Issue date: 7/10/2003
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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Boron trioxide

Company information

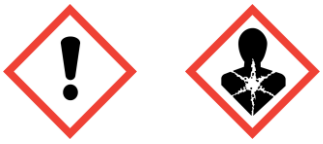
Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	04239
Product numbers applied by the SDS	:	04239, 04240, 05834
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	Serious eye damage/eye irritation	Category 2A
	Reproductive toxicity	Category 1B
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)

Hazard pictograms



Signal word	:	Danger
Hazard statements	:	Causes serious eye irritation May cause respiratory irritation May damage fertility or the unborn child

Precautionary statements

Prevention	:	Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Wash hands, forearms and face thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	:	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: Get medical advice/attention.

		Call a POISON CENTER or doctor if you feel unwell. If eye irritation persists: Get medical advice/attention.
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
Synonyms	:	Boric anhydride, Diboron trioxide

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Boron trioxide	≥ 90	B2O3	Listed	215-125-8	1303-86-2

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	:	Inhalation causes cough and sore throat.

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	10 mg/m³

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

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	:	5.1 (1.0% aqueous solution, 20℃)
Melting point	:	577 ° C
Freezing point	:	No data available
Boiling point	:	≥ 1500 ° C
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	No data available
Density	:	1.85 g/cm³ (20℃)
Relative gas density	:	No data available
Solubility	:	Organic solvents: Soluble in ethylene glycol.

		Water: 1 % (20℃)
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	:	May react when in contact with alkaline substances.
Chemical stability	:	Stable under normal conditions. Reacts gradually with water and forms boric acid.
Possibility of hazardous reactions	:	It can attack metals in the presence of moist air and generate flammable hydrogen gas.
Conditions to avoid	:	Light, heat, moisture.
Incompatible materials	:	Alkaline substances, metals.
Hazardous decomposition products	:	fume.

11. Toxicological information

Acute toxicity (oral)	:	No classification mouse LD50=3163mg/kg
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	No classification Studies show erythema with reversibility in several days in rabbits and skin irritation in humans. However, the substance was not classified because of mild effects.
Serious eye damage/irritation	:	Causes serious eye irritation Based on evidence of conjunctivitis in animals, and eye irritation, redness and pain in humans, 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 inorganic boron compounds as A4(not classifiable as a human carcinogen).
Reproductive toxicity	:	May damage fertility or the unborn child No information is available on reproductive toxicity of the substance. However, in reproductive toxicity studies of feeding administration in mice exposed to boric acid, and in rats exposed to boric acid or borax, infertility due to reduced fertility was observed at dosing levels not toxic to parent animals. Meanwhile, in multiple developmental toxicity tests in pregnant rats or pregnant mice exposed in the diet to boric acid during organogenesis, increased fetal teratogenesis and increases in fetal/neonatal mortalities were observed at dosing levels toxic to dams. In summary, it is assumed that the substance, a boron compound, has the same reproductive and developmental toxicity as boric acid and borax. Thus, it was classified into category 1B.

STOT-single exposure	:	May cause respiratory irritation There are no human data on single exposure to the substance. However, data on boric acid and borax, inorganic boron compounds, can be used. In single inhalation exposure studies of boric acid/borax dust in human volunteers, a significant increase in nasal secretion compared to control group was observed. Thus, it was classified into category 3 (respiratory tract irritation).
STOT-repeated exposure	:	Classification not possible
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Desmodesmus subspicatus EC50=109mg/L/72h
Aquatic chronic	:	No classification Desmodesmus subspicatus EC10=77mg/L/72h

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	:	Bury in a landfill site approved for the disposal of chemical and hazardous wastes. 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)	:	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 : Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) .
Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
ICSC Card (2009) .
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.