Safety Data Sheet

Martrex, Inc.

Section 1: Chemical Product and Company Information

Product name: Boric Acid
Reference Number: n/a
Supplier/ Further Information: Martrex, Inc.

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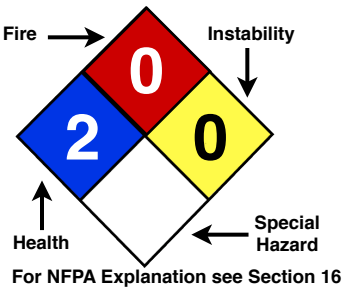

For NFPA Explanation see Section 16

EPA Registration Number: n/a
CAS#: 10043-35-3
Chemical Name: Boric Acid
Synonyms: Boracic acid; Orthoboric acid.; Hydrogen borate.
Chemical Family: Inorganic Borates

24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637

Section 2: Hazards Identification

Emergency Overview

Danger! **Acute toxicity, oral. Reproductive toxicity. May be harmful if swallowed. Ingested, adult, fatal dose reported at 5 to > 30 gr. If exposed or concerned: Get medical advice/ attention. Obtain special instructions before use.**

OSHA Hazards:

Target Organ Effect: Central nervous system, liver and kidneys

Teratogen: May cause harm to the unborn child

Reproductive hazard: May impair fertility

Target Organs:

Central nervous system, liver and kidneys, testes

GHS Classification (Global Harmonized Classification see Section 16)**:**

Acute toxicity, oral	Category 5	(H303)
Reproductive toxicity	Category 1B	(H360)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:

(GHS Pictogram Hazards Definitions See Section 16)

Label Signal Word: **Danger!**

Hazard Statements:

May be harmful if swallowed.	(H303)
May damage fertility or the unborn child.	(H360)

24 Hour Emergency Phone - Chemtrec: 1-800-424-9300 Transportation
1-800-441-3637 Medical

Precautionary Statements:

Prevention:

Obtain special instructions before use. (P201)

Do not handle until all safety precautions have been read and understood. (P202)

Wear protective gloves/protective clothing/eye protection/face protection. (P280)

Response:

If exposed or concerned, Get medical advice/attention... (P308+P313)

Call a **POISON CENTER**/doctor if you feel unwell. (P312)

Storage:

Store locked up. (P405)

Disposal Considerations:

Dispose of content/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

NFPA Ratings: Health: **2;** Flammability: **0;** Reactivity: **0**

Potential Health Effects:

Inhalation: Causes irritation to the mucous membranes of the respiratory tract. May be absorbed from the mucous membranes.

Ingestion: Symptoms parallel absorption via inhalation. Adult fatal dose reported at 5 to > 30 gr.

Skin Contact: Causes skin irritation. Not significantly absorbed through the intact skin. Readily absorbed through damaged or burned skin.

Eye Contact: Causes irritation, redness, and pain.

Chronic Exposure: Prolonged absorption causes weight loss, vomiting, diarrhea, skin rash, convulsions and anaemia. Liver, testes and particularly the kidneys may be susceptible.

Aggravation of Pre-existing Conditions:

No information found.

Carcinogenicity: No known or anticipated carcinogen. (see section 11)

Section 3: Composition/Information on Ingredients

Chemical Name	CAS#	%	ACGIH STEL	ACGIH TWA
Boric Acid H_3BO_3	10043-35-3	99.9	6 mg/m^3 16 hr TLV	2 mg/m^3 8 hr TLV

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **Contact a Physician.**

Ingestion: Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. **Get medical attention immediately.**

Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. **Get medical attention if irritation develops or persists.** Wash clothing before re-use.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. **Get medical attention immediately.**

NOTE TO THE PHYSICIAN: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire Hazard: Not considered to be a fire hazard.

Suitable Extinguishing Media: Use any means suitable for extinguish surrounding fire.

Specific Hazards During Fire Fighting: A mixture of potassium and boric acid may explode on impact.

Protective Equipment for Fire-Fighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode. (see Section 8)

Section 6: Accidental Release Measures

Person-Related Safety Precautions: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. (Section 8).

Measures for Environmental Protection: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Measures for Cleaning / Collecting: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

Measures for Disposal: Under Federal RCRA, it is the responsibility of the user of Product to determine at the time of disposal, whether the Product falls under the RCRA as a hazardous waste. Follow all Federal, State and Local Regulations in disposal of product.

Section 7: Handling and Storage

Handling: Use good housekeeping practices to prevent accumulation of dust and follow sound cleaning techniques that will keep airborne particulates at a low level.

Storage and Receptacles: Store in closed containers in a cool, dry area. Carbon steel or aluminum containers are suitable for storage. Stainless steel is needed for moist conditions.

Hygienic Work Practices: Wash hands after handling this material. Avoid contact especially when skin is cut. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); **Observe all Warnings and Precautions Listed for the Product.**

Section 8: Exposure Controls / Personal Protection

Exposure Limits:

Chemical Name	CAS #	ACGIH STEL	ACGIH TWA
Boric Acid H_3BO_3	10043-35-3	6 mg/m^3 16 hr TLV	2 mg/m^3 8 hr TLV
Remarks: Upper Respiratory Tract irritation Not classifiable as a human carcinogen varies.			

Engineering Controls: Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Protective Measures:

Respirators: 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).

Hand Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. To obtain safe and appropriate gloves for this chemical, contact the supplier of the CE approved gloves and an Industrial Hygienist.

Eye protection: Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and Body Protection: Impervious clothing, this type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

General Hygienic Measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Section 9: Physical and Chemical Properties

Chemical Name: Boric Acid
Chemical Formula: H_3BO_3
Chemical Weight: 61.83
Appearance: white Granules or powder
Odor: odorless
Odor Threshold: no data
pH: 5.1 Aqueous solution: (0.1M)
Melting / Freezing Point: 169°C (336°F)
Boiling Point / Boiling Range: Decomposes
Flash Point: no data
Evaporation Rate: no data
Flammability (solid, gas): no data
Flammability Limit: Upper: no data **Lower:** no data
Explosion limits: Upper: no data **Lower:** no data
Vapor Pressure (mm Hg): 2.6 @ 20C (68°F)
Vapor Density: no data
Density: 1.43
Solubilities: 1g/18mL in cold water
Partition coefficient (water / n-octanol): no data
Auto-Ignition Temperature: no data
Decomposition Temperature: no data
Viscosity: no data
% Volatiles by volume @ 21C (70F)**:** 0
Specific Gravity: no data

Section 10: Stability and Reactivity

Chemical Stability: Stable under ordinary conditions of use and storage. If moisture is present, boric acid can be corrosive to iron.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: moisture, incompatibles.
Incompatibilities: Potassium, acetic anhydride, alkalis, carbonates, and hydroxides.
Hazardous Decomposition Products: Loses chemically combined water upon heating, forming metaboric acid (HBO_2) at 212-221ºF, then pyroboric acid ($H_2B_4O_7$) at 285-320ºF, and Boric anhydride at higher temperatures**.**

Section 11: Toxicological Information

Routes of Entry:
Inhalation, Skin, Ingestion
Acute toxicity
Oral LD_{50}
LD_{50} Oral: rat - 2,660 mg/kg
LD_{LO} Oral: woman 200 mg/kg
Inhalation LC_{50}
no data
Dermal LD_{50}
no data
Other Information on Acute Toxicity
Investigated as a mutagen, tumorigen, reproductive effector (see NIOSH: RTECS: ED4550000)

Skin Corrosion/Irritation
no data
Serious Eye Damage/Eye Irritation
no data
Respiratory or Skin Sensitization
no data
Germ cell Mutagenicity
no data
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.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive Toxicity
Presumed human reproductive toxicant. (see NIOSH: RTECS: ED4550000)
Teratogenicity
Fetotoxicity
Presumed human reproductive toxicant. (see NIOSH: RTECS: ED4550000)
Specific Target Organ Toxicity - single exposure (Globally Harmonized System)
no data
Specific Target Organ Toxicity - repeated exposure (Globally Harmonized System)
no data
Aspiration Hazard
no data
Potential Health Effects
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion: May be harmful if swallowed.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
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.
Synergistic Effects
no data
Additional Information
NIOSH: RTECS: ED4550000

Section 12: Ecological Information

Toxicity

Toxicity to Fish	LC_{50} - Ptychocheilus lucius - 279 mg/l - 96 h
	LC_{50} - Lepomis macrochirus (Bluegill) - > 1,021 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	LC_{50} - Daphnia magna (Water flea) - 53.2 mg/l - 21 d
	EC_{50} - Daphnia magna (Water flea) - 133 mg/l - 48 h

Persistence and Degradability
no data
Bioaccumulative Potential
no data

Mobility in Soil
no data
PBT and vPvB Assessment
no data
Other adverse Effects
no data

Section 13: Disposal Considerations

Waste Disposal Recommendation:
Offer surplus and non-recyclable solutions to a licensed disposal company. 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.
Contaminated Packaging: Dispose of as unused product.
In Waste Disposal Always Observe all Federal, State, and Local Environmental regulations.

Section 14: Transport Information

DOT (US)	IMDG:	IATA:
Not dangerous goods	Not dangerous goods	Not dangerous goods

Section 15: Regulatory Information

State / Federal Regulations:
OSHA Hazards
Target Organ Effect, Teratogen, Reproductive hazard
SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards
Chronic Health Hazard
Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right To Know Components

Chemical	CAS#	Revision Date
Boric Acid H_3BO_3	10043-35-3	2009-07-17

New Jersey Right To Know Components

Chemical	CAS#	Revision Date
Boric Acid H_3BO_3	10043-35-3	2009-07-17

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16: Other Information

Acronyms

ACGIH - American Conference of Governmental Industrial Hygienists
ANSI - American National Standards Institute
CAS - Chemical Abstracts Service

CERCLA - Comprehensive Environmental Response, Compensation & Liability Act of 1980
CFR - Code of Federal Regulations
CHEMTREC - Chemical Transportation Emergency Center
CPR - Controlled Products Regulations
CWC - Chemical Weapons Convention
DOT - U.S. Department of Transportation
DSL - Canadian Domestic Substance List
EHS - Extremely Hazardous Substance
EPA - U.S. Environmental Protection Agency
HMIS - Hazardous Material Identification System
IARC - International Agency for Research on Cancer
LEL/UEL - Lower and Upper Explosive Limit
NAERG - North American Emergency Response Guidebook
NIOSH - National Institute of Occupational Safety and Health
NFPA - National Fire Protection Association
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit (set by OSHA)
PPE - Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act of 1976
RTECS - The Registry of Toxic Effects of Chemical Substances
SARA - Superfund Amendments and Reauthorization Act
SDS - Safety Data Sheet
STEL - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.
TDG (Canadian)**:** Transport of Dangerous Goods Regulations

GHS Pictograms and Hazards

Health Hazard • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame** • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark** • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder • Gases Under Pressure	**Corrosion** • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb** • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle • Oxidizers	**Environment** (Non-Mandatory) • Aquatic Toxicity	**Skull and Crossbones** • Acute Toxicity (fatal or toxic)

NFPA Rating Explanation Guide

Rating Number	Health Hazard	Flammability Hazard	Instability Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock
2	Can cause temporary incapacitation or residual injury	Must be heated or high ambient temperature to burn	Violent chemical change at high temperatures or pressures
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable
0	No Hazard	Will not burn	Stable

Rating Symbol	Special Hazard
ALK	Alkaline
ACID	Acidic
BIO	BioHazard
COR	Strong Corrosive
CRYO	Cryogenic
OXY	Oxidizer
	Radioactive
W	Reacts violently or explosively with water
W OX	Reacts violently or explosively with water or oxidizer

This chart for reference only - For complete specifications consult the NFPA Standard

TLV - Threshold Limit Value (set by ACGIH)
TWA - 8-hour Time Weighted Average
TSCA - US Toxic Substance Control Act
WHMIS - Workplace Hazardous Material Information System

SDS Issue Date: n/a
Revised Date: 12-17-2014
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