

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 10/23/2009

Reviewed on 10/22/2009

**1 Identification of substance:****Product details:****Product name:** Boric acid**Stock number:**

A10896

L13184

**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Emergency Phone: (978) 521-6300

CHEMTREC: (800) 424-9300

Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

Boric acid (CAS# 10043-35-3)

**Identification number(s):****EINECS Number:** 233-139-2**Index number:** 005-007-00-2**3 Hazards identification****Hazard description:**

T Toxic

**Information pertaining to particular dangers for man and environment**

R 60 May impair fertility

R 61 May cause harm to the unborn child

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	1
FIRE	0
REACTIVITY	1

Health (acute effects) = 1

Flammability = 0

Reactivity = 1

**GHS label elements**

Danger

3.7/1B - May damage fertility or the unborn child.

**Prevention:**

Obtain special instructions before use.

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

Use personal protective equipment as required.

**Response:**

IF exposed or concerned: Get medical advice/attention.

**Storage:**

Store locked up.

**Disposal:**

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

**4 First aid measures****After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

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**After skin contact**

Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Boron oxide

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:** The product is not flammable

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Store away from water/moisture.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:** Not required.

**Additional information:** No data

**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

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**Eye protection:** Safety glasses  
**Body protection:** Protective work clothing.

**9 Physical and chemical properties:****General Information**

**Form:** Crystalline powder  
**Color:** White  
**Odor:** Odorless

**Change in condition**

**Melting point/Melting range:** ca 185°C (ca 365°F) (dec)  
**Boiling point/Boiling range:** Not determined  
**Sublimation temperature / start:** Not determined

**Flash point:** Not applicable

**Ignition temperature:** Not determined

**Decomposition temperature:** Not determined

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

**Lower:** Not determined  
**Upper:** Not determined

**Vapor pressure:** Not determined

**Density at 20°C (68°F):** 1.435 g/cm<sup>3</sup>

**Solubility in / Miscibility with  
 Water at 21°C (70°F):** 50 g/l

**pH-value (33 g/l) at 20°C (68°F):** 3.8-4.8

**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:** None known.

**Dangerous reactions:** No dangerous reactions known

**Dangerous products of decomposition:** Boron oxide

**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	3450 mg/kg (mouse)
		2660 mg/kg (rat)
	LDLo	934 mg/kg (inf)
		429 mg/kg (man)
Dermal	LD50	200 mg/kg (wmn)
		>2000 mg/kg (rat)
	LDLo	1500 mg/kg (child)
		1200 mg/kg (inf)
Inhalative	LC50	2430 mg/kg (man)
		>2030 mg/m <sup>3</sup> (rat)

**Primary irritant effect:**

**on the skin:** Causes mild irritant effect.

**on the eye:** May cause irritation

**Sensitization:** No sensitizing effects known.

**Other information (about experimental toxicology):**

Reproductive effects have been observed on tests with laboratory animals.

**Subacute to chronic toxicity:**

Boron affects the central nervous system. Boron poisoning causes depression of the circulation, persistent vomiting and diarrhea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body.

**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

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Gastrointestinal - nausea or vomiting.  
 Gastrointestinal - other changes.  
 Gastrointestinal - hypermotility, diarrhea.  
 Skin and Appendages - dermatitis, other (after systemic exposure).  
 Skin and Appendages - primary irritation (after topical exposure).  
 Cardiac - other changes.  
 Blood - changes in spleen.  
 Sense Organs and Special Senses (Eye) - conjunctive irritation.  
 Lungs, Thorax, or Respiration - respiratory depression.  
 Lungs, Thorax, or Respiration - cyanosis.  
 Kidney, Ureter, Bladder - changes in tubules (including acute renal failure, acute tubular necrosis).  
 Behavioral - fluid intake.  
 Behavioral - convulsions or effect on seizure threshold.  
 Behavioral - tremor.  
 Behavioral - wakefulness.  
 Behavioral - anorexia (human).  
 Behavioral - somnolence (general depressed activity).  
 Behavioral - ataxia.  
 Nutritional and Gross Metabolic - body temperature increase.  
 Nutritional and Gross Metabolic - body temperature decrease.  
 Nutritional and Gross Metabolic - weight loss or decreased weight gain.  
 Nutritional and Gross Metabolic - changes in calcium.  
 Nutritional and Gross Metabolic - changes in phosphorus.  
 Related to Chronic Data - changes in testicular weight.  
 Related to Chronic Data - death.  
 Brain and Coverings - meningeal changes.  
 Brain and Coverings - changes in brain weight.  
 Liver - changes in liver weight.  
 Endocrine - changes in thyroid weight.  
 Reproductive - Specific Developmental Abnormalities - musculoskeletal system.  
 Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).  
 Reproductive - Specific Developmental Abnormalities - other developmental abnormalities.  
 Reproductive - Paternal Effects - testes, epididymis, sperm duct.  
 Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).  
 Reproductive - Effects on Embryo or Fetus - fetal death.  
 Reproductive - Paternal Effects - spermatogenesis.  
 Reproductive - Maternal Effects - uterus, cervix, vagina.  
 Reproductive - Maternal Effects - other effects.  
 Reproductive - Specific Developmental Abnormalities - cardiovascular (circulatory) system.  
 Reproductive - Fertility - litter size (e.g. # fetuses per litter; measured before birth).  
 Reproductive - Specific Developmental Abnormalities - craniofacial (including nose and tongue).

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

May impair fertility.

May cause harm to the unborn child.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:**

**Recommendation** Consult state, local or national regulations to ensure proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

Not a hazardous material for transportation.

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**DOT regulations:****Hazard class:** None**Land transport ADR/RID (cross-border)****ADR/RID class:** None**Maritime transport IMDG:****IMDG Class:** None**Marine pollutant:** No**Air transport ICAO-TI and IATA-DGR:****ICAO/IATA Class:** None**Transport/Additional information:** Not dangerous according to the above specifications.**15 Regulations****Product related hazard informations:****Hazard symbols:**

T Toxic

**Risk phrases:**

60 May impair fertility

61 May cause harm to the unborn child

**Safety phrases:**

53 Avoid exposure - obtain special instructions before use.

45 In case of accident or if you feel unwell, seek medical advice immediately.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

**Information about limitation of use:** For use only by technically qualified individuals.**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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