# SAFETY DATA SHEET

Boric Acid

## SECTION 1: IDENTIFICATION

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| Product identifier used on a label: | **Boric Acid** |
| Product code: | 2002 |
| HS Code: | 281000 |
| CAS-No.: | 10043-35-3 |
| Synonyms: | Orthoboric acid, boracic acid, hydrogen borate |
| Recommended use of the chemical and restrictions on use: | Chemical reagent |
| Chemical family: | Inorganic base |
| Chemical formula: | $H_3BO_3$ |
| Name, address and phone # of supplier: | Aqua Bond Inc.<br>440 Passmore Ave.<br>Toronto, ON, M1V 5J8<br>(416) 754-7211 |
| **24 Hr. Emergency phone #:** | **CANUTEC (613) 996-6666** |

## SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:

Reproductive toxicity (Category 2)
H360 - May damage fertility or the unborn child

Label elements:



Signal word: DANGER

Hazard statements: H360 - May damage fertility or the unborn child

Precautionary statements:
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 to an approved waste disposal plant.

Other Hazards: Not available.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

| Ingredient name | Synonyms | CAS Number | Concentration (wt. %) |
|---|---|---|---|
| Boric acid | Orthoboric acid, boracic acid, hydrogen borate | 10043-35-3 | ≥ 99.9 % |

**SECTION 4: FIRST-AID MEASURES**

**Description of first aid measures**:

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| Inhalation | If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| Skin contact | Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Seek medical attention. |
| Eye contact | Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention if pain and irritation develops or persists. |
| Ingestion | If large amounts are swallowed (i.e. more than one teaspoon), give two glasses of water or milk to drink and seek medical attention. Never give anything by mouth to an unconscious person. |

**Most important symptoms and effects, both acute and delayed:**
Symptoms/injuries: May damage fertility or the unborn child.
Inhalation: May cause respiratory irritation.
Skin contact: Slight irritation.
Eye contact: May cause slight irritation.
Ingestion: Nausea. Vomiting. Diarrhoea. May cause cyanosis.
Chronic symptoms: Cracking of the skin.

**Indication of any immediate medical attention and special treatment needed:** No information available.

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. Boron 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.

**SECTION 5: FIRE-FIGHTING MEASURES**

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| Extinguishing media: | Use media appropriate for the surrounding fire. |
| Suitable | Foam. Dry powder. Carbon dioxide. Water spray. Sand. |
| Unsuitable | Do not use a heavy water stream. |
| Flash point: | Not Available. |
| Autoignition Temperature: | Not Available. |
| Specific hazards arising from the substance: | No specific hazards are known. Boric acid is non-flammable, combustible or explosive. The product is itself a flame retardant. |
| Hazardous thermal decomposition products: | Not Available. |
| Special protective equipment and precautions for fire-fighters: | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

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| Personal precautions, protective equipment and emergency procedures: | Use personal protective equipment. Avoid dust formation. Avoid breathing dust. In case of exposure to prolonged or high level of airborne dust, wear a personal respirator in compliance with national legislation. |
| Environmental precautions: | Should not be released into environment. Prevent from reaching drains, sewer, or waterway. Report releases as required by local and national authorities. Boric acid is a water-soluble white powder that may, at high concentrations cause damage to trees or vegetation by root absorption (see section 12). |
| Methods and materials for containment and cleaning up: | Wear protective eyeware, gloves, and clothing. Refer to Section 8.<br><br>Land spill<br>Vacuum, shovel or sweep up boric acid and place in containers for disposal in accordance with applicable local, state, and federal laws and regulations. Avoid contamination of water bodies during clean up and disposal. Avoid breathing dust.<br><br>Spillage into water<br>Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water<br>should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its<br>normal environmental background level (see sections 12, 13 and 15). |

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| Special spill response procedures: | In case of transportation accident, contact CHEMTREC at 1-800-424-9300. |

**SECTION 7: HANDLING AND STORAGE**

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| Precautions for safe handling: | Avoid contact with skin and eyes. Good housekeeping and dust prevention procedures should be followed to minimize dust generation and accumulation. Use with appropriate local exhaust ventilation. |
| Conditions for safe storage: | Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. |
| Incompatible materials: | Strong bases, strong reducing agents, potassium, acetic anhydride, alkalis, carbonates, hydroxides. |
| Hazardous decomposition products: | Will not decompose under normal conditions.<br>Potential decomposition products: Boranes, hydrogen, boron oxides. |

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control Parameters**

| **Ingredient** | **Exposure limits** |
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| Boric Acid (10043-35-3) | 2 mg/m³ ACGIH TWA<br>6 mg/m³ ACGIH ACGIH Ceiling |

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| **Engineering controls:** | Ensure adequate ventilation, especially in confined areas.<br>Use mechanical exhaust or laboratory fumehood to avoid exposure.<br>Handle in accordance with good industrial hygiene and safety practice.<br>Wash hands before breaks and at the end of workday. |
| **Individual protection measures:** | **Eye Protection**: Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.<br>**Skin Protection**: Wear appropriate protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.<br>**Respiratory protection:** Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) 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). |

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

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| Appearance: | White powder or crystalline solid |
| Odour: | Odourless |
| Odour threshold: | Not available. |
| pH: | 6.1 (0.1% solution)<br>5.1 (1.0% solution)<br>3.7 (4.7% solution)318 °C (604 °F) |
| Melting point/Freezing point: | 169 °C |
| Initial boiling point/boiling range: | 300 °C |
| Flash point: | Not available. |
| Evaporation rate: | Not available. |
| Flammability (solid; gas) : | Not available. |
| Lower flammable/explosive limit: | Not available. |
| Upper flammable/explosive limit: | Not available. |
| Vapour pressure: | Not available. |
| Vapour density: | Not available. |
| Relative density: | 1.49 g/cm$^3$@ 23°C |
| Solubility in water: | 4.7% @ 20°C; 27.5% @100°C |
| Partition coefficient (n-octanol/water) : | Log Kow (Pow): -1.09 @ 22°C |
| Auto-ignition temperature: | Not available. |
| Decomposition temperature: | Not available. |
| Viscosity: | Not available. |

**SECTION 10: STABILITY AND REACTIVITY**

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| Reactivity: | No data available |
| Chemical stability: | Boric acid is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. When heated it loses water, first forming metaboric acid (HBO2), and on further heating it is converted into boric oxide (B2O3). |
| Possibility of hazardous reactions: | Reaction with strong reducing agents such as metal hydrides or alkali metals will generate flammable hydrogen gas which could create an explosive hazard. |
| Conditions to avoid: | Moisture, dust formation and incompatible materials. |
| Incompatible materials: | Strong bases, strong reducing agents, potassium, acetic anhydride, alkalis, carbonates, hydroxides. |
| Hazardous decomposition products: | Boranes, hydrogen, boron oxides. |

**SECTION 11: TOXICOLOGICAL INFORMATION**

Toxicity data

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| Acute toxicity: | Oral: LD50 in rats is 3,500 to 4,100 mg/kg of body weight.<br><br>Skin corrosion/irritation: LD50 in rabbits is greater than 2,000 mg/kg of body weight.<br><br>Serious eye damage/eye irritation: Not classified<br><br>Respiratory or skin sensitisation: Not classified |
| Information on the likely routes of exposure: | Skin, eye, ingestion, inhalation |
| Potential health effects (acute): | **Inhalation**: May cause respiratory irritation.<br>**Ingestion:** Nausea. Vomiting. Diarrhoea. May cause cyanosis.<br>**Skin Contact**: Slight irritation.<br>**Eye Contact**: May cause slight irritation.<br>**Chronic Exposure**: Cracking of the skin.<br>Specific target organ toxicity - single exposure: No data available<br>Specific target organ toxicity - repeated exposure: No data available |
| Target organ effects: | Not available. |
| Reproductive toxicity: | Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes (Weir R J, Fisher R S, Toxicol. Appl. Pharmacol., (1972), 23, 351-364). Studies in rat, mouse and rabbit, at high doses, demonstrate developmental effects on the fetus including fetal weight loss and minor skeletal variations. The doses administered were many times in excess of those which humans would normally be exposed to (National Toxicology Program (NTP) – Technical Report Series No. TR324, NIH Publication No. 88-2580 (1987), PB88 213475/XAB). |
| 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.<br>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. |
| Potential chronic health effects: | Not available. |
| Teratogenicity: | Not available. |
| Developmental effects: | Not available. |
| Fertility effects: | Not available. |

**SECTION 12: ECOLOGICAL INFORMATION**

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| Toxicity | **Toxicity to fish**<br>Fish, Fathered minnow, Pimephales promelas (Soucek et al., 2010)<br>96-hr LC50 = 79.7 mg B/L or 456 mg boric acid/L or 370 mg disodium tetraborate, anhydrous<br>**Phytotoxicity**<br>Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimize the amount of borate product released to the environment.<br>**Algal toxicity**<br>Green algae, Pseudokirchneriella subcapitata (Hansveit and Oldersma, 2000)<br>72-hr EC50 –biomass = 40 mg B/L, or 229 mg boric acid/L.<br>**Invertebrate toxicity**<br>Daphnia, Daphnids, Daphnia magna (Gersich, 1984a)<br>48-hr LC50 = 133 mg B/L or 760 mg boric acid/L or 619 mg disodium tetraborate , anhydrous/L |
| Other adverse effects: | Avoid release to the environment. |
| Persistence and degradability: | Boron is naturally occurring in the environment. Boric acid decomposes in the environment to natural borate. |
| Bioaccumulative potential: | Not significantly bio-accumulative. |
| Mobility in soil: | The product is soluble in water and is leachable through normal soil. |

**SECTION 13: DISPOSAL CONSIDERATIONS**

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| Disposal methods: | **Product:** The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.<br>**Contaminated packaging:** Dispose of as unused product. |

**SECTION 14: TRANSPORT INFORMATION**

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| UN Number: | - |
| UN proper shipping name: | - |
| Transport hazard class: | - |
| Packing group: | - |
| Special precautions for user: | Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident. |

**SECTION 15: REGULATORY INFORMATION**

Boric Acid (10043-35-3) - Listed on the United States TSCA (Toxic Substances Control Act) inventory

Boric Acid (10043-35-3) - Listed on the Canadian DSL (Domestic Substances List)

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

**SECTION 16: OTHER INFORMATION**

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0

Revision date: January 14, 2020

UN = United Nations

**Disclaimer**

While the information and recommendations set forth are believed to be accurate as of data hereof, Aqua Bond Inc., makes no warranty with respect thereto and disclaims all liability from reliance thereon.