

Material Safety Data Sheet

This MSDS Sheet complies with the style format specified by ANSI Z400.1-1993

SECTION 1: CHEMICAL PRODUCT - COMPANY IDENTIFICATION

TETRA Micronutrients (281) 419-9430
230 Spring Hill Dr., Suite 310 (800) 521-9979
The Woodlands, Texas 77386

(800) 424-9300 - CHEMTREC (24 Hour Emergency Response)

PRODUCT: TETRA-BOR 17 Commercial Grade Boric Acid
SYNONYMS: Boric Acid, Orthoboric Acid, Boracic Acid
CHEMICAL FAMILY: Inorganic Borates
MSDS CREATION DATE: 01 NOV 04
MSDS REVISION DATE: 14 NOV 08

SECTION 2: COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENTS: Boric Acid
FORMULA: H₃BO₃
CAS NUMBER: 10043-35-3
TSCA NUMBER: 10043-35-3
PERCENTAGE: 17%

SECTION 3: HAZARDS IDENTIFICATION

NFPA RATINGS: (SCALE 0-4): HEALTH=0, FIRE=0, REACTIVITY=0

HMIS CLASSIFICATIONS: Red (Flammability)=0, Yellow (Reactivity)=0, Blue (Acute Health)=1*
*Chronic Effects

EMERGENCY OVERVIEW: Boric Acid is a white odorless, powdered substance that is not flammable, combustible, or explosive, and it presents no unusual hazard if involved in a fire. Boric Acid presents little or not hazard (to humans) and has low acute oral and dermal toxicities. Care should be taken to minimize the amount of Boric Acid released to the environment to avoid ecological effects.

POTENTIAL ECOLOGICAL EFFECTS:

Large amounts of Boric Acid can be harmful to boron sensitive plants and other ecological systems.

POTENTIAL HEALTH EFFECTS:

ROUTES OF EXPOSURE: Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not a concern because Boric Acid is not absorbed through intact skin.

INHALATION:

Occasional mild irritation effects to nose and throat may occur from inhalation of Boric Acid dusts at levels greater than 10 mg/m³.

SKIN CONTACT:

Boric Acid does not cause irritation to intact skin.

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EYE CONTACT:

Boric Acid is non-irritating to eyes in normal industrial use.

INGESTION:

Products containing Boric Acid are not intended for ingestion. Boric Acid has a relatively low acute toxicity. Small amount (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects; swallowing amounts large than that may cause gastrointestinal symptoms.

CANCER:

Boric Acid did not cause cancer in long-term animal studies and is not considered a carcinogen.

REPRODUCTIVE: Long term, high dose animal ingestion studies have demonstrated reproductive effects in male animals. A human study of occupational exposure to borate dust showed no adverse effect to reproduction.

DEVELOPMENTAL TOXICITY: Boric Acid at dietary levels of 1000 ppm (78 mg/kg/d) administered to pregnant female rats through 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.

1. Weir, R. J. and Fisher, R. S., Toxicol. App., Pharmacol., 23:361-364 (1972).
2. National Toxicology Program (NTP) – Technical Report Series No. TR324, NIH Publication No. 88-2580 (1987), PB-88-213475/XAB.
3. Fail et al., Fund. Appl. Toxicol. 17,225-239 (1991)

SECTION 4: FIRST AID MEASURES

INHALATION: No specific treatment is necessary since Boric Acid is not likely to be hazardous by inhalation. Prolonged exposure to dust levels in excess of regulatory limits should always be avoided.

SKIN CONTACT: Wash affected area with soap or mild detergent and large amounts of water.

EYE CONTACT: Flush eyes immediately with large amounts of water or normal saline solution until no evidence of product remains (approximately 15-20 minutes). If irritation persists for more than 30 minutes, seek medical attention.

INGESTION: Swallowing less than one teaspoon will cause not harm to health adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

NOTE TO PHYSICIAN: 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 analysis 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).

SECTION 5: FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD: None, because Boric Acid is not flammable, combustible or explosive. The product is itself a flame retardant.

EXTINGUISHING MEDIA: Use any standard agent suitable for surrounding structural fire or for other chemicals that may be involved.

FLAMMABILITY CLASSIFICATION (29 CFR 1910.1200): Non-flammable solid.

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SECTION 6: ACCIDENTAL RELEASE MEASURES

GENERAL SPILL: Boric Acid is a water-soluble white powder that may cause damage to trees or vegetation by root absorption.

LAND SPILL: Vacuum, shovel or sweep up Boric Acid and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during clean up and disposal. No personal protective equipment is needed to clean up land spills.

WATER SPILL: 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 spills or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261).

SECTION 7: HANDLING AND STORAGE

Storage Temperature: Room Temperature (72°F)

Storage Pressure: Atmospheric

Storage Sensitivity: Moisture (Caking)

General: 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.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS: No occupational exposure limits established by OSHA/ACGIH/NIOSH.

VENTILATION: Use local exhaust ventilation to keep airborne concentrations of Boric Acid dust below permissible exposure limits

PERSONAL PROTECTION: 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.

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

ACGIH-TIV -5 mg/m³ respirable dust

Cal OSHA:PEL -10 mg/m³

PEL= "Permissible Exposure Limit"

TLV= "Threshold Limit Value"

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

DESCRIPTION:	White, odorless, crystalline solid
pH:	6.1 (0.1% solution) 5.1 (1.0% solution)
MELTING POINT:	171°C (heated in closed space)
WATER SOLUBILITY:	0.5% (20° C)
SPECIFIC GRAVITY:	1.43
SOLUBILITY IN WATER:	5.46% by wt. (25°C) 27.5% by wt. (100°C)

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Boric Acid is a stable product, but when heated it loses water, first forming Metaboric Acid (H_3BO_2), and on further heating it is converted into Boric Oxide (B_2O_3).

INCOMPATIBILITIES: 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.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information sited below is for Ulexite.

TOXICITY DATA:

Acute Oral Toxicity: LD_{50} : 3200-3400 mg/kg, of body weight

Acute Dermal Toxicity: LD_{50} : in rabbits is greater than 2000 mg/kg of body weight. Boric Acid is not absorbed through direct contact of the 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.

NOTE: Boric Acid is chemically and toxicologically related to Boric Acid; the majority of the borate chronic toxicology studies were conducted using Boric Acid.

CARCINOGEN STATUS:

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.

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SECTION 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.

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.

SECTION 13: DISPOSAL INFORMATION

Observe all federal, state and local regulations when disposing of this product.

SECTION 14: TRANSPORT INFORMATION

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

DOT Hazard Class or Division: Boric Acid is not a DOT Hazardous Substance.

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

SECTION 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 (Comprehensive Environmental Response Compensation 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 coverage 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, 33 USC 1317, 40 CFR 129. (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 at the CONEG requirements relating to heavy metal limitations on components of packaging materials.

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SECTION 16: OTHER INFORMATION

Individuals handling this product should be informed of the recommended safety precautions and should have access to this information.

This information relates to the specific product designated and may not be valid for such product used in combination with any other materials or in any other processes. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy themselves as to the suitability and completeness of such information for their own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

TETRA Micronutrients reserves the right to refuse shipment of this product to any consumer who fails to demonstrate the ability to consistently handle and use it safely and in compliance with all applicable laws, rules and regulations. Such demonstration may require on-site inspection of any or all storage, processing, packaging and other handling systems that come in contact with it.

Customers are responsible for compliance with local, state and federal regulations that may be pertinent in the storage, application and disposal of this product.