

## Chemical Safety Data Sheet MSDS / SDS

## Barium SDS

Revision Date:2024-04-25 Revision Number:1

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

Product name: Barium  
CAS: 7440-39-3

**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.in  
Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090  
Telephone: +91 9550333722

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

Flammable solids, Category 1  
Substances and mixtures, which in contact with water, emit flammable gases, Category 1

Acute toxicity - Category 3, Oral  
Skin corrosion, Category 1  
Serious eye damage, Category 1

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H228 Flammable solid  
H260 In contact with water releases flammable gases which may ignite spontaneously  
H301 Toxic if swallowed  
H314 Causes severe skin burns and eye damage  
H318 Causes serious eye damage

### Precautionary statement(s)

### Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P240 Ground and bond container and receiving equipment.  
P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...  
P223 Do not allow contact with water.  
P231+P232 Handle and store contents under inert gas/....Protect from moisture.  
P264 Wash ... thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.

### Response

P370+P378 In case of fire: Use ... to extinguish.  
P302+P335+P334 IF ON SKIN: Brush off loose particles from skin. Immerse in cool water [or wrap in wet bandages].  
P301+P316 IF SWALLOWED: Get emergency medical help immediately.  
P321 Specific treatment (see ... on this label).  
P330 Rinse mouth.  
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P363 Wash contaminated clothing before reuse.

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

P316 Get emergency medical help immediately.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P317 Get medical help.

### Storage

P402+P404 Store in a dry place. Store in a closed container.

P405 Store locked up.

### 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 which do not result in classification

no data available

## SECTION 3: Composition/information on ingredients

### Substance

Chemical name: Barium

Common names and synonyms: Barium

CAS number: 7440-39-3

EC number: 231-149-1

Concentration: 100%

## SECTION 4: First aid measures

### Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

#### **Following skin contact**

Remove contaminated clothes. Rinse skin with plenty of water or shower. 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. Refer for medical attention .

#### **Most important symptoms/effects, acute and delayed**

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]: Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control may cause pollution. (ERG, 2016)

#### **Indication of immediate medical attention and special treatment needed, if necessary**

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. Barium and Related Compounds

## **SECTION 5: Firefighting measures**

#### **Suitable extinguishing media**

Use dry chemical, carbon dioxide, water spray, or alcohol foam extinguisher ... If material 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 ... The only respirators recommended for fire fighting are self-contained breathing apparatuses that have full facepieces and are operated in a pressure-demand or other positive-pressure mode.

#### **Specific hazards arising from the chemical**

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]: Produce flammable gases on contact with

water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. May re-ignite after fire is extinguished. Some are transported in highly flammable liquids. Runoff may create fire or explosion hazard. (ERG, 2016)

#### **Special protective actions for fire-fighters**

Use special powder, dry sand. NO water.

### **SECTION 6: Accidental release measures**

#### **Personal precautions, protective equipment and emergency procedures**

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT wash away into sewer. Sweep spilled substance into covered sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

#### **Environmental precautions**

Sweep spilled substance into covered sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations. Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT wash away into sewer.

#### **Methods and materials for containment and cleaning up**

Spill handling: evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Small quantities of barium metal may be dissolved in large quantities of water. Soda ash is added and the solution then neutralized with /hydrochloric acid/. 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.

### **SECTION 7: Handling and storage**

#### **Precautions for safe handling**

NO open flames, NO sparks and NO smoking. NO contact with water. 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 halogenated solvents, strong oxidants and acids. Dry. Keep under inert gas, oil or oxygen-free liquid. Barium metal should be stored in a dry area, separated from halogenated solvents, strong oxidants, acids, in tightly closed containers under an inert gas blanket, petroleum, or oxygen-free liquid. Rubber gloves, rubber protective clothing and apron, goggles and /particulate/ filter mask should be worn when working in a barium storage area.

## **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, inhalable fraction): 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

#### **Appropriate engineering 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, such as personal protective equipment (PPE)**

##### **Eye/face protection**

Wear safety goggles.

##### **Skin protection**

Protective gloves.

##### **Respiratory protection**

Use local exhaust or breathing protection.

##### **Thermal hazards**

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Solid. Crystalline.
Colour:	White.
Odour:	no data available
Melting point/freezing point:	Ca. 727 °C.
Boiling point or initial boiling point and boiling range:	1640°C(lit.)
Flammability:	Flammable. Many reactions may cause fire or explosion.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	no data available
Auto-ignition temperature:	Remarks:Not measured/tested.
Decomposition temperature:	no data available
pH:	6.8. Remarks:HCl media pH 1.5.
Kinematic viscosity:	no data available
Solubility:	Reacts with water; slightly soluble in ethanol
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	10 mm Hg at 1920° F (NTP, 1992)
Density and/or relative density:	4.31. Temperature:20 °C.

Relative vapour density: no data available

Particle characteristics: no data available

## SECTION 10: Stability and reactivity

### Reactivity

The substance, if in powder form, may ignite spontaneously on contact with air. The substance is a strong reducing agent. It reacts violently with oxidants and acids. Reacts violently with halogenated solvents. Reacts with water. This produces flammable/explosive gas (hydrogen - see ICSC 0001). This generates fire and explosion hazard.

### Chemical stability

The free element oxidizes readily in moist air.

### Possibility of hazardous reactions

Barium powder is a flammable solid. Dust explosion possible if in powder or granular form, mixed with air. BARIUM reacts readily with water, ammonia, halogens, oxygen and most acids. Reacts with incandescence when heated with boron trifluoride [Merck 11th ed. 1989]. Mixtures of finely divided barium metal and a number of halogenated hydrocarbons (such as monofluorotrichloromethane, trichlorotrifluoroethane, carbon tetrachloride, trichloroethylene, or tetrachloroethylene) are explosives [ASESB Pot. Incid. 39 1968; Chem. Eng. News 46(9):38 1968].

### Conditions to avoid

no data available

### Incompatible materials

Incompatible with /trichloro-1,1,2-trifluoro-1,2,2-ethane/, /trichlorofluoroethane/, /trichloroethylene/ and water, 1,1,2-trichlorotrifluoroethane, and fluorotrichloroethane.

### Hazardous decomposition products

no data available



## SECTION 11: Toxicological information

### Acute toxicity

Oral: LD50 - rat (male/female) - 1 690 mg/kg bw.

Inhalation: no data available

Dermal: LD50 - rat - > 2 000 mg/kg bw.

### 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

WEIGHT OF EVIDENCE CHARACTERIZATION: Under EPA's 1986 Guidelines for Carcinogen Risk Assessment, barium would be classified as Group D, not classifiable as to human carcinogenicity. Based on former classification system

### Reproductive toxicity

no data available

### STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract.

### STOT-repeated exposure

no data available

### Aspiration hazard

no data available

## SECTION 12: Ecological information

### Toxicity

Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - > 3.5 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: LC50 - Daphnia magna - 14 500 µg/L - 48 h. Remarks: Metal ion -based.

Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - > 1.15 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - > 1 000 mg/L - 3 h. Remarks: Respiration rate.

### Persistence and degradability

no data available

### Bioaccumulative potential

no data available

### Mobility in soil

no data available

### Other adverse effects

no data available

## 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.

## **SECTION 14: Transport information**

### **UN Number**

ADR/RID: UN1383 (For reference only, please check.)

IMDG: UN1383 (For reference only, please check.)

IATA: UN1383 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: PYROPHORIC METAL, N.O.S. or PYROPHORIC ALLOY, N.O.S. (For reference only, please check.)

IMDG: PYROPHORIC METAL, N.O.S. or PYROPHORIC ALLOY, N.O.S. (For reference only, please check.)

IATA: PYROPHORIC METAL, N.O.S. or PYROPHORIC ALLOY, N.O.S. (For reference only, please check.)

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

ADR/RID: 4.2 (For reference only, please check.)

IMDG: 4.2 (For reference only, please check.)

IATA: 4.2 (For reference only, please check.)

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

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

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

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

### **Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

**Special precautions for user**

no data available

**Transport in bulk according to IMO instruments**

no data available

**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

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

## 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?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=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**

Reacts violently with fire extinguishing agents such as water, bicarbonate, powder, foam, and carbon dioxide. Rinse contaminated clothing with plenty of water because of fire hazard.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any