



SIGMA-ALDRICH

Material Safety Data Sheet

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Section 1 - Product and Company Information

Product Name Boric acid, 99.99%
Product Number 339067
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
Fax: 800-325-5052

Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

<u>Substance Name</u>	<u>CAS #</u>	<u>SARA 313</u>	<u>EC no</u>	<u>Annex I Index Number</u>
BORIC ACID	10043-35-3	No	233-139-2	

Formula H3BO3
Synonyms Basilit B, Boracic acid, Borofax, Boron trihydroxide, Borsauere (German), Dr.'s 1 Flea Terminator DF, Dr.'s 1 Flea Terminator DFPBO, Dr.'s 1 Flea Terminator DT, Dr.'s 1 Flea Terminator DTPBO, Flea Prufe, NCI-C56417, Orthoboric acid, Super Flea Eliminator, Three elephant, Trihydroxyborone

Section 3 - Hazards Identification

Emergency Overview

Caution: Avoid contact and inhalation. Target organ(s): Testes.

HMIS Rating

Health: 1* Flammability: 0 Reactivity: 1

NFPA Rating

Health: 1 Flammability: 0 Reactivity: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Dermal Exposure

In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A

Extinguishing Media

Suitable
Water spray, Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure(s) of Personal Precaution(s)

Exercise appropriate precautions to minimize direct contact with skin or eyes and prevent inhalation of dust.

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed.

Special Requirements

Moisture sensitive.

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks.

Hand

Protective gloves.

Eye

Chemical safety goggles.

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General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance
Physical State
Solid

Molecular Weight: 61.83 AMU

Concentration: 1.8 g/l

pH 5.1
BP/BP Range 300 °C
MP/MP Range 160 °C
Freezing Point N/A
Vapor Pressure 2.6 mmHg 20 °C
Vapor Density N/A
Saturated Vapor Conc. N/A
SG/Density 1.44 g/cm³
Bulk Density N/A
Odor Threshold N/A
Volatile% N/A
VOC Content N/A
Water Content N/A
Solvent Content N/A
Evaporation Rate N/A
Viscosity N/A
Partition Coefficient N/A
Decomposition Temp. N/A
Flash Point °F N/A
Flash Point °C N/A

Explosion Limits N/A

Flammability N/A

Autoignition Temp N/A

Solubility
Solubility in Water: Soluble.

N/A = not available

Section 10 - Stability and Reactivity

Stability

Stable
Stable.
Conditions to Avoid
Moisture.

Materials to Avoid
Potassium, Acid anhydrides.

Hazardous Decomposition Products
Hazardous Decomposition Products
Boron oxides.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

May cause skin irritation.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

May cause eye irritation.

Inhalation

May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion

May be harmful if swallowed.

Target Organ(s) or System(s)

Testes.

Signs and Symptoms of Exposure

Toxicity reported for borates in humans: ingestion or absorption may cause nausea, vomiting, diarrhea, abdominal cramps, and erythematous lesions on the skin and mucous membranes. Other symptoms include: circulatory collapse, tachycardia, cyanosis, delirium, convulsions, and coma. Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams.

RTECS Number: ED4550000

Toxicity Data

Oral - Man: 429 mg/kg (LDLO)

Remarks: Cardiac: Other changes.

Kidney, Ureter, Bladder: Changes in tubules (including acute renal failure, acute tubular necrosis).

Oral - Woman: 200 mg/kg (LDLO)

Remarks: Behavioral: Fluid intake.

Gastrointestinal: Hypermotility, diarrhea.

Gastrointestinal: Nausea or vomiting.

Oral - Infant: 934 mg/kg (LDLO)

Skin - Infant: 1200 mg/kg (LDLO)

Remarks: Behavioral: Convulsions or effect on seizure threshold.

Skin and Appendages: Skin: After systemic exposure: Dermatitis, other

Nutritional and Gross Metabolic: Changes in: Body temperature increase.

Skin - Child: 4000 mg/kg (LDLO)

Skin - Man: 2430 mg/kg (LDLO)

Remarks: Gastrointestinal: Hypermotility, diarrhea.

Skin and Appendages: Skin: After topical exposure: Primary irritation.

Nutritional and Gross Metabolic: Changes in: Body temperature increase.

Skin - Child: 1500 mg/kg (LDLO)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Eye: Conjunctive irritation.

Lungs, Thorax, or Respiration: Respiratory depression.

Gastrointestinal: Hypermotility, diarrhea.

Subcutaneous - Infant: 1100 MG/KG (LDLO)

Remarks: Behavioral: Tremor.

Gastrointestinal: Hypermotility, diarrhea.

Gastrointestinal: Nausea or vomiting.

Oral - Rat: 2660 mg/kg (LD50)

Subcutaneous - Rat: 1400 MG/KG (LD50)

Remarks: Behavioral: Somnolence (general depressed activity).

Behavioral: Ataxia.

Nutritional and Gross Metabolic: Changes in: Body temperature decrease.

Intravenous - Rat: 1330 MG/KG (LD50)
Remarks: Behavioral:Tremor,
Gastrointestinal:Hypermotility, diarrhea,
Gastrointestinal:Nausea or vomiting.

Oral - Mouse: 3450 mg/kg (LD50)

Subcutaneous - Mouse: 1740 MG/KG (LD50)

Intravenous - Mouse: 1240 MG/KG (LD50)
Remarks: Behavioral:Convulsions or effect on seizure threshold,
Lungs, Thorax, or Respiration:Respiratory depression,
Gastrointestinal:Hypermotility, diarrhea.

Subcutaneous - Guinea pig: 1200 MG/KG (LD50)
Remarks: Behavioral:Tremor,
Gastrointestinal:Hypermotility, diarrhea,
Gastrointestinal:Nausea or vomiting.

Irritation Data

Skin - Human: 15 mg 3D I
Remarks: Mild irritation effect

NTP Carcinogen List

<u>Rating</u>	<u>Species</u>	<u>Route</u>
No evidence.	Mouse	Feed

Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
	Result:Laboratory experiments have shown teratogenic effects.		
Rat	1600 MG/KG	Oral	(6-9D PREG)
	Result:Specific Developmental Abnormalities: Musculoskeletal system.		
Rat	6600 MG/KG	Oral	(1-21D PREG)
	Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Other developmental abnormalities.		
Rat	1596 MG/KG	Oral	(0-20D PREG)
	Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	7684 MG/KG	Oral	(1-17D PREG)
	Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Mouse	800 MG/KG	Oral	(7D PREG)
	Result:Specific Developmental Abnormalities: Musculoskeletal system.		
Rabbit	3500 MG/KG	Oral	(6-19D PREG)
	Result:Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Cardiovascular (circulatory) system.		
Rabbit	3500 MG/KG	Oral	(6-19D PREG)
	Result:Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Other developmental abnormalities.		

Chronic Exposure - Reproductive Hazard

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
	Result: May cause reproductive disorders.		
Rat	45 GM/KG	Oral	(90D MALE)
	Result: Paternal Effects: Testes, epididymis, sperm duct.		
Rat	5390 MG/KG	Oral	(6-15D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Musculoskeletal system.		
Rat	52 MG/KG	Oral	(26W MALE)
	Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).		
Rat	9600 UG/M3/4H	Inhalation	(16W MALE)
	Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.		
Mouse	17051 MG/KG	Oral	(1-17D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).		

Mouse	18054 MG/KG	Oral	(1-18D PREG)
	Result: Maternal Effects: Uterus, cervix, vagina. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).		
Mouse	8136 MG/KG	Oral	(1-18D PREG)
	Result: Maternal Effects: Other effects. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Rabbit	3500 MG/KG	Oral	(6-19D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Specific Developmental Abnormalities: Cardiovascular (circulatory) system.		
Rabbit	3500 MG/KG	Oral	(7-20D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.		
Rabbit	1750 MG/KG	Oral	(7-20D PREG)
	Result: Maternal Effects: Uterus, cervix, vagina. Maternal Effects: Other effects.		

Section 12 - Ecological information

N/A

Acute Ecotoxicity Tests

Test Type	
EC50 Daphnia	
Species	
Daphnia magna	
Time:	Value:
48.0 h	133 mg/l
Test Type	
LC0 Fish	
Species	
Lepomis macrochirus (Bluegill)	
Time:	Value:
96.0 h	> 1,021 mg/l

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

US Classification and Label Text

US Statements

Caution: Avoid contact and inhalation. Target organ(s): Testes.

United States Regulatory Information

SARA Listed: No

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.