

# SAFETY DATA SHEET

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (4N) 99.99% Boron Trifluoride Dihydrate

**Product Code:** BO-F-04-C.2HYD

**CAS Number:** 13319-75-0

**Relevant identified uses of the substance:** Scientific research and development

Supplier details:

American Elements  
10884 Weyburn Ave.  
Los Angeles, CA 90024  
Tel: +1 310-208-0551  
Fax: +1 310-208-0351  
Emergency telephone number:  
+1 800-424-9300

## SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Specific target organ toxicity - repeated exposure, Inhalation (Category 1), Kidney, H372

Acute aquatic toxicity (Category 3), H402

GHS Label elements, including precautionary statements

Pictograms



Signal word Danger

Hazard statement(s)

H302 + H332 Harmful if swallowed or if inhaled

H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage.

H372 Causes damage to organs (Kidney) through prolonged or repeated exposure if inhaled.

H402 Harmful to aquatic life.

Precautionary statement(s)

P260 Do not breathe dust/ fume/ gas/ mist/ Vapors/ spray. P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.

P314 Get medical advice/ attention if you feel unwell. P363 Wash contaminated clothing before reuse.

P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS - none

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### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula:  $\text{BF}_3 \cdot 2\text{H}_2\text{O}$

Molecular weight: 103.84 g/mol

CAS-No.: 13319-75-0

Hazardous components

Boron trifluoride dihydrate

Acute Tox. 4; Skin Corr. 1B; Eye Dam. 1; STOT RE 1; Aquatic Acute 3; H302 + H332, H314, H318, H372, H402/90 - 100 %

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### **SECTION 4. FIRST AID MEASURES**

General advice

Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

Indication of any immediate medical attention and special treatment needed  
No data available

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## **SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media  
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  
Special hazards arising from the substance or mixture  
Hydrogen fluoride, Borane/boron oxides  
Advice for firefighters  
Wear self-contained breathing apparatus for firefighting if necessary.  
Further information  
No data available

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures  
Use personal protective equipment. Avoid breathing Vapors, mist or gas. Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
For personal protection see section 8.  
Environmental precautions  
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.  
Methods and materials for containment and cleaning up  
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.  
Reference to other sections  
For disposal see section 13.

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## **SECTION 7. HANDLING AND STORAGE**

Precautions for safe handling  
Avoid contact with skin and eyes. Avoid inhalation of Vapor or mist. For precautions see section 2  
  
Conditions for safe storage, including any incompatibilities  
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
  
Moisture sensitive.  
Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

Specific end use(s)  
Apart from the uses mentioned in section 1 no other specific uses are stipulated

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Components with workplace control parameters

Component: Boron trifluoride dihydrate  
CAS-No.:13319-75-0

TWA 2.5 mg/m<sup>3</sup> USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants  
Remarks CAS number varies with compound

TWA 2.5 mg/m<sup>3</sup> USA. Occupational Exposure Limits (OSHA) - Table Z-2 Z37.28-1969

Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi- purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form: clear, liquid

Odor: No data available

Odor Threshold: No data available

pH: No data available

Melting point/freezing point: No data available

Initial boiling point and boiling range: No data available

Flash point N/A  
Evaporation rate: No data available  
Flammability (solid, gas) : No data available  
Upper/lower flammability or explosive limits: No data available  
Vapor pressure: 7 hPa (5 mmHg) at 20 °C (68 °F)  
Vapor density: No data available  
Relative density: 1.636 g/cm<sup>3</sup> at 25 °C (77 °F)  
Water solubility: completely miscible  
Partition coefficient: n- octanol/water: N/A  
Auto-ignition temperature: No data available  
Decomposition temperature: No data available  
Viscosity: 4.22 mm<sup>2</sup>/s at 20 °C (68 °F) - s)  
Explosive properties: No data available  
Oxidizing properties: No data available

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## SECTION 10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

No data available

Conditions to avoid

Avoid moisture.

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Other decomposition products - No data available

In the event of fire: see section 5

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## SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity

LD<sub>50</sub> Oral - Rat - 320 mg/kg

LC<sub>50</sub> Inhalation - Rat - 4 h - 1.21 mg/l

Dermal: No data available

No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Corrosive

Serious eye damage/eye irritation  
Eyes - Rabbit  
Result: Corrosive

Respiratory or skin sensitisation  
No data available

Germ cell mutagenicity  
No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity  
No data available

No data available

Specific target organ toxicity - single exposure  
No data available

Specific target organ toxicity - repeated exposure  
Inhalation - Causes damage to organs through prolonged or repeated exposure. - Kidney

Aspiration hazard  
No data available

Additional Information  
RTECS: ED2285000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

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## SECTION 12. ECOLOGICAL INFORMATION

Toxicity  
Toxicity to fish: static test LC50 - *Leuciscus idus* (Golden orfe) - 22 - 46 mg/l - 96 h (DIN 38412)  
Toxicity to daphnia and other aquatic invertebrates: static test EC50 - *Daphnia magna* (Water flea) - 21.3 mg/l - 48 h (ISO 6341)

Persistence and degradability  
No data available

Bioaccumulative potential  
No data available

Mobility in soil  
No data available

Results of PBT and vPvB assessment  
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects  
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Harmful to aquatic life.

Hazardous to the aquatic environment

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

Product  
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging  
Dispose of as unused product

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## **SECTION 14. EXPOSURE CONTROLS/PERSONAL PROTECTION**

DOT (US)  
UN number: 2851  
Class: 8  
Packing group: II P  
Proper shipping name: Boron trifluoride dihydrate  
Reportable Quantity (RQ): Marine pollutant: No  
Poison Inhalation Hazard: No

IMDG  
UN number: 2851  
Class: 8  
Packing group: II  
EMS-No: F-A, S-B  
Proper shipping name: BORON TRIFLUORIDE DIHYDRATE  
Marine pollutant: No

IATA  
UN number: 2851  
Class: 8  
Packing group: II  
Proper shipping name: Boron trifluoride dihydrate

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## SECTION 15. REGULATORY INFORMATION

### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (DeMinimis) reporting levels established by SARA Title III, Section 313.

### Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

### Pennsylvania Right To Know Components

Boron trifluoride dihydrate

CAS-No.: 13319-75-0

Revision Date: 2007-03-01

### New Jersey Right To Know Components

Boron trifluoride dihydrate

CAS-No.: 13319-75-0

Revision Date: 2007-03-01

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.