1. Identification

Product identifier: TRONA® Elemental Boron

Other means of identification:
- SDS number: B-5026
- Recommended use: Fuel in pyrotechnic devices.
- Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information:
- Company name: Tronox LLC
  - Address: 3301 NW 150th Street
  - Oklahoma City, OK 73134
  - USA
- Email: ChemProdSteward@tronox.com
- Telephone: +1-405-775-5000 (24-hours)
- Emergency telephone number: +1-877-358-7421
  - +1-760-476-3962 (Access code: 333318)

2. Hazard(s) identification

Physical hazards: Not classified.

Health hazards: Acute toxicity, oral
  Category 4

OSHA defined hazards: Not classified.

Label elements:
- Signal word: Warning
- Hazard statement: Harmful if swallowed.
- Precautionary statement:
  - Prevention: Wash thoroughly after handling. Do not eat, drink or smoke when using this product.
  - Response: If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth.
  - Storage: Store away from incompatible materials.
  - Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.
- Hazard(s) not otherwise classified (HNOC): None known.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron</td>
<td>7440-42-8</td>
<td>84-92</td>
</tr>
<tr>
<td>Magnesium</td>
<td>7439-95-4</td>
<td>4-6</td>
</tr>
</tbody>
</table>

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

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

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

Do not rub eyes. 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.

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.

Most important symptoms/effects, acute and delayed

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

Indication of immediate medical attention and special treatment needed

Treat symptomatically.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

DRY sand, sodium chloride powder, graphite powder or Met-L-X powder. Class D fire extinguisher.

Unsuitable extinguishing media

Water.

Specific hazards arising from the chemical

None known.

Special protective equipment and precautions for firefighters

Firefighters should wear full protective clothing including self contained breathing apparatus. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Fire fighting equipment/instructions

Use standard firefighting procedures and consider the hazards of other involved materials.

Specific methods

Move container from fire area if it can be done without risk.

General fire hazards

Fine particles may form explosive mixtures with air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid inhalation of dust and contact with skin and eyes. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

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. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container. The vacuum cleaner should be explosion-proofed.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and storage

Precautions for safe handling

Minimize dust generation and accumulation. 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. 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. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

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).

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear dust-resistant safety goggles where there is risk of eye contact.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Protective clothing is not required under normal conditions.
Respiratory protection
Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. Seek advice from local supervisor.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
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 and chemical properties

Appearance
Physical state Solid.
Form Powder.
Color Brown. / Black.
Odor Slight.
Odor threshold Not available.
pH Not applicable.
Melting point/freezing point 3932.6 °F (2167 °C)
Initial boiling point and boiling range 6616.4 °F (3658 °C)
Flash point Not available.
Evaporation rate Not available.
Flammability (solid, gas) Not available.
Upper/lower flammability or explosive limits
Flammability limit - lower (%) Not available.
Flammability limit - upper (%) Not available.
Explosive limit - lower (%) Not available.
Explosive limit - upper (%) Not available.
Vapor pressure Not available.
Vapor density Not available.
Relative density 2.35
Solubility(ies)
Solubility (water) Insoluble in water.
Partition coefficient (n-octanol/water) Not applicable.
Auto-ignition temperature 1076 °F (580 °C)
Decomposition temperature Not available.
Viscosity Not applicable.
Other information
Bulk density 16 lb/ft³

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Stable under normal temperature conditions. However: Oxidizes slowly at room temperature.
Possibility of hazardous reactions Hazardous polymerization does not occur.
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 In case of fire: Boron oxides. Magnesium oxides.
11. Toxicological information

Information on likely routes of exposure

**Inhalation**
Dust may irritate throat and respiratory system and cause coughing. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.

**Skin contact**
Dust or powder may irritate the skin.

**Eye contact**
Dust may irritate the eyes.

**Ingestion**
Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

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

Information on toxicological effects

**Acute toxicity**
Harmful if swallowed.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron (CAS 7440-42-8)</td>
<td>Acute Oral LD50</td>
<td>Rat 650 mg/kg</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**
Skin irritation occurs on contact with moist or wet skin.

**Serious eye damage/eye irritation**
Dust may irritate the eyes.

Respiratory or skin sensitization

**Respiratory sensitization**
No data available.

**Skin sensitization**
Not a skin sensitizer.

**Germ cell mutagenicity**
This product is not reported to cause mutagenic effects in humans.

**Carcinogenicity**
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

**Reproductive toxicity**
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.

Specific target organ toxicity - single exposure

No data available.

Specific target organ toxicity - repeated exposure

No data available.

**Aspiration hazard**
Not applicable.

**Further information**
No other specific acute or chronic health impact noted.

12. Ecological information

**Ecotoxicity**
The product is 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.

**Persistence and degradability**
The degradability of the product has not been stated.

**Bioaccumulative potential**
No data available on bioaccumulation.

**Mobility in soil**
No data available.

**Other adverse effects**
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. Disposal considerations

**Disposal instructions**
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazardous waste code**
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**
Empty containers should be taken to an approved waste handling site for recycling or disposal.
14. Transport information

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable.

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.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US 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. Massachusetts RTK - Substance List
Magnesium (CAS 7439-95-4)

US. New Jersey Worker and Community Right-to-Know Act
Boron (CAS 7440-42-8)
Magnesium (CAS 7439-95-4)

US. Pennsylvania Worker and Community Right-to-Know Law
Magnesium (CAS 7439-95-4)

US. Rhode Island RTK
Not regulated.

US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.
<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date: 27-March-2015

Revision date: -

Version #: 01

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

HMIS® ratings:
- Health: 2
- Flammability: 0
- Physical hazard: 0

References:
- NLM: Hazardous Substances Data Base
- IARC: International Agency for Research on Cancer
- Registry of Toxic Effects of Chemical Substances (RTECS)

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