

Material Safety Data Sheet

Boric acid

ACC# 03260

Section 1 - Chemical Product and Company Identification

MSDS Name: Boric acid

Catalog Numbers: AC180570000, AC180570010, AC180570025, AC217080000, AC217085000, AC315180000, AC315181000, AC327130000, AC327130010, AC423480000, AC423480020, AC423485000, S79802, S79923, S79923-1, S93142, S93143, A73-1, A73-10, A73-3, A73-325LB, A73-50, A73-500, A74-1, A74-10, A74-3, A74-500, A74-500LC, A77-10, A77-NHL, A78-10, A78-500, A79-12, A79-212, BP168-1, BP168-500, NC9269806, NC9974905

Synonyms: Boracic acid; Hydrogen borate; Orthoboric acid.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|------------|---------------|---------|---------------|
| 10043-35-3 | Boric acid | >99 | 233-139-2 |

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Warning! Causes eye, skin, and respiratory tract irritation. May impair fertility. May cause harm to the unborn child.

Target Organs: Respiratory system, eyes, reproductive system, skin.

Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes skin irritation. May be absorbed through damaged or abraded skin in harmful amounts.

Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause gastric disturbances and electrolytic imbalance. May cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). Boric acid poisoning begins with nausea, vomiting and diarrhea. There is a red skin rash followed by extensive exfoliation not only in areas of rash but also of mucous membranes. Other symptoms may include weakness, headache, restlessness & kidney injury CNS effects (excitement or depression, lethargy, headache, coma, seizures), dehydration, arrhythmias, shock and metabolic acidosis have been reported in extreme adult and pediatric cases.

Inhalation: Causes respiratory tract irritation.

Chronic: Prolonged or repeated skin contact may cause dermatitis. Chronic poisoning by boron compounds, borism, may be little more than dry skin and mucous membranes, followed by appearance of a red tongue, patchy alopecia (hair loss), cracked lips, and conjunctivitis. Infants and young children are more susceptible to boric acid poisoning than adults. May cause adverse reproductive effects.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water. Wash mouth out with water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use only in a well-ventilated area. Minimize dust generation and accumulation. Avoid breathing dust, vapor, mist, or gas. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|---------------|---|-------------|-------------------|
| Boric acid | 2 mg/m ³ TWA (inhalable fraction, listed under Borate compounds, inorganic); 6 mg/m ³ STEL (inhalable fraction, listed under Borate compounds, inorganic) | none listed | none listed |

OSHA Vacated PELs: Boric acid: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear a chemical apron. Wear appropriate protective clothing to prevent skin exposure.

Respirators: A NIOSH/MSHA approved air purifying dust or mist respirator or European Standard EN 149.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white

Odor: odorless

pH: 3.6-4 (4% aq soln)

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Negligible.

Viscosity: Not applicable.

Boiling Point: Not available.

Freezing/Melting Point: 169 deg C

Decomposition Temperature: 169 deg C

Solubility: 4.9g/100g water @ 20°C

Specific Gravity/Density: 1.44 (Water=1)

Molecular Formula: H₃BO₃

Molecular Weight: 61.83

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Boric acid is a stable product, but when heated, it loses water to form metaboric acid (HBO₂), and on further heating it is converted into boric oxide (B₂O₃).

Conditions to Avoid: High temperatures, dust generation, exposure to moist air or water.

Incompatibilities with Other Materials: Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas, which could create an explosion hazard., caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), acetic anhydride, alkali carbonates.

Hazardous Decomposition Products: Oxides of boron.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 10043-35-3: ED4550000; ED4560000

LD50/LC50:

CAS# 10043-35-3:

Oral, mouse: LD50 = 3450 mg/kg;
Oral, rat: LD50 = 2660 mg/kg;
Oral, rat: LD50 = 2500 mg/kg;

Carcinogenicity:

CAS# 10043-35-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Weakened sexual activity and a low level of genital functions (low sperm counts and motility) were observed in 28 male workers engaged in the production of boric acid. Due to a lack of detailed description of this observation, its value is limited.

Teratogenicity: Developmental effects were observed in mice, rats and rabbits after oral administration of boric acid. However, these effects were considered secondary to maternal toxicity (increased liver and kidney weight).

Reproductive Effects: Boric acid was found to induce testicular atrophy and effects on spermatogenesis in rats and mice in various studies. Effects occurred at dose-levels (27 mg/kg) without general toxicity. Boric acid has selectively damaged the testes, sperm production and fertility in rats and dogs.

Mutagenicity: No information found

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Water flea Daphnia: LC50 = 115.0-153.0 mg/L; 48 Hr.; Static Condition Fish: Rainbow trout: LC50=150mg B/L; 24-day; Fish: Goldfish: LC50=46mg B/L; 7-day; Mosquito fish (fresh water) TLm=1800 ppm/24H Mosquito fish (fresh water) TLm=1800 ppm/24H

Environmental: Boric acid is a water-soluble white powder that may, at high concentrations, cause damage to trees or vegetation by root absorption.

Physical: No information available.

Other: None.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

| | US DOT | Canada TDG |
|-----------------------|---------------------------------------|---------------------------|
| Shipping Name: | Not regulated as a hazardous material | No information available. |
| Hazard Class: | | |
| UN Number: | | |
| Packing Group: | | |

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 10043-35-3 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 10043-35-3: immediate, delayed.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 10043-35-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T

Risk Phrases:

R 60 May impair fertility.

R 61 May cause harm to the unborn child.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)

CAS# 10043-35-3: 1

Canada - DSL/NDSL

CAS# 10043-35-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 10043-35-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/03/1999

Revision #8 Date: 6/19/2006

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.