Issue date: 8/19/2003
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Safety Data Sheet

1. Chemical product and company identification

Product name : Barium hydroxide octahydrate

Company information

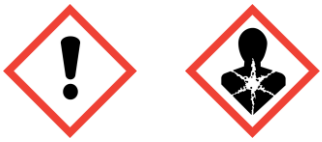
Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	04028
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 4
	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, nervous system, muscles, kideny)

Hazard pictograms



Signal word : Danger

Hazard statements :
Harmful 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, nervous system, muscles, kideny) through prolonged or repeated exposure

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

protection.

Response : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
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 hydroxide octahydrate	≥ 97	Ba(OH)2・8H2O	Listed	241-234-5	12230-71-6

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 milk with egg white. Do not induce vomiting. 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 in a chemical waste container. Flush contaminated area with copious amounts of water.

7. Handling and storage

Handling

Technical measures	:	Wear appropriate 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	:	Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection	:	If necessary, wear 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	:	White
Odor	:	Odorless
pH	:	The aqueous solution is strongly alkaline.

Melting point	:	77.9 ° C
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	550 ° C (Becomes anhydrous)
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	2.188 (16℃)
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Organic solvents: Slightly soluble in ethanol. Water: 5.3 % (15℃)
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	:	Generate heat vigorously when contact with acids. Corrodes many light metals and their alloys.
Chemical stability	:	Stable under normal conditions. Efflorescence. It absorbs carbon dioxide in the air and produces barium carbonate.
Possibility of hazardous reactions	:	Heating a mixture with chlorinated rubber can cause an explosive reaction.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Acids, oxidizing substances.
Hazardous decomposition products	:	Barium oxides.

11. Toxicological information

Acute toxicity (oral)	:	Harmful if swallowed rat LD50=308mg/kg (as anhydrous salt)
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes skin irritation It is described that aqueous solution of barium hydroxide is strongly alkaline and, therefore, indicates corrosive properties. However, it is also described that barium hydroxide is irritating to the eyes, skin, and respiratory tract and indicates irritation of the skin. From the above, it was classified into category 2.
Serious eye damage/irritation	:	Causes serious eye irritation Based on a description that barium hydroxide is strongly alkaline in aqueous solution, and causes severe burns to the eyes, it was classified into category 2A.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible
Germ cell mutagenicity	:	Classification not possible

Carcinogenicity	:	No classification ACGIH classifies barium and soluble compounds as A4 (not classifiable as a human carcinogen).
Reproductive toxicity	:	Classification not possible
STOT-single exposure	:	Causes damage to organs (nervous system, cardiovascular, muscles, kidney, digestive tract) May cause respiratory irritation In humans, it is reported that adverse effects of soluble barium compounds by oral intake or inhalation are gastrointestinal symptoms, myocardial and muscular stimulation, and hypokalemia. It is reported that severe cases include general muscular paralysis, and death from respiratory arrest or ventricular fibrillation. Additionally, it is written that accidental or intentional ingestion of soluble barium compounds at high concentrations causes gastroenteritis, hypokalemia, hypertension, cardiac arrhythmias, skeletal muscle paralysis and renal failure. It is reported that barium oxide and barium hydroxide irritate the respiratory tract. From the above, 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, nervous system, muscles, kideny) through prolonged or repeated exposure There is no information on this substance. However, it is said that the toxicity of barium and barium compounds depends largely on the solubility, and that the toxicity is inhibitory effects on the potassium channel by the barium ions. Barium ions and soluble compounds of barium are toxic to humans. Although barium carbonate is relatively insoluble in water, it is toxic to humans because it is soluble in the gastrointestinal tract. The insoluble barium compounds are inefficient sources of barium ions and are, thus, generally nontoxic to humans. Therefore, this substance is also thought to exhibit a similar target organ as soluble barium compounds do. It is reported that incidences of hypertension, heart disease, and stroke increased in a population of neighborhood who ingested drinking water containing water soluble barium such as barium chloride, and that an increase in mortality due to heart diseases such as vascular disorder and arteriosclerosis was observed in other similar groups. As for the inhalation route, increase in the incidence of elevated blood pressure is reported among workers exposed to soluble barium (mean 1.07 g/m3) caused by blending and grinding of several grades of barium at a mineral processing facility. As for the effects of soluble barium compounds on humans, as an acute effect, it is regarded that gastroenteritis, hypopotassemia, hypertension, cardiac arrhythmias, and skeletal muscle paralysis may be caused by the intake of the high concentrations. Additionally, in humans there are only a few reports of renal failure and renal insufficiency occurring as acute barium poisoning. However, as for experimental animals, in 13-week or 2-year studies on barium dichloride or its dihydrate using rats or mice administered by drinking water, death cases attributed to nephropathy were observed at doses above category 2 in both species, and it is described that the kidneys are the most sensitive target organ in the experimental animals. Therefore, it is thought that the kidneys are one of the target organs in humans. From the above, the substance was classified into category 1 (cardiovascular, nervous system, muscles, kidney) since it was thought that the effects of soluble barium compounds including this substance might occur in the cardiovascular system, nervous system, muscular system and kidneys in high probability.
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Classification not possible
Aquatic chronic	:	Classification not possible

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

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 and add diluted sulfuric acid to neutralize and precipitate barium sulfate. Filter the precipitation and bury in a landfill site approved for hazardous waste disposal. Or consult approved disposal companies.
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)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Transport hazard class(es) (IMDG)	:	Not applicable

Air transport(IATA)

UN-No. (IATA)	:	Not applicable
Proper Shipping Name (IATA)	:	Not applicable
Packing group (IATA)	:	Not applicable
Transport hazard class(es) (IATA)	:	Not applicable
Marine pollutant	:	Not applicable

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) . Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) . Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) . 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.