



Safety Data Sheet



BORIC ACID

1. Product Identification

Commercial Name: Boric Acid

Chemical Name: Boric Acid

CAS No: 10043-35-3

Synonyms: Boracic Acid

Advisable uses:

- Fertilizers
- Thickening agents
- Complexing agents
- Biocide substances
- Corrosion inhibitors and antifouling agents
- Flame retardants
- Fluxes
- Laboratory chemical products
- Lubricants and lubricant additives
- pH regulating agents
- Water treatment agents
- Transformation aid
- Viscosity controllers
- Electroplating
- Surfactant agents

Supplier Information:

Global Chemical Resources

1925 Nebraska Avenue

Toledo, OH 43607

Phone: 419-242-1004

Fax: 419-241-0668

Emergency Contact Information:

24 Hour Chemical Emergency. Call CHEMTREC: 800-424-9300

2. Hazard(s) Identification

Classification of the substance

GHS-US classification - Repr. 1B, H360

Label elements:



Danger

H360FD: May damage fertility. May damage the unborn child.

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P281: Use personal protective equipment as required.

P308 + P313: IF exposed or concerned get medical advice/attention.

P405: Store locked up.

P501: Dispose of contents/container in accordance with local / regional / national / international regulations

3. Composition/Information on Ingredients

Chemical Name: Boric Acid

CAS No: 10043-35-3

Molecular Formula: H₃BO₃

Molecular Weight: 61.833 g/mol

Concentration: 99.90% to 100.20 % Boric Acid

Family: Inorganic Borates

4. First-Aid Measures

IF INHALED: Mild irritation to nose and throat may occur. Remove victim to fresh air. Get medical attention. Prolonged exposure to dust levels in excess of regulatory limits should always be avoided.

IF IN EYES: Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

IF ON SKIN: Wash with soap and water.

IF SWALLOWED: Swallowing less than one teaspoon will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

NOTE TO PHYSICIANS: Observation only is required for adult ingestion of less than 6 grams of Boric Acid.

For ingestion in excess of 6 grams, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boric Acid analyses of urine or blood are only useful for

documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment. (For further information: Litovitz T.L., Norman, S.A., Veltri, J.C. Annual Report of the American Association of Poison Control Centers Data Collection System. Am. J. Emerg. Med. 1986; 4:427-458)

5. Fire-Fighting measures

Fire Extinguishing Media: Use any means suitable for extinguishing fire.

Hazards: Not considered to be a fire hazard, because Boric Acid is not flammable, combustible or explosive. The product is itself a flame retardant.

Recommendations for fire-fighters: In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Flammability Classification (29CFR 1910.1200): Non-flammable solid.

6. Accidental Release Measures

Personal precautions, protection, equipment and emergency procedures:

Personal precautions:

- Avoid dust formation. In case of prolonged exposure or great amounts of dust in the air, use a personal breather in accordance with national laws.
- Avoid inhaling dust.
- Make sure there is adequate ventilation.

Personal protection equipment:

No personal protective equipment is needed to clean up land spills.

Emergency procedures: Unnecessary

Environment related precautions:

- Prevent product from entering sewers and watercourses.
- Place containers to eliminate collected residues according to the existing regulations.
- Boric Acid is a water-soluble white powder that may cause damage to trees or vegetation by root absorption.

Methods and materials for containment and cleaning material:

Cleaning

Collect with a vacuum, broom, or shovel without raising dust and use a container which meets the local regulations when discarding. Avoid polluting adjacent water when undergoing cleaning and the elimination of ground spills.

Spilling in water:

- Prevent the solution from being consumed or from polluting water or effluents.
- Boric Acid will cause localized contamination of surrounding waters depending on the quantity dissolved. At high concentrations some damage to local vegetation, fish and other aquatic life may be expected.

Boric Acid is a non-hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261).

7. Handling and Storage

Precautions for safe handling:

- Avoid dust formation, handle in ventilated areas.
- Handle the product far away from sewers, surface and underground water and water sources for human consumption.
- Eating, drinking and smoking are prohibited in the working area.

Safe Storing Conditions:

- Though Boric Acid does not require any special precautions, it is sensitive to moisture and will cake. Therefore, the bags should be kept tightly sealed and be stored indoors in a dry environment. Also, the bags should be rotated on a “first-in first-out” basis. Good housekeeping procedures should be followed to minimize dust generation and accumulation.
- **Storage Temperature:** Room Temperature (72F)
- **Storage Pressure:** Atmospheric
- **Special Sensitivity:** Moisture (Caking)

8. Exposure Controls/Personal Protection

Occupational Exposure Limits: Boric Acid is listed/regulated by OSHA, Cal OSHA and ACGIH as

“Particulate Not Otherwise Classified” or “Nuisance Dust.”

- OSHA:PEL -15 mg/m³ total dust
-5 mg/m³ respirable dust
- ACGIH:TIV -10 mg/m³
- Cal OSHA:PEL -10 mg/m³
- PEL= “Permissible Exposure Limit”
- TLV= “Threshold Limit Value

Engineering Controls: Use local exhaust ventilation to keep airborne concentrations of Boric Acid dust below permissible exposure levels.

Individual Protection Measures: Where airborne concentrations are expected to exceed exposure limits, NIOSH/MSHA certified respirators must be used. Eye goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

9. Physical and Chemical Properties

Appearance: White, crystalline solid

Odor: Odorless.

Solubility: 5.46% by wt. (25oC)
27.5% by wt. (100oC).

PH: 6.1 (0.1% solution)
5.1 (1.0% solution)

Boiling Point: Decomposes.

Melting Point: 171oC (heated in closed space)

Vapor Density (Air=1): No information found.

Vapor Pressure (mm Hg): 2.6 @ 20C (68oF)

10. Stability and Reactivity

Chemical stability: Boric Acid is a stable product, but when heated it loses water, first forming Metaboric Acid (H₃BO₂), and on further heating it is converted into Boric Oxide (B₂O₃).

Incompatible Materials: Boric Acid reacts as a weak acid which may cause corrosion of base metals. Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

11. Toxicological Information

Ingestion (Acute Oral Toxicity): Low acute oral toxicity; LD₅₀ in rats is 3500-4100 mg/kg of body weight.

Skin (Acute Dermal Toxicity): Low acute dermal toxicity; LD₅₀ in rabbits is greater than 2000 mg/kg of body weight. Boric Acid is not absorbed through intact skin.

Primary Skin Irritation Index: 0 (zero) Boric Acid is non-corrosive.

Eye: Draize test in rabbits produced mild eye irritation effects. Fifty years of occupational exposure history show no indication of human eye injury from exposure to Boric Acid.

Inhalation: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposure to Boric Acid dust.

Carcinogenicity: A Technical Report issued by the National Toxicology Program showed “no evidence of carcinogenicity” from a full 2 year bioassay on Boric Acid in mice at feed doses of 2500 and 5000 ppm in the diet. No mutagenic activity was observed for Boric Acid in a recent battery of four short-term mutagenicity assays.

Reproductive Toxicity: Dietary Boric Acid levels of 6,700 ppm in chronic feeding studies in rats and dogs produced testicular atrophy, while dogs and rats receiving 2000 ppm did not develop testicular changes¹.

In chronic feeding studies of mice on diets containing 5000 ppm (550 mg/kg/d) Boric Acid, testicular atrophy was present, while mice fed 2500 ppm (275 mg/kg/d) Boric Acid showed no significant increase in testicular atrophy². In a reproduction study on rats, 2000 ppm of dietary Boric Acid had no adverse effect on lactation, litter size, weight and appearance. In a continuous breeding study in mice there was a reduction in fertility rates for males receiving 4500 ppm (636 mg/kg/d) Boric Acid but not for females receiving 4500 ppm Boric Acid³.

Developmental Toxicity: Boric Acid at dietary levels of 1000 ppm (78 mg/kg/d) administered to pregnant female rats throughout gestation caused a slight reduction in fetal weight but was considered to be close to the NOAEL. Doses of 2000 ppm (163 mg/kg/d) and above caused fetal malformation and maternal toxicity. In mice the no effect level for fetal weight reduction and maternal toxicity was 1000 ppm (248 mg/kg/d) Boric Acid.

Fetal weight loss was noted at dietary Boric Acid levels of 2000 ppm (452 mg/kg/d) and above.

12. Ecological Information

Phytotoxicity: Although boron is an essential micronutrient for healthy growth of plants, it can be harmful to boron-sensitive plants in higher quantities. Care should be taken to minimize the amount of Boric Acid released to the environment.

Fish Toxicity:

Rainbow Trout (*S. gairdneri*)

24 day LC50=150.0 mg B/L

36 day NOEC-LOEC=0.75-1 mg B/L

Goldfish (*Carassius auratus*)

7 day NOEC-LOEC=26.50 mg B/L

3 day LC50=178 mg B/L

Persistence/Degradation: Boron is naturally occurring and ubiquitous in the environment.

Soil Mobility: Boric Acid is soluble in water and is leachable through normal soil.

13. Disposal considerations

Disposal Guidance: Small quantities of Boric Acid can usually be disposed of at Municipal Landfill sites.

No special disposal treatment is required, but refer to state and local regulations for applicable site specific requirements. Tonnage quantities of product are not recommended to be sent to landfills. Such products should be re-used for an appropriate application. RCRA (40 CFR 261): Boric Acid is not listed under any sections of the Federal Resource Conservation and Recovery Act (RCRA).

14. Transportation Information

DOT Hazardous Material Classification: Boric Acid is not a U.S. Department of Transportation (DOT) Hazardous Material.

DOT Hazardous Substances Classification: Boric Acid is not a DOT Hazardous Substance.

International Transportation: Boric Acid has no U.N. number and is not regulated under any international rail, highway, water or air transport regulations.

15. Regulatory Information

RCRA: Boric Acid is not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act or regulations (40 CFR 261 et seq.)

Superfund: CERCLA/SARA. Boric Acid is not listed under CERCLA (the Comprehensive Environmental Response Compensation and Liability Act) or its 1986 amendments, SARA (Superfund Amendments and Reauthorization Act), including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65; Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355; or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.

Safe Drinking Water Act: Boric Acid is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories regarding boron. Clean Water Act (Federal Water Pollution Control Act): 33 USC 1251 et seq.

(a) Boric Acid is not itself a discharge

covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314.

(b) It is not on the Section 307 List of Priority Pollutants.

(c) It is not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.

IARC: The International Agency for Research on Cancer (of the World Health Organization) does not list or categorize Boric Acid as a carcinogen.

OSHA Carcinogen: Boric Acid is not listed.

California Proposition 65: Boric Acid is not listed on any Proposition 65 lists of carcinogens or reproductive toxicants.

Federal Food, Drug and Cosmetic Act: Pursuant to 21 CFR 175.105, 176.180 and 181.30, Boric Acid is approved by the FDA for use in adhesive components of packaging materials, as a component of paper coatings on such materials, or for use in the manufacture thereof, which materials are expected to come in contact with dry food products.

CONEG Model Legislation: Boric Acid meets all the CONEG requirements relating to heavy metal limitations on components of packaging materials.

16.

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