

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Barium Carbonate, Enriched Barium
Chemical Formula	BaCO ₃
Molecular Weight	197.37
CAS No.	513-77-9
EINECS No.	208-167-3
Synonyms	Barium salt
Supplier Address*	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
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Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview Hazardous product for human health. Presents hazards from its ionizing barium action on the neuromuscular system.

Potential Health Effects

Principle Routes of Exposure

- Inhalation*
- Eye Contact*
- Skin Contact*
- Ingestion*

Acute Toxicity

- Eyes* Moderate Irritation. Risk of temporary eye lesions.
- Inhalation (Dusts)* At high concentrations, nose and throat irritation. In case of repeated or prolonged exposure, there is a risk of bronchitis.
- Skin Contact* May cause irritation with redness and pain.
- Ingestion* Abundant salivation, nausea, vomiting, abdominal cramps and diarrhea. Risk of cardiac rhythm alteration. Trembling, muscle cramps followed by general weakness and paralysis of the extremities. Risk of shock.

Aggravated Medical Conditions Hazard due to the formation of barium chloride in the presence of hydrochloric acid (stomach). Risk of cardiac, nervous and muscular disorders. Fatalities have been observed after a single dose of 4 grams or more taken by an adult weighing 70 kg (155 lbs.).

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 Flammability = 0 Reactivity = 1



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 Flammability = 0 Physical Hazard = 1

HEALTH HAZARD	2
FLAMMABILITY	0
PHYSICAL HAZARD	1
PERSONAL PROTECTION	

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Barium Carbonate
CAS No.: 513-77-9
Chemical Formula: BaCO₃
Molecular Weight: 197.37

4. FIRST AID MEASURES

Eye Contact

Flush eyes with running water for at least 15 minutes, while keeping the eyelids wide open. Consult an ophthalmologist in case of persistent pain.

Skin Contact

Wash the affected skin with soap and water for at least 15 minutes and clean clothing.

Ingestion

None under normal use. Get medical attention if symptoms occur. Ingestion is unlikely as product is a gas at room temperature. Consult with a physician in all cases and take to the hospital.

If the subject is completely conscious: Rinse mouth with fresh water. 250 ml of fresh water added with 30 grams of sodium sulfate. **If the subject presents nervous, respiratory or cardiovascular disorders:** administer oxygen.

If the subject is unconscious: NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Remove any evidence of the product from the person's mouth. Loosen collar and tight clothing, lay the victim on his/her left side. Administer oxygen or cardiopulmonary resuscitation if necessary, while keeping and patient warm.

Notes to Physician

Do not give adrenergic drugs.

Ingestion

If necessary, tracheal intubation. Gastric lavage after administration of 250 ml of water added with 30 grams of sodium sulfate. Surveillance of cardiovascular system (heart rate and blood pressure). Surveillance of neuromuscular reactions. Surveillance and treatment of hypokalemia.

5. FIREFIGHTING MEASURES

<i>Flammable Properties</i>	Not flammable
<i>Flash Point</i>	Not applicable
<i>Autoignition Temperature</i>	Not applicable
<i>Flammability Limits</i>	Not applicable
<i>Unusual Fire and Explosion Hazards</i>	None
<i>Common Extinguishing Methods</i>	In case of fire in close proximity, all means of extinguishing are acceptable.

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Avoid excessive dust.
<i>Environmental Precautions</i>	Clean up residual material by washing area with water. Do not flush to drain. Prevent material from entering public sewer systems or any waterways. Dispose of waste in accordance with applicable federal, state, and local environmental laws and regulations.
<i>Cleanup Methods</i>	Clean up uncontaminated material and recycle into process. Place unusable material into a closed, labeled container compatible with the product.

7. HANDLING AND STORAGE

<i>Handling</i>	Operate in a well-ventilated area. Keep away from reactive products.
<i>Storage</i>	Store in a dry area away from food, keeping product in original closed packaging.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values **TLV® ACGIH® USA (2002):** 0.5 mg/m³ as Ba, in soluble compounds of Ba

OSHA PELL: 0.5 mg/m³ as Ba, in soluble compounds of Ba

Ventilation: Maintain exposures to levels below the applicable exposure limits.

Personal Protective Equipment

Respiratory Protection Use only respiratory protection that conforms to international/ national standards (NIOSH/MSHA approved respiratory protection). Full face supplied air respirator for high or unknown exposures. Cartridge respirators in known concentrations above exposure limits. Comply with OSHA respiratory protection requirements.

Hand Protection Chemical protective gloves. Recommended materials: PVC, neoprene or rubber.

Eye Protection Wear protective goggles for all industrial operations.

Skin Protection Wear boots, apron, long sleeves and other protective clothing suitable for use conditions to prevent contact with the skin.

Hygiene Measures

Chemical protective clothing in dusty areas. An eyewash and safety shower should be nearby and ready for use. Use good hygiene practices when handling this product including changing work clothes after use. Do not eat, drink or smoke in areas where this material is handled.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	Powder
Color	White
Odor	Odorless

Safety Data

pH	7 to 8 @ 20 °C (68 °F) in saturated solution.
Melting Point	811 °C
Boiling Point	1300 °C
Decomposition Temperature	> 1400 °C (2552 °F)
Flash Point	Not applicable
Oxidizing Properties	Oxidizer, see Section 4
Vapor Pressure	Not Applicable
Relative Density: Specific Gravity (H ₂ O=1)	4.3
Solubility in Water	0.02 g/l @ 20 °C (68 °F)
Partition Coefficient	P (n-octanol/water): Not listed
Viscosity	Not applicable
Vapor Density (Air=1)	Not applicable
Evaporation Rate	Not applicable

10. STABILITY AND REACTIVITY

<i>Stability</i>	Stable under normal conditions of use
<i>Conditions to Avoid</i>	Heat
<i>Materials and Substances to Avoid</i>	Contact with acids liberates CO ₂ , sometimes violently
<i>Hazardous Decomposition Products</i>	Carbon dioxide and soluble barium salts (Barium oxide)
<i>Hazardous Polymerization</i>	Not applicable

11. TOXICOLOGICAL INFORMATION

Acute toxicity

<i>Oral LD50</i>	Rat, 418 800 mg/kg
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Chronic toxicity

<i>Inhalation</i>	After repeated exposure, rat, Target Organ cardiovascular/hematology respiratory system liver: 5.2 mg/m ³ , observed effect
<i>Oral</i>	After repeated exposure, rat/mouse, target organ cardiovascular/hematology renal system/adrenal glands, observed effect
<i>Carcinogenic Designation</i>	Oral (water), after prolonged exposure, rat/mouse, no carcinogenic effect

Comments

Harmful effect by oral route. The toxicity is mainly linked to the barium ion (nervous, cardiovascular, respiratory and gastrointestinal troubles). Risk of effect on liver, cardiovascular and hematological system and adrenals. Irritant effect for the skin and eyes.

12. ECOLOGICAL INFORMATION

Acute Ecotoxicity

Fishes, *Gambusia affinis*, LC 50, 96 hour(s), > 10 g/l. Result: Toxicity threshold above hydro solubility

Chronic Ecotoxicity

No data

Mobility

Mobility as solid aerosols

Degradation

Abiotic

Slow ionization and cation precipitation in presence of sulfates or carbonates

Biotic

Not applicable (inorganic compound)

Potential for Bioaccumulation

Bioconcentration result: potential accumulation of the cation

*Other Adverse Effects/
Comments*

Product is not significantly hazardous for the environment. Persistent product mainly as inert form.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

Use a solution of sodium/magnesium sulfate or a dilute solution of sulfuric acid to form a precipitate of sulfate. Spilled product should be disposed of in an EPA-approved disposal facility in accordance with applicable national, state and local environmental laws and regulations.

Packaging treatment

Containers that cannot be cleaned must be treated as waste and disposed of in an approved industrial incineration facility.

RCRA Hazardous Waste

May exhibit characteristic of hazardous waste (D005). Results of toxicant extraction test must show waste to contain at least 100 mg/l barium to be considered hazardous waste.

14. TRANSPORT INFORMATION

Not a hazardous material for transportation.

DOT Regulations:

Not regulated

Air Transport ICAO-TI and IATA: Not regulated

15. REGULATORY INFORMATION

US National Regulations

TSCA Inventory 8(b) / Yes

SARA Title III Sec. 302/303

Extremely Hazardous Substances / No (40 CFR355)

**SARA Title III Sec. 311/312
(40 CFR 370)**

Hazard Category

Acute health hazard; chronic health hazard. Threshold planning quantity - 10,000 lbs.

SARA Title III Sec. 313 Toxic Chemical Emissions Reporting (40 CFR 372): No

CERCLA Hazardous Substance (40CFR Part 302): No

Canadian DSL Registration: Yes

WHMIS Classification: D-1 Material causing immediate and serious toxic effects

Labeling according to Directive 1999/45/EC:

<i>Phrases:</i>	R 22	Harmful if swallowed
	S 2	Keep out of reach of children
	24/25	Avoid contact with skin and eyes

16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Issuing Date	September 17, 2014
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Revision Number	4
Revision Note	Required review and update

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer

IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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