1. Product and Company Identification

Material Name: BXL-2
Revision Date: 12/21/2011
Version #: 3
Product Use: Borate crosslinker.
Manufacturer / Supplier: FRAC TECH SERVICES LLC
2500 HWY 62 West
Chickasha, OK 73018
US
General information: 1-405-222-2300


2. Hazards Identification

Physical State: Liquid.
Appearance: Clear, colorless liquid.
Emergency Overview: DANGER!
Causes skin and eye burns. Causes digestive tract burns. Mist or vapor irritating to eyes and respiratory tract.

OSHA regulatory status: This product is hazardous according to OSHA 29 CFR 1910.1200.

Routes of exposure: Inhalation. Eyes. Skin. Ingestion.

Eyes: Causes eye burns.
Skin: Causes skin burns.
Inhalation: Causes respiratory tract irritation.
Ingestion: Causes digestive tract burns.

Potential environmental effects: The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>10555-76-7</td>
<td>0 - 25</td>
</tr>
<tr>
<td>Boric acid</td>
<td>10043-35-3</td>
<td>0 - 15</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>1310-58-3</td>
<td>3 - 12</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

First aid procedures:

Eye Contact
Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.

Skin Contact
Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Inhalation
Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Ingestion
Call a physician or poison control center immediately. DO NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration.

Notes to physician: Not available.
5. Fire Fighting Measures

Flammable Properties

No unusual fire or explosion hazards noted.

Extinguishing media

Suitable extinguishing media


Unsuitable extinguishing media

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Specific Hazards arising from the Chemical

Carbon oxides.

Firefighting equipment / instructions

Not available.

Specific Methods

Not available.

Hazardous combustion products

Not available.

6. Accidental Release Measures

Personal precautions

Wear appropriate personal protective equipment (See Section 8).

Methods for cleaning up

Absorb spill with vermiculite or other inert material, then place in a container for chemical waste for proper disposal.

Large Spills: Flush area with water. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

7. Handling and Storage

Handling

Do not get in eyes, on skin, on clothing. Avoid breathing material. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Storage

Keep container tightly closed. Store away from incompatible materials, such as acids (See Section 10).

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>Not available. 2</td>
<td>Not available. 6</td>
</tr>
<tr>
<td>Boric acid</td>
<td>Not available. 2</td>
<td>Not available. 6</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>Not available. 2</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

US. OSHA Table Z-1 Limits for Air Contaminates (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boric acid</td>
<td>Not available.</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
### Canada. Alberta OELs (Occupational Health Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boric acid</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>Not available.</td>
<td>2 (Ceiling)</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boric acid</td>
<td>Not available.</td>
<td>2 (Inhalable Fraction)</td>
<td>Not available.</td>
<td>6 (Inhalable Fraction)</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>Not available.</td>
<td>2 (Ceiling)</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents) Components

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boric acid</td>
<td>Not available.</td>
<td>2 (Inhalable Fraction)</td>
<td>Not available.</td>
<td>6 (Inhalable Fraction)</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>Not available.</td>
<td>2 (Ceiling)</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) Components

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boric acid</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>Not available.</td>
<td>2 (Ceiling)</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Mexico. Occupational Exposure Limit Values
9. Physical and Chemical Properties

Appearance: Clear, colorless liquid.
Color: Colorless
Odor: Odorless
Odor threshold: Not available.
Physical State: Liquid.
Form: Colorless liquid.
pH: 12.1 1%v/v
Melting point: Not available.
Freezing point: 20 °F (-6.7 °C)
Boiling point: 210.2 °F (99 °C)
Flash point: Not available.
Evaporation rate: 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: 1.17 (25 °C)
Solubility (water): Complete.
Partition coefficient (n-octanol/water) Not available.
Auto-ignition temperature Not available.
Decomposition temperature Not available.
Bulk Density 9.76 lb/gal
VOC Not available.
Viscosity Not available.
Percent volatile Not available.

10. Chemical Stability  Reactivity Information

Chemical Stability Material is stable under normal conditions.
Conditions to avoid None known.
Incompatible material Strong oxidizing agents. Acids.
Hazardous decomposition products No hazardous decomposition products are known.
Possibility of hazardous reaction Hazardous polymerization does not occur.

11. Toxicology Information

Toxicological Data

Components Test Results
Sodium metaborate Acute Oral LD50 Rat: 2330 mg/kg
Boric acid Acute Dermal LD50 Rabbit: > 2000 mg/kg
                               Acute Oral LD50 Rat: 2660 mg/kg
Potassium hydroxide Acute Oral LD50 Rat: 273 mg/kg

Sensitization No sensitizing effects known.

Carcinogenicity

Sodium metaborate A4 Not classifiable as a human carcinogen.
Boric acid A4 Not classifiable as a human carcinogen.
Potassium hydroxide Not available.

Epidemiology Not available.

Mutagenicity Not available.

Reproductive effects

A human study of occupationally exposed Borate worker population showed no adverse reproductive effects. Animal studies indicate that Boric Acid reduces or inhibits sperm production, causes testicular atrophy, and, when given to pregnant animals during gestation, may cause developmental changes. These feed studies were conducted under chronic exposure conditions leading to doses well in excess of those that could occur through inhalation of dust in the occupational setting.

Teratogenicity Not available.
Further Information
Causes skin and eye burns. Causes digestive tract burns. Mist or vapor irritating to eyes and respiratory tract.

12. Ecological Information
Ecotoxicological data

<table>
<thead>
<tr>
<th>Components</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metaborate</td>
<td>LC50 Fish: 74 mg/l 96 hours</td>
</tr>
<tr>
<td>Boric acid</td>
<td>LC50 Bonytail (Gila elegans): &gt; 100 mg/l 96 hours</td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>LC50 Western mosquitofish (Gambusia affinis): 80 mg/l 96 hours</td>
</tr>
</tbody>
</table>

Ecotoxicity
The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

Persistence and degradability
No data available.

Bioaccumulation / Accumulation
No data available.

Mobility in environmental media
No data available.

Partition coefficient (n-octanol/water)
Not available.

13. Disposal Considerations

Waste codes
Not available.

Disposal instructions
Dispose of contents/container in accordance with local/ regional/ national/ international regulations. When this product as supplied is to be discarded as waste, it does not meet the definition of a RCRA waste under 40 CFR 261.

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN3266</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper shipping name</td>
<td>Corrosive liquid, basic, inorganic, n.o.s. (Potassium Hydroxide 12%)</td>
</tr>
<tr>
<td>Hazard class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>III</td>
</tr>
<tr>
<td>Labels required</td>
<td>8</td>
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<tr>
<td>DOT Reportable Quantity:</td>
<td>1000</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
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<tr>
<td>Special provisions</td>
<td>IB3, T7, TP1, TP28</td>
</tr>
<tr>
<td>Packaging exceptions</td>
<td>154</td>
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<td>Packaging non bulk</td>
<td>203</td>
</tr>
<tr>
<td>Packaging bulk</td>
<td>241</td>
</tr>
<tr>
<td>ERG number</td>
<td>154</td>
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</table>

IATA

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN3266</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper shipping name</td>
<td>Corrosive liquid, basic, inorganic, n.o.s. (Potass</td>
</tr>
<tr>
<td>Hazard class</td>
<td>8</td>
</tr>
</tbody>
</table>
Packing group III
Additional information
ERG code 8L

IMDG
UN number UN3266
Proper shipping name Corrosive liquid, basic, inorganic, n.o.s. (Potass
Hazard class 8
Packing group III
EmS No F-A, S-B
IMDG Additional information:

15. Regulatory Information
US federal regulation This product is hazardous according to OSHA 29 CFR 1910.1200.
CERCLA (Superfund) Reportable Potassium hydroxide: 1000
Quantity:

Superfund amendments and Reauthorization Act of 1986 (SARA)

<table>
<thead>
<tr>
<th>Hazard Categories</th>
<th>Immediate Hazard</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Pressure Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactivity Hazard</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Section 302 extremely hazardous substance (40 CRF 355, Appendix A): No
Section 311/312 (40 CFR 370): No
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15): Not controlled

Inventory Status

<table>
<thead>
<tr>
<th>Country</th>
<th>Inventory Name</th>
<th>On Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>AICS</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>DSL</td>
<td>No</td>
</tr>
<tr>
<td>Canada</td>
<td>NDSL</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>IECSC</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>EINECS</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>ELINCS</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>ENCS</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>ECL</td>
<td>No</td>
</tr>
<tr>
<td>New Zealand</td>
<td>NZI</td>
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</tr>
<tr>
<td>United States / Puerto Rico</td>
<td>TSCA</td>
<td>No</td>
</tr>
<tr>
<td>Philippines</td>
<td>PICCS</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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

WHMIS Information

WHMIS status Controlled
WHMIS classification E - Corrosive
State Regulation

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


16. Other Information

Further Information

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

HMIS® ratings

Health: 3
Flammability: 1
Physical Hazard: 0

A HMIS® rating including an * indicates a chronic hazard.

NFPA ratings

Health: 3
Flammability: 1
Instability: 0

Disclaimer

Seller warrants that the goods described herein shall conform to the seller's published specifications for such good. The goods described herein and the information relating to them is intended for use solely by buyers that have the necessary industrial skill, competence and knowledge to use these goods for their intended purposes. Buyers should undertake sufficient examination, verification and testing prior to use of the goods to determine the suitability and utility of the goods for Buyer's particular purposes. Buyer acknowledges that the conditions of use and uses of the good(s) are beyond the control of Seller. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSES WHATSOEVER WITH RESPECT TO THE GOODS BEING SOLD HEREUNDER. BUYER ACKNOWLEDGES THAT THE GOODS ARE BEING SOLD “AS IS.” BUYER FURTHER ACKNOWLEDGES THAT THERE HAVE BEEN NO REPRESENTATIONS CONCERNING THE GOODS BEING SOLD HEREUNDER OTHER THAN WHAT ARE EXPRESSLY SET FORTH AND CONTAINED HEREIN.

Issue Date

12/21/2011