

MATERIAL SAFETY DATA SHEET

Date Printed: 01/22/2004

Date Updated: 09/02/2002

Version 1.3

Section 1 - Product and Company Information

Product Name BORIC ACID, 99.5+%, A.C.S. REAGENT
Product Number 236462
Brand ALDRICH

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
BORIC ACID	10043-35-3	No

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
RTECS Number: ED4550000

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

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

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: Wear dust mask.
Hand: Protective gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
Molecular Weight	61.83 AMU	
pH	5.1	Concentration: 1.8 g/l
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/cm ³	
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	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Soluble.	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions to Avoid: Sensitive to 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.

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

Rating: No evidence.
Species: Mouse
Route: Feed

CHRONIC EXPOSURE - TERATOGEN

Result: Laboratory experiments have shown teratogenic effects.

Species: Rat
Dose: 1600 MG/KG
Route of Application: Oral
Exposure Time: (6-9D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 6600 MG/KG
Route of Application: Oral
Exposure Time: (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.

Species: Rat
Dose: 1596 MG/KG
Route of Application: Oral
Exposure Time: (0-20D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse
Dose: 7684 MG/KG
Route of Application: Oral
Exposure Time: (1-17D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Mouse
Dose: 800 MG/KG
Route of Application: Oral
Exposure Time: (7D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rabbit
Dose: 3500 MG/KG
Route of Application: Oral
Exposure Time: (6-19D PREG)
Result: Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

Species: Rabbit
Dose: 3500 MG/KG
Route of Application: Oral
Exposure Time: (6-19D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Other developmental abnormalities.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Result: May cause reproductive disorders.

Species: Rat
Dose: 45 GM/KG
Route of Application: Oral
Exposure Time: (90D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Rat
Dose: 5390 MG/KG
Route of Application: Oral
Exposure Time: (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.

Species: Rat
Dose: 52 MG/KG
Route of Application: Oral
Exposure Time: (26W MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Rat
Dose: 9600 UG/M3/4H
Route of Application: Inhalation
Exposure Time: (16W MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse
Dose: 17051 MG/KG
Route of Application: Oral
Exposure Time: (1-17D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Mouse
Dose: 18054 MG/KG
Route of Application: Oral
Exposure Time: (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).

Species: Mouse
Dose: 8136 MG/KG
Route of Application: Oral
Exposure Time: (1-18D PREG)
Result: Maternal Effects: Other effects. Effects on Embryo or

Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rabbit

Dose: 3500 MG/KG

Route of Application: Oral

Exposure Time: (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.

Species: Rabbit

Dose: 3500 MG/KG

Route of Application: Oral

Exposure Time: (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.

Species: Rabbit

Dose: 1750 MG/KG

Route of Application: Oral

Exposure Time: (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: 48 h

Value: 133 mg/l

Test Type: LC0 Fish

Species: Lepomis macrochirus (Bluegill)

Time: 96 h

Value: > 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. 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 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.