxicity assessment

Acute aquatic toxicity

barium carbonate	No toxicity at the limit of solubility
Barium sulphate	No toxicity at the limit of solubility

Chronic aquatic toxicity

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

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 sulphate or possibly a dilute solution of sulphuric acid to form a sulphate precipitate.
- Dispose of wastes in an approved waste disposal facility.

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

ADR
not regulated

RID
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 transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

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

Local regulations

no data available

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
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	- If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier.

SECTION 16: Other information

Full text of H-Statements

- H302 Harmful if swallowed.

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

- TWA 8-hour, time-weighted average

Further information

- Distribute new edition to clients

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.