Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/ Trade Name</th>
<th>Boric acid</th>
</tr>
</thead>
</table>
| Manufacturer            | SPECTRUM LABORATORY PRODUCTS INC.  
14422 S. SAN PEDRO STREET  
GARDENA, CA 90248         |
| CAS#                    | 10043-35-3 |
| RTECS                   | ED4550000  |
| TSCA                    | TSGA 8(b) inventory: Boric acid |
| Supplier                | SPECTRUM LABORATORY PRODUCTS INC.  
14422 S. SAN PEDRO STREET  
GARDENA, CA 90248         |

Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Boric acid</td>
<td>10043-35-3</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients

Boric acid:
- ORAL (LD50): Acute: 2660 mg/kg [Rat], 3450 mg/kg [Mouse].
- DERMAL (LD50): Acute: 2000 mg/kg [Rabbit].
- DUST (LC50): Acute: >0.16 mg/l 4 hours [Rat].

Section 3. Hazards Identification

Potential Acute Health Effects
Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Potential Chronic Health Effects
Hazardous in case of skin contact (permeator), of ingestion.
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH.
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance may be toxic to kidneys, lungs, upper respiratory tract, skin, bones.
Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Continued on Next Page
Section 4. First Aid Measures

### Eye Contact
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

### Skin Contact
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

### Serious Skin Contact
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

### Inhalation
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

### Serious Inhalation
Not available.

### Ingestion
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

### Serious Ingestion
Not available.

Section 5. Fire and Explosion Data

### Flammability of the Product
Non-flammable.

### Auto-Ignition Temperature
Not applicable.

### Flash Points
Not applicable.

### Flammable Limits
Not applicable.

### Products of Combustion
Not available.

### Fire Hazards in Presence of Various Substances
Not applicable.

### Explosion Hazards in Presence of Various Substances
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

### Fire Fighting Media and Instructions
Not applicable.

### Special Remarks on Fire Hazards
Not available.

### Special Remarks on Explosion Hazards
A mixture of potassium and boric acid may explode on impact. A mixture of boric acid and acetic anhydride will explode when heated to 58-60 C.

Section 6. Accidental Release Measures

### Small Spill
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

### Large Spill
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

### Precautions
Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as alkalis.

### Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Continued on Next Page
Section 8. Exposure Controls/Personal Protection

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
TWA: 2 STEL: 6 (mg/m³) from ACGIH (TLV) [United States]
TWA: 2 STEL: 6 (mg/m³) [Canada]
Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Sol. (Powdered solid.)</th>
<th>Odor</th>
<th>Odorless.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>61.83 g/mole</td>
<td>Taste</td>
<td>Bitter. (Slight.)</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>5.2 [Acidic.]</td>
<td>Color</td>
<td>White.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>300°C (572°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting Point</td>
<td>169°C (336.2°F)-171 deg. C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.435-1.5 (Water = 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>The product is more soluble in oil; log(oil/water) = 0.175</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ionicity (in Water)</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water, methanol.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in hot water, methanol. Partially soluble in cold water. Very slightly soluble in acetone.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 10. Stability and Reactivity Data

Stability
The product is stable.

Instability Temperature
Not available.

Conditions of Instability
High temperatures, dust generation, incompatible materials.

Incompatibility with various substances
Reactive with alkalis.

Corrosivity
Not available.

Special Remarks on Reactivity
Incompatible with Potassium, Acetic Anhydride. Reacts with basic materials to form borate salts.

Special Remarks on Corrosivity
Not available.

Polymerization
Will not occur.

Continued on Next Page
### Section 11. Toxicological Information

#### Routes of Entry
Absorbed through skin. Inhalation. Ingestion.

#### Toxicity to Animals

**WARNING:** THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
- Acute oral toxicity (LD50): 2660 mg/kg [Rat].
- Acute dermal toxicity (LD50): 2000 mg/kg [Rabbit].
- Acute toxicity of the dust (LC50): >0.16 mg/l 4 hours [Rat].

#### Chronic Effects on Humans
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH.
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.
May cause damage to the following organs: kidneys, lungs, upper respiratory tract, skin, bones.

#### Other Toxic Effects on Humans
Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

#### Special Remarks on Toxicity to Animals
Not available.

#### Special Remarks on Chronic Effects on Humans
May cause adverse reproductive effects (fertility, fetotoxicity) based on animal studies. May affect genetic material.
May cause teratogenic effects based on animal studies.

#### Special Remarks on other Toxic Effects on Humans
Acute Potential Health Effects:
- **Skin:** May cause skin irritation. It can be absorbed through damaged (broken) or abraded skin in harmful amounts. If absorbed through skin it can cause system effects similar to acute ingestion and affect behavior/central nervous system, sense organs, metabolism, the gastrointestinal tract, and the respiratory tract (respiratory depression)
- **Eyes:** Dust causes eye irritation.
- **Inhalation:** Dust causes respiratory tract and mucous membrane irritation. Symptoms may include, nasal and throat irritation, dryness of throat, dry or productive cough, nose bleeds, shortness of breath, chest pain/chest tightness.
- **Ingestion:** Severe and fatal poisonings have rarely been reported following acute ingestion. However acute ingestion can cause digestive/gastrointestinal tract irritation with nausea, vomiting, diarrhea, dehydration. This may be followed by lowered body temperature (hypothermia) or fever (hyperthermia), red skin rash and affects on behavior/brain/Central Nervous System/nervous system (excitement, wakefulness or depression, restlessness, lethargy, weakness, somnolence, headache, dizziness, lightheadedness, drowsiness, nervousness, extreme irritability, delirium, altered reflexes, confusion, alteration in consciousness (described as "clouded"), convulsions, collapse, unconsciousness, coma), cardiovascular system (hypotension, dysrhythmia, arrhythmias), blood (anemia, leukopenia), liver (hepatomegaly, jaundice, transient elevation in liver function tests), urinary system (kidneys - acute renal failure, oliguria) and endocrine system. Metabolic acidosis, coughing, and cyanosis accompanied by a weak, rapid pulse may also occur. Death may occur from circulatory collapse or shock.

Chronic Potential Health Effects:
- Severe and fatal poisonings are more common following repeated dermal application to abraded or burned skin and chronic ingestion.
- Boric acid can accumulate in the body (brain, bone) with prolonged or repeated dermal exposure and chronic ingestion. It can cause borism. Borism is a sign of systemic uptake of boron-containing compounds and is characterized by dry skin, skin eruptions, eczema, and gastric disturbances such as nausea, hypermotility, vomiting, and anorexia and weight loss. Prolonged or repeated dermal application and chronic ingestion may also cause other symptoms similar to acute ingestion, and skin absorption. Chronic ingestion may also cause red tongue, patchy alopecia, cracked lips, conjunctivitis. Prolonged or repeated skin contact may also cause dermatitis.

### Section 12. Ecological Information

#### Ecotoxicity
Ecotoxicity in water (LC50): 1020 mg/l 72 hours [Fish (Carassius auratus)]. 115-153 mg/l 48 hours [Daphnia (daphnia magna)].

#### BOD5 and COD
Not available.

#### Products of Biodegradation
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

#### Toxicity of the Products of Biodegradation
The product itself and its products of degradation are not toxic.

#### Special Remarks on the Products of Biodegradation
Not available.

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*Continued on Next Page*
Section 13. Disposal Considerations

Waste Disposal

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification

Not a DOT controlled material (United States).

Identification

Not applicable.

Special Provisions for Transport

Not applicable.

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations

TSCA 8(b) inventory: Boric acid

California Proposition 65

Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations


EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 233-139-2).

Canada: Listed on Canadian Domestic Substance List (DSL).

China: Listed on National Inventory.

Japan: Listed on National Inventory (ENCS).

Korea: Listed on National Inventory (KECI).

Philippines: Listed on National Inventory (PICCS).

Australia: Listed on AICS.

Other Classifications

WHMIS (Canada) CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC) R60- May impair fertility.

R61- May cause harm to the unborn child.

S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.)

National Fire Protection Association (U.S.A.)

Health 2

Flammability 0

Personal Protection E

Specific hazard

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

Continued on Next Page
Boric acid

Section 16. Other Information

MSDS Code B3780

References Not available.

Other Special Considerations Major Uses: Weatherproofing Wood; nickling baths; for printing and dyeing; for impregnating wicks; in the manufacturer of cements, crockery, porcelains, enamels, class borates (inorganic borate salts), leather, carpets, hats, soaps, artificial gems; in painting; in photography; flame retardant in wood and textiles; additive for glass fibers; catalyst for alcohol production; insecticidal.

Validated by Sonia Owen on 4/24/2013.

CALL (310) 516-8000

Notice to Reader
All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user’s responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.