

Safety Data Sheet

Section 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:

Product name: Boron trifluoride methanol complex

SDS No. : 0964E-2

Relevant identified uses of the substance or mixture and uses advised against

Research and Development

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN

Division: Chemical Safety Management Department

Telephone number: +81-6-6946-8061

FAX: +81-6-6946-1607

Section 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL AND CHEMICAL HAZARDS

Flammable liquids: Category 3

Corrosive to metals: Category 1

HEALTH HAZARDS

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Reproductive toxicity: Category 1

Specific target organ toxicity – single exposure: Category 1 (central nervous system, organ of vision, systemic toxicity)

Specific target organ toxicity – single exposure: Category 2 (central nervous system, organ of vision, systemic toxicity)

Specific target organ toxicity – single exposure: Category 3 (Narcotic effects)

Specific target organ toxicity – repeated exposure: Category 1 (central nervous system, organ of vision)

(Note) GHS classification without description: Not classified/Classification not possible

Label elements



Signal word: Danger

HAZARD STATEMENT

Flammable liquid and vapor

May be corrosive to metals

Causes severe skin burns and eye damage

May damage fertility or the unborn child

Causes damage to organs (central nervous system, organ of vision, systemic toxicity)

May cause damage to organs (central nervous system, organ of vision, systemic toxicity)

May cause drowsiness or dizziness

Causes damage to organs through prolonged or repeated exposure (central nervous system, organ of vision)

PRECAUTIONARY STATEMENT

**Prevention**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Keep only in original packaging.
Ground and bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wash contaminated parts thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
Do not eat, drink or smoke when using this product.

Response

In case of fire: Use appropriate media to extinguish.
Absorb spillage to prevent material-damage.
Get medical advice/attention if you feel unwell.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Wash contaminated clothing before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal

Dispose of contents/container in accordance with local/national regulation.

Specific Physical and Chemical hazards

Flammable liquid. Vapor/air mixture may explode.

Section 3. Composition/information on ingredients**Mixture/Substance selection:****Substance**

Ingredient name: Boron trifluoride methanol complex

Content (%): <100

Chemical formula: $\text{BF}_3 \cdot \text{CH}_3\text{OH}$

Chemicals No, Japan: 2-2109; 2-2112

CAS No.: 373-57-9

MW: 99.85

ECNO: 206-766-4

Note : The figures shown above are not the specifications of the product.

Impurities

Methanol <25% (CAS No. 67-56-1)



Section 4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical advice/attention if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water or shower.

If skin irritation or rash occurs: Get medical advice/attention.

IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

Call a POISON CENTER/doctor/physician if you feel unwell.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use foam, dry powder, CO2 to extinguish.

Unsuitable extinguishing media

Indoor firefighting equipment or outdoor firefighting equipment

Sprinkler equipment

Dry-powder firefighting equipment – other (except for phosphate etc., hydrogen carbonate etc.)

Straight stream water extinguisher

Water mist extinguisher

Reinforcing liquid jet extinguisher

Dry-powder extinguisher – other (except for phosphate etc., hydrogen carbonate etc.)

Bucket of water or tank of water

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

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

Firefighters should wear self-contained breathing apparatus with full face piece operated positive pressure mode.

Section 6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Ventilate area until material pick up is complete.

Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

Preventive measures for secondary accident



Absorb spillage to prevent material-damage.
Collect spillage.

Section 7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Ground and bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use non-sparking tools.

Take action to prevent static discharges.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Use only outdoors or in a well-ventilated area.

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

When using do not eat, drink or smoke.

Any incompatibilities

See "10.Stability and Reactivity"

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

Storage

Conditions for safe storage

Keep container tightly closed.

Store in a cool, dry place. Do not store in direct sunlight.

(Incompatible storage condition)

The product may corrode metal. Do not keep in a metal container.

Container and packaging materials for safe handling

Keep only in original packaging.

Store in a corrosion resistant/specified container with a resistant inner liner.

Polyethylene

Section 8. Exposure controls/personal protection

Control parameters

Adopted value

(Methanol)

ACGIH(2009) TWA: 200ppm;

STEL: 250ppm (Headache; eye dam; dizziness; nausea)

Notation

(Methanol)

Skin

OSHA-PEL

(Methanol)



TWA: 200ppm, 260mg/m³

Exposure controls

Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures

Respiratory protection

Wear respiratory protection.

Hand protection

Wear protective gloves.

Eye protection

Wear eye/face protection.

Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Liquid

Color: Colorless to light brown

Odor: Pungent odour

Melting point/Freezing point data is not available.

Boiling point or initial boiling point data is not available.

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit data is not available.

Flash point: (Boron trifluoride methanol complex) 28.5°C

Auto-ignition temperature data is not available.

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: decompose

n-Octanol/water partition coefficient data is not available.

Vapor pressure data is not available.

Density and/or relative density: 1.2

Relative vapor density (Air=1) data is not available.

Particle characteristics data is not available.

Section 10. Stability and Reactivity

Reactivity

Not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

On combustion, form HF and BF₃.

Form HF and BF₃ by contact with acid.

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Acids, Strong oxidizing agents, Reducing agents

Hazardous decomposition products

Carbon oxides, HF, BF₃

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Data for components of the product]

[GHS Cat. Japan, base data]

(Methanol)

human LD50=ca. 1400mg/kg (DFGOT vol.16, 2001)

Acute toxicity (Dermal)

[Data for components of the product]

[GHS Cat. Japan, base data]

(Methanol)

rabbit LD50=15800mg/kg (DFGOT vol.16, 2001)

Acute toxicity (Inhalation)

[Data for components of the product]

[GHS Cat. Japan, base data]

(Methanol)

vapor: rat LC50>31500ppm/4hr (DFGOT vol.16, 2001)

Irritant properties

Skin corrosion/irritation

[Data for components of the product]

[Company proprietary data]

(Boron trifluoride methanol complex)

Category 1

Serious eye damage/irritation

[Data for components of the product]

[GHS Cat. Japan, base data]

(Methanol)

rabbit category 2 : Draize test (EHC 196, 1997)

[Company proprietary data]

(Boron trifluoride methanol complex)

Category 1

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenic effects data is not available.

Reproductive toxicity

[Data for components of the product]

[GHS Cat. Japan, base data]

(Methanol)

cat. 1B; mouse : PATTY 5th, 2001

[Company proprietary data]

(Boron trifluoride methanol complex)

Category 1

Specific target organ toxicity (STOT)

STOT-single exposure

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

(Methanol)

central nervous system, organ of vision, systemic toxicity (DFGOT vol.16, 2001)

[cat.2]

[Company proprietary data]

(Boron trifluoride methanol complex)



CNS; organ of vision; systemic toxicity
[cat.3 (narcotic effects)]
[GHS Cat. Japan, base data]
(Methanol)
narcotic effect (PATTY 5th, 2001)
STOT-repeated exposure
[Data for components of the product]
[cat.1]
[GHS Cat. Japan, base data]
(Methanol)
central nervous system, organ of vision (ACGIH 7th, 2001)
[Company proprietary data]
(Boron trifluoride methanol complex)
CNS; organ of vision
Aspiration hazard data is not available.

Section 12. Ecological Information

Toxicity
Aquatic toxicity
[Data for components of the product]
Hazardous to the aquatic environment, short-term (acute)
[GHS Cat. Japan, base data]
(Methanol)
Crustacea (Brine shrimp) LC50=900.73mg/L/24hr (EHC196, 1998)
Water solubility
(Methanol)
100 g/100 ml (PHYSPROP_DB, 2009)
Persistence and degradability
Persistence and degradability data is not available.
Bioaccumulative potential
[Data for components of the product]
(Methanol)
log Pow=-0.82/-0.66 (ICSC, 2000)
Mobility in soil
Mobility in soil data is not available.
Other adverse effects
Ozone depleting chemical data is not available.

Section 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging
Waste treatment methods
Dispose of contents/container in accordance with local/national regulation.

Section 14. Transport Information

UN Number or ID Number : 2920
UN Proper Shipping Name :
CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Class or division (Transport hazard class) : 8
Subsidiary hazard(s) : 3
Packing group : I



ERG GUIDE No.: 132
Special provisions No.: 274
IMDG Code (International Maritime Dangerous Goods Regulations)
UN Number or ID Number : 2920
UN Proper Shipping Name :
CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Class or division (Transport hazard class) : 8
Subsidiary hazard(s) : 3
Packing group : I
Special provisions No.: 274
IATA (Dangerous Goods Regulations)
UN Number or ID Number : 2920
UN Proper Shipping Name :
CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Class or division (Transport hazard class) : 8
Subsidiary hazard(s) : 3
Hazard labels : Corrosive & Flamm.liquid
Packing group : I
Environmental hazards
Marine pollutants (yes/no) : no
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Noxious Liquid Substances ; Cat. Y
Methanol
MARPOL Annex V – HME (Harmful to the Marine Environment)
Reproductive toxicity: cat.1, 1A, 1B
Boron trifluoride methanol complex
Specific target organ toxicity – repeated exposure: cat.1
Boron trifluoride methanol complex

Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

Methanol; Boron trifluoride methanol complex

Other regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

Section 16. Other information

GHS classification and labelling

Flammable liquids, Category 3: H226 Flammable liquid and vapour

Corrosive to metals, Category 1: H290 May be corrosive to metals

Skin corrosion/irritation, Category 1: H314 Causes severe skin burns and eye damage

Serious eye damage/eye irritation, Category 1: H318 Causes serious eye damage

Reproductive toxicity, Category 1: H360 May damage fertility or the unborn child

STOT – single exposure, Category 1: H370 Causes damage to organs

STOT – single exposure, Category 2: H371 May cause damage to organs

STOT – single exposure, Category 3, Narcotic effects: H336 May cause drowsiness or dizziness.

STOT – Repeated exposure, Category 1: H372 Causes damage to organs through prolonged or repeated exposure

References and sources for data



Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 21th edit., 2019 UN
IMDG Code, 2020 Edition (Incorporating Amendment 40-20)
IATA Dangerous Goods Regulations (62nd Edition) 2021
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2022 TLVs and BEIs. (ACGIH)
Supplier's data/information

General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2021).