

## Chemical Safety Data Sheet MSDS / SDS

**BARIUM CHLORATE MONOHYDRATE**

Revision Date:2024-03-16 Revision Number:1

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

Product name : BARIUM CHLORATE MONOHYDRATE  
CBnumber : CB8143644  
CAS : 13477-00-4  
EINECS Number : 236-760-7  
Synonyms : Barium chlorate monohydrate,barium chlorate

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

**Company Identification**

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

**SECTION 2: Hazards identification****Classification of the substance or mixture**

Oxidizing solids, Category 1  
Acute toxicity - Category 4, Oral  
Acute toxicity - Category 4, Inhalation  
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

**Label elements****Pictogram(s)**

☐☐

Signal word : Danger

**Hazard statement(s)**

H271 May cause fire or explosion; strong oxidizer  
H302 Harmful if swallowed  
H332 Harmful if inhaled  
H411 Toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

### Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P220 Keep away from clothing and other combustible materials.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P283 Wear fire resistant or flame retardant clothing.

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

### Response

P306+P360 IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P371+P380+P375 In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

P370+P378 In case of fire: Use ... to extinguish.

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P317 Get medical help.

P391 Collect spillage.

### Storage

P420 Store separately.

### Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

### Other hazards

no data available

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## SECTION 3: Composition/information on ingredients

### Substance

|              |   |
|--------------|---|
| Product name | : BARIUM CHLORATE MONOHYDRATE                     |
| Synonyms     | : Barium chlorate monohydrate,barium chlorate     |
| CAS          | : 13477-00-4                                      |
| EC number    | : 236-760-7                                       |
| MF           | : BaCl <sub>2</sub> H <sub>2</sub> O <sub>7</sub> |
| MW           | : 322.24  |

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## SECTION 4: First aid measures

### Description of first aid measures

**If inhaled**

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

**Following skin contact**

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer for medical attention .

**Following eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

**Following ingestion**

Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Rest. Refer for medical attention .

**Most important symptoms and effects, both acute and delayed**

Inhalation causes irritation of upper respiratory system. Contact with eyes or skin causes irritation. Ingestion causes abdominal pain, nausea and vomiting, diarrhea, pallor, blueness shortness of breath, excessive salivation, convulsive tremors, slow, hard pulse, elevated blood pressure, unconsciousness. Hemorrhages may occur in the stomach, intestines, and kidneys. Muscular paralysis may follow. (USCG, 1999)

**Indication of any immediate medical attention and special treatment needed**

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Chlorates and Related Compounds

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## SECTION 5: Firefighting measures

**Extinguishing media**

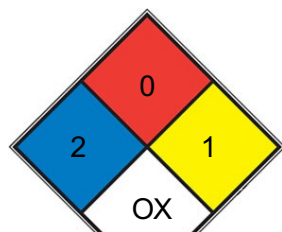
May explode when heated. Contact with combustible, organic, or other easily oxidizable materials, such as paper, oil, fuels, or sawdust can cause fires. Rubbings of these mixtures can cause explosions. Use water to extinguish the fire. ... If materials or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position.

**Specific Hazards Arising from the Chemical**

Special Hazards of Combustion Products: Yields toxic fumes when involved in fire. Behavior in Fire: May cause an explosion when involved in a fire. (USCG, 1999)

**Advice for firefighters**

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

**NFPA 704**



|                                     |        |    |  |
|-------------------------------------|--------|----|--|
| <input checked="" type="checkbox"/> | HEALTH | 2  | Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. <a href="#">diethyl ether</a> , ammonium phosphate, iodine)   |
| <hr/>                               |        |    |  |
| <input checked="" type="checkbox"/> | FIRE   | 0  | Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride) |
| <hr/>                               |        |    |  |
| <input checked="" type="checkbox"/> | REACT  | 1  | Normally stable, but can become unstable at elevated temperatures and pressures (e.g. <a href="#">propene</a> )  |
| <hr/>                               |        |    |  |
| <input type="checkbox"/>            | SPEC.  |    |  |
| <input type="checkbox"/>            | HAZ.   | OX |  |

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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Consult an expert! Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Wash away remainder with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents.

### Environmental precautions

Consult an expert! Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Wash away remainder with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents. Do NOT let this chemical enter the environment. Personal protection: particulate filter respirator adapted to the airborne concentration of the substance.

### Methods and materials for containment and cleaning up

Evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Absorb liquids in vermiculite, dry sand, earth, or a similar non-organic materials and deposit in sealed containers. May also be covered with weak reducing agents; resulting sludge neutralized and flushed to sewer. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area of spill or leak after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped.

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## SECTION 7: Handling and storage

### Precautions for safe handling

NO contact with flammables. NO contact with organic materials, powdered metals, ammonium salts or reducing agents. Do NOT expose to friction or shock. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Separated from combustible substances, reducing agents, ammonium compounds, metal powders and food and feedstuffs. Separate from acids, alkalies, reducing agents, combustibles, ammonium compounds. Store in a cool, dry, well-ventilated location.

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## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

TLV: 0.5 mg/m<sup>3</sup>, as TWA; A4 (not classifiable as a human carcinogen). MAK: (as Ba): 0.5 mg/m<sup>3</sup>; peak limitation category: II(8); pregnancy risk group: D. EU-OEL: (as Ba): 0.5 mg/m<sup>3</sup> as TWA

#### Biological limit values

no data available

### Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures

#### Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection.

#### Skin protection

Protective gloves.

#### Respiratory protection

Use ventilation (not if powder), local exhaust or breathing protection.

#### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

|  |  |
|--|--|
| Physical state   | Barium chlorate is a white crystalline solid. Forms very flammable mixtures with combustible materials. Mixtures may be ignited by friction and may be explosive if the combustible material is finely divided. Contact with concentrated sulfuric acid solutions may cause fires or explosions. May spontaneously decompose and ignite when mixed with ammonium salt. May explode under prolonged exposure to heat or fire. Used in explosives and pyrotechnics, in dyeing textiles, and to make other chlorates. |
| Colour   | Colorless prisms or white powder   |
| Odour  | no data available  |
| Melting point/freezing point                             | 414°C(lit.)  |
| Boiling point or initial boiling point and boiling range | no data available  |
| Flammability   | Not combustible but enhances combustion of other substances. Many reactions may cause fire or explosion.   |

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|  |                                      |
|--|--------------------------------------|
| Lower and upper explosion limit/flammability limit | no data available                    |
| Flash point  | no data available                    |
| Auto-ignition temperature                          | no data available                    |
| Decomposition temperature                          | 250°C                                |
| pH   | no data available                    |
| Kinematic viscosity                                | no data available                    |
| Solubility   | Slightly soluble in ethanol, acetone |
| Partition coefficient n-octanol/water              | no data available                    |
| Vapour pressure                                    | no data available                    |
| Density and/or relative density                    | 3.18 g/mL at 25°C(lit.)              |
| Relative vapour density                            | no data available                    |
| Particle characteristics                           | no data available                    |

## SECTION 10: Stability and reactivity

### Reactivity

Mixtures with organic compounds, reducing agents, ammonia-containing agents and metal powders are shock-sensitive. Decomposes violently on heating. This produces oxygen and toxic fumes. This generates fire and explosion hazard. The substance is a strong oxidant. It reacts with combustible and reducing materials.

### Chemical stability

no data available

### Possibility of hazardous reactions

Cloth, leather, wood and paper are extremely flammable when impregnated by ... chlorates /Chlorates/BARIUM CHLORATE is an oxidizing agent. Liberates explosive chlorine dioxide gas in the presence of a strong acid. Heating a moist metal chlorate and a dibasic organic acid liberates chlorine dioxide and carbon dioxide [Bretherick 1979 p. 100]. Mixtures with ammonium salts, powdered metals, silicon, sulfur, or sulfides are readily ignited and potentially explosive [Bretherick 1979 p. 806]. A combination, in finely divided form with finely divided aluminum can explode by heat, percussion, or friction [Mellor 2:310 1946-4].

### Conditions to avoid

no data available

### Incompatible materials

A strong oxidizer. Barium chlorate is a reactive chemical and is an explosion hazard. Violent reaction may occur with reducing materials, strong acids, powdered metals. Combustible materials will increase activity in fire.

### Hazardous decomposition products

When heated to decomposition, can emit toxic fumes and explode ... Chlorates

## SECTION 11: Toxicological information

### **Acute toxicity**

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

### **Skin corrosion/irritation**

no data available

### **Serious eye damage/irritation**

no data available

### **Respiratory or skin sensitization**

no data available

### **Germ cell mutagenicity**

no data available

### **Carcinogenicity**

A4; Not classifiable as a human carcinogen. Barium and soluble compounds, as Ba

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the blood and nervous system. This may result in the formation of methaemoglobin. Exposure could cause hypokalaemia. This may result in cardiac disorders and muscular disorders. The effects may be delayed. Medical observation is indicated. Exposure could cause death.

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered.

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

no data available

### **Bioaccumulative potential**

no data available

### **Mobility in soil**

no data available

### **Other adverse effects**

no data available

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## SECTION 13: Disposal considerations

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

### **UN Number**

ADR/RID: UN1445 (For reference only, please check.)

IMDG: UN1445 (For reference only, please check.)

IATA: UN1445 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: BARIUM CHLORATE, SOLID (For reference only, please check.)

IMDG: BARIUM CHLORATE, SOLID (For reference only, please check.)

IATA: BARIUM CHLORATE, SOLID (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: 5.1 (For reference only, please check.)

IMDG: 5.1 (For reference only, please check.)

IATA: 5.1 (For reference only, please check.)

### **Packing group, if applicable**

ADR/RID: II (For reference only, please check.)

IMDG: II (For reference only, please check.)

IATA: II (For reference only, please check.)



## Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

## Special precautions for user

no data available

## Transport in bulk according to IMO instruments

no data available

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# SECTION 15: Regulatory information

## Safety, health and environmental regulations specific for the product in question

### European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

### EC Inventory

Listed.

### United States Toxic Substances Control Act (TSCA) Inventory

Listed.

### China Catalog of Hazardous chemicals 2015

Listed.

### New Zealand Inventory of Chemicals (NZIoC)

Listed.

### PICCS

Listed.

### Vietnam National Chemical Inventory

Not Listed.

### IECSC

Listed.

### Korea Existing Chemicals List (KECL)

Listed.

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# SECTION 16: Other information

## Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

## References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

## Other Information

Depending on the degree of exposure, periodic medical examination is suggested. The symptoms of paralysis do not become manifest until some hours have passed. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. Rinse contaminated clothing with plenty of water because of fire hazard. 10294-38-9 is a CAS registry number for Barium chlorate, monohydrate.

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.