Issue date: 10/20/2003
Revision date: 3/26/2024

Safety Data Sheet

1. Chemical product and company identification

Product name	:	Barium chloride dihydrate

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	04017
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 3
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity (single exposure)	Category 1 (nervous system, cardiovascular, muscles, kidney, digestive tract)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (cardiovascular)
Environmental hazards	Aquatic acute	Category 3
	Aquatic chronic	Category 3

Hazard pictograms

Signal word : Danger

Hazard statements :
Toxic if swallowed
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation
Causes damage to organs (nervous system, cardiovascular, muscles, kidney, digestive tract)
Causes damage to organs (cardiovascular) through prolonged or repeated exposure
Harmful to aquatic life
Harmful to aquatic life with long lasting effects

Precautionary statements

Prevention	:	Do not breathe dust. Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	:	IF SWALLOWED: Immediately call a POISON CENTER or doctor. IF ON SKIN: Wash with plenty of water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. Call a POISON CENTER or doctor if you feel unwell. Get medical advice/attention if you feel unwell. Rinse mouth. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
Storage	:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	:	Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Barium chloride dihydrate	≥ 98.5	BaCl2·2H2O	Listed	233-788-1	10326-27-9

4. First aid measures

First aid measures

First-aid measures after inhalation	:	Remove the victim to fresh air, and make him blow his nose and gargle.
First-aid measures after skin contact	:	Wash the affected areas under running water.
First-aid measures after eye contact	:	Wash the affected areas under running water for at least 15 minutes. If necessary, get medical treatment.
First-aid measures after ingestion	:	Give the victim water or salt water and make him vomit. Get medical attention.
Personal Protection in First Aid and Measures	:	Rescuers should wear proper protective equipment like rubber gloves, goggles.

Most Important Symptoms/Effects

Symptoms/effects	:	Soluble barium is absorbed as barium ions from the digestive tract and causes abnormal contraction in all muscles. Barium also

causes hypokalemia.

5. Fire fighting measures

Suitable extinguishing media	:	This product is noncombustible.
Unsuitable extinguishing media	:	None
Firefighting instructions	:	Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
Personal protection (Emergency response)	:	Firefighters should wear protective equipment.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures	:	Wear proper protective equipment and avoid contact with skin and inhalation of dust. Conduct operations from upwind and evacuate people downwind.

Environmental precautions

Environmental precautions	:	Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Sweep up the chemical in a chemical wast container and sprayed sodium sulfate water solution to scattered area. Flush residual area with copious amounts of water.

7. Handling and storage

Handling

Technical measures	:	If necessary, wear proper protective equipment to avoid contact with skin or inhalation of dust.
Precautions for safe handling	:	Avoid formation of dust and aerosols.

Storage

Storage conditions	:	Store in a dark, cool place and tightly closed.
Material used in packaging/containers	:	Glass, polyethylene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	0.5 mg/m³ (as Ba)

Appropriate engineering controls	:	Use with an enclosed system or a local exhaust ventilation.

Protective equipment

Respiratory protection	:	Dust mask
Hand protection	:	Impervious protective gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Solid
Color	:	Colorless - white
Odor	:	Odorless
pH	:	5 - 7 (50g/L, 25℃)
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	60 ° C (Lose one molecule of water), 125 ° C (Lose all water)
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	3.097 (24/4℃)
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Organic solvents: Insoluble in ethanol. Water: 28.2 % (0℃)
Partition coefficient n-octanol/water (log Pow)	:	No data available
Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	Reacts with sulfate ions to produce insoluble barium sulfate.
Chemical stability	:	Stable under normal conditions. Slightly hygroscopic.
Possibility of hazardous reactions	:	Stable under normal conditions of use.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	strong acids.
Hazardous decomposition products	:	Chlorine, hydrogen chloride, barium oxide.

11. Toxicological information

Acute toxicity (oral)	:	Toxic if swallowed rat LD50=118mg/kg
Acute toxicity (dermal)	:	No classification rat LD50>2346mg/kg
Acute toxicity (inhalation)	:	No classification (gas) Classification not possible (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes skin irritation Barium chloride (anhydrous) is classified into category 2, because it causes irritation of the eyes, skin, and respiratory tract. Thus, the substance was also classified into category 2.

Serious eye damage/irritation	:	Causes serious eye irritation In rabbit eye irritation tests (conforming to OECD TG 405 and EPA OPPTS 870.2400), average scores after 24/48/72h were 0.43 (corneal opacity), 0.20 (iris), 2.47 (conjunctival redness), and 2.43 (chemosis), respectively. All the effects disappeared by 21 days after exposure. Thus, it was classified into category 2A.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	No classification In a mouse local lymph node assay (LLNA) (conforming to OECD TG 429), the substance was negative with SI value of less than 3.
Germ cell mutagenicity	:	Classification not possible As for in vitro tests, reverse mutation test in bacteria, chromosome aberration test and sister chromatid exchange test in cultured mammalian cells were negative, and mouse lymphoma assay was positive.
Carcinogenicity	:	No classification ACGIH classifies "barium and soluble compounds" as A4 (not classifiable as a human carcinogen).
Reproductive toxicity	:	Classification not possible In a developmental toxicity test by oral gavage in female rats on gestation days 0-20, no fetal developmental effects were seen even at the lethal dose in dams. However, there is insufficient data of reproductive function/fertility.
STOT-single exposure	:	Causes damage to organs (nervous system, cardiovascular, muscles, kidney, digestive tract) May cause respiratory irritation Human studies have shown that ingestion of soluble barium compounds including the substance causes gastrointestinal disorders and hypokalemia, and affects cardiovascular, nervous system and kidney as a result of hypokalemia. In addition, a man who ingested 13 g of barium chloride developed diarrhea, abdominal pain, weakness and paralysis of limbs, hypokalemia, and acute renal failure, but he recovered later. Moreover, soluble barium compounds including the substance may cause local irritation of the eyes, nose, throat, trachea, and skin. Thus, it was classified into category 1 (nervous system, cardiovascular, muscles, kidney, digestive tract) and category 3 (respiratory tract irritation).
STOT-repeated exposure	:	Causes damage to organs (cardiovascular) through prolonged or repeated exposure In a group of people who ingested drinking water containing soluble barium such as barium chloride, increased incidence of high blood pressure, heart disease, and seizure was observed. In addition, in another similar group, increased mortality due to cardiovascular disorder and heart disease such as arteriosclerosis was observed. The substance is considered to cause effects on cardiovascular due to hypokalemia in humans. Thus, it was classified into category 1 (cardiovascular).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Harmful to aquatic life Daphnia magna EC50=25.8mg/L/48h
Aquatic chronic	:	Harmful to aquatic life with long lasting effects

Persistence and degradability

No additional information available

Bioaccumulative potential

Low bioconcentration
BCF : ≤5.9 (2mg/L barium chloride), ≤60 (0.2mg/L barium chloride)

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Precipitation method : Dissolve in water, add an aqueous solution of sodium sulfate for treatment, precipitate and filter, and dispose of in landfill. Or entrust approved waste disposal companies with the disposal.
Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	1564
Proper Shipping Name (IMDG)	:	BARIUM COMPOUND, N.O.S.
Packing group (IMDG)	:	III
Transport hazard class(es) (IMDG)	:	6.1

Air transport(IATA)

UN-No. (IATA)	:	1564
Proper Shipping Name (IATA)	:	Barium compound, n.o.s.
Packing group (IATA)	:	III
Transport hazard class(es) (IATA)	:	6.1
Marine pollutant	:	Not applicable
MFAG-No	:	154

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources	:	Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) . Handbook of dangeroous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001) . Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) . Handbook of Poisonous and Deleterious substances, revised and enlarged edition, Yakumu Kohosa (2000) .

NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.