



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name TRONA® Elemental Boron
Version # 01
Revision date 09-29-2009
MSDS Number B-5026
Product use Fuel in pyrotechnic devices.
Manufacturer information Tronox LLC
3301 NW 150th Street
Oklahoma City, OK 73134 US
ChemProdSteward@tronox.com
1-405-775-5000 (24-hours)
Emergency CHEMTREC 1-800-424-9300

2. Hazards Identification

Physical state Solid.
Appearance Powder.
Emergency overview CAUTION
May be harmful if swallowed. May irritate eyes and mucous membranes.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

- Routes of exposure** Eye contact. Ingestion. Inhalation. Skin contact.
- Eyes** Contact with eyes may cause irritation.
- Skin** Dust or powder may irritate the skin. Skin irritation occurs on contact with moist or wet skin.
- Inhalation** Dust may irritate throat and respiratory system and cause coughing.
- Ingestion** May be harmful if swallowed. May irritate and cause stomach pain, vomiting, diarrhea and nausea.

Target organs Eyes. Kidneys. Respiratory system. Skin.

Chronic effects Boron: High doses have demonstrated effects on fertility, testes, and developmental effects on the fetus in laboratory animals. Relevance of these findings to humans is uncertain. May cause damage to the kidneys.

Signs and symptoms Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Potential environmental effects The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Boron	7440-42-8	84-92
Magnesium	7439-95-4	4-6

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye contact Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention.

Skin contact Flush skin thoroughly with water. Get medical attention if irritation develops and persists.

Inhalation Move to fresh air. Get medical attention if any discomfort continues.

Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Never give anything by mouth to an unconscious person. Get medical attention if any discomfort occurs. If ingestion of a large amount does occur, call a poison control center immediately.
Notes to physician	Treat symptomatically.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties	Fine particles may form explosive mixtures with air.
Extinguishing media	
Suitable extinguishing media	Class D fire extinguisher. DRY sand, sodium chloride powder, graphite powder or Met-L-X powder.
Unsuitable extinguishing media	Water.
Protection of firefighters	
Protective equipment and precautions for firefighters	Move containers from fire area if you can do it without risk.
Special protective equipment for fire-fighters	Firefighters should wear full protective clothing including self contained breathing apparatus. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.
Specific methods	Move container from fire area if it can be done without risk.
Hazardous combustion products	None known.

6. Accidental Release Measures

Personal precautions	Avoid inhalation of dust and contact with skin and eyes. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use Personal Protective Equipment recommended in Section 8 of the MSDS.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product.
Methods for cleaning up	Avoid dust formation. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container. The vacuum cleaner should be explosion-proofed. For waste disposal, see Section 13 of the MSDS.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Keep away from heat, spark, open flames and other sources of ignition. Avoid inhalation of dust and contact with skin and eyes. Dust clouds may be explosive under certain conditions. Use only with adequate ventilation. Use Personal Protective Equipment recommended in section 8 of the MSDS. Take precautionary measures against static discharges when there is a risk of dust explosion. Use explosion-proof electrical equipment if airborne dust levels are high. Wash thoroughly after handling.
Storage	Store in tightly closed original container in a dry and cool place. Store away from incompatible materials.

8. Exposure Controls / Personal Protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Exposure guidelines	ACGIH: OELs (8-hour TLV-TWA) for inhalable dust: 10 mg/m ³ ; respirable dust 3 mg/m ³ . OSHA: OELs (8-hour PEL) for total dust: 15 mg/m ³ ; respirable dust 5 mg/m ³ .
Engineering controls	Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high.
Personal protective equipment	
Eye / face protection	Wear dust-resistant safety goggles where there is danger of eye contact.
Skin protection	Protective clothing is not required under normal conditions. Wear suitable gloves.
Respiratory protection	When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. Seek advice from local supervisor.

General hygiene considerations

Do not breathe dust. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Appearance	Powder.
Color	Brown/black.
Odor	Slight.
Odor threshold	Not available.
Physical state	Solid.
Form	Powder.
pH	Not available.
Melting point	3932.6 °F (2167 °C)
Freezing point	Not available.
Boiling point	6616.4 °F (3658 °C)
Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	2.35
Solubility (water)	Insoluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	1076 °F (580 °C)
Decomposition temperature	Not available.
Bulk density	16 lb/ft ³

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions. However: Oxidizes slowly at room temperature.
Conditions to avoid	Contact with incompatible materials. Avoid dust formation.
Incompatible materials	Ignites in gaseous chlorine or fluorine at ambient temperature. Halogens. Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information**Toxicological data**

Components	Test Results
Boron (7440-42-8)	Acute Oral LD50 Rat: 650 mg/kg
Acute effects	May be harmful if swallowed.
Local effects	May irritate eyes and mucous membranes. Dust may irritate throat and respiratory system and cause coughing.
Sensitization	Not a skin sensitizer.
Chronic effects	Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	This product is not reported to cause mutagenic effects in humans.

Neurological effects	No data available for this product.
Reproductive effects	Boron: High doses have demonstrated effects on fertility, testes, and developmental effects on the fetus in laboratory animals. Relevance of these findings to humans is uncertain.
Teratogenicity	Not available.
Further information	No other specific acute or chronic health impact noted.

12. Ecological Information

Ecotoxicity	Contains a substance which causes risk of hazardous effects to the environment.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	The degradability of the product has not been stated.
Bioaccumulation / Accumulation	No data available on bioaccumulation.
Mobility in environmental media	The product is insoluble in water.

13. Disposal Considerations

Waste codes	Not regulated.
Disposal instructions	Dispose of this material and its container to hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

TDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List. CERCLA/SARA Hazardous Substances - Not applicable.
-------------------------------	---

CERCLA (Superfund) reportable quantity (lbs)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes
Drug Enforcement Agency (DEA)	Not controlled
WHMIS status	Non-controlled
WHMIS labeling	

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance

Magnesium (CAS 7439-95-4) Listed.

US - Massachusetts RTK - Substance: Listed substance

Magnesium (CAS 7439-95-4) Listed.

US - New Jersey RTK - Substances: Listed substance

Magnesium (CAS 7439-95-4) Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Magnesium (CAS 7439-95-4) Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 2
Flammability: 1
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 1
Instability: 0

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.

Issue date

09-29-2009