

## SAFETY DATA SHEET

Preparation Date: 07/13/2015

Revision Date: 09/21/2018

Revision Number: G3

### 1. IDENTIFICATION

**Product identifier**

**Product code:** F1075  
**Product Name:** FLUOBORIC ACID, REAGENT

**Other means of identification**

**Synonyms:** Borate(1-), tetrafluoro-, hydrogen  
 Borofluoric acid  
 Acide fluoborique (French)  
 Ácido fluobórico (Spanish)  
 Hydrofluoboric acid  
 Hydrogen tetrafluoroborate  
 Hydrogen tetrafluoroborate(1-)  
 Fluoroboric acid

**CAS #:** 16872-11-0  
**RTECS #** ED2685000  
**CI#:** Not available

**Recommended use of the chemical and restrictions on use**

**Recommended use:** Catalyst for acetal synthesis and cellulose esters. Metal surface cleaning agent. an aluminum electrolytic finishing agent. Stripping solution. Intermediate in making Fluoroborate salt.

**Uses advised against** No information available

**Supplier:** Spectrum Chemical Mfg. Corp  
 14422 South San Pedro St.  
 Gardena, CA 90248  
 (310) 516-8000

**Order Online At:** <https://www.spectrumchemical.com>  
**Emergency telephone number** Chemtrec 1-800-424-9300  
**Contact Person:** Martin LaBenz (West Coast)  
**Contact Person:** Ibad Tirmiz (East Coast)

### 2. HAZARDS IDENTIFICATION

**Classification**

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

|                                   |                           |
|-----------------------------------|---------------------------|
| Acute toxicity - Oral             | Category 3                |
| Skin corrosion/irritation         | Category 1 Sub-category B |
| Serious eye damage/eye irritation | Category 1                |

**Label elements**

**Danger**

**Hazard statements**

Toxic if swallowed  
Causes severe skin burns and eye damage



**Hazards not otherwise classified (HNOC)**

Not Applicable

**Other hazards**

Not available

**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
Do not breathe dust/fume/gas/mist/vapors/spray  
Wear protective gloves/protective clothing/eye protection/face protection

**Precautionary Statements - Response**

*Immediately call a POISON CENTER or doctor/physician*  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse  
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.  
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician  
Rinse mouth  
Do NOT induce vomiting

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Components     | CAS-No.    | Weight % |
|----------------|------------|----------|
| Fluoboric Acid | 16872-11-0 | 100      |

**4. FIRST AID MEASURES**

**First aid measures**

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**General Advice:** National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**Skin Contact:** Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

**Eye Contact:** Flush eyes with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

**Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **WARNING!** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

**Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**  
Corrosive  
Severe skin irritation  
Causes severe skin burns  
Severe eye irritation  
Vapors irritating to eyes and respiratory tract  
Choking sensation  
May cause coughing and shortness of breath  
Severe over-exposure can result in death  
Inflammation of the eye is characterized by redness, watering and itching  
Skin contact may result in redness, pain, inflammation, itching, scaling  
blistering

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician:** Treat symptomatically.

**Protection of first-aiders**

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

**5. FIRE-FIGHTING MEASURES**

**Extinguishing Media**

**Suitable Extinguishing Media:** The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

**Unsuitable Extinguishing Media:** No information available.

**Specific hazards arising from the chemical**

**Hazardous Combustion Products:** If it is involved in a fire the following can be released:  
Hydrogen fluoride. Borane/Boron oxides.

**Specific hazards:** Contact with metals may evolve flammable hydrogen gas.

## Special Protective Actions for Firefighters

|   |   |
|---|---|
| <b>Specific Methods:</b>                              | No information available.   |
| <b>Special Protective Equipment for Firefighters:</b> | As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear |

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

**Personal Precautions:** Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

**Methods for containment** Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up** Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Clean contaminated surface thoroughly.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

#### **Technical Measures/Precautions:**

Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials.

#### **Safe Handling Advice**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Do not ingest. Handle in accordance with good industrial hygiene and safety practice.

### Conditions for safe storage, including any incompatibilities

#### **Technical Measures/Storage Conditions:**

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

#### **Incompatible Materials:**

Metals  
Bases

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

### **National occupational exposure limits**

#### **United States**

| Components     | CAS-No.    | OSHA                | NIOSH | ACGIH               | AIHA WEEL |
|----------------|------------|---------------------|-------|---------------------|-----------|
| Fluoboric Acid | 16872-11-0 | 2.5 mg/3 TWA (as F) | None  | 2.5 mg/3 TWA (as F) | None      |

## Canada

| Components     | CAS-No.    | Canada - Alberta    | Canada - British Columbia | Canada - Ontario    | Canada - Quebec       |
|----------------|------------|---------------------|---------------------------|---------------------|-----------------------|
| Fluoboric Acid | 16872-11-0 | 2.5 mg/3 TWA (as F) | 2.5 mg/3 TWA (as F)       | 2.5 mg/3 TWA (as F) | 2.5 mg/3 TWAEV (as F) |

## Australia and Mexico

| Components     | CAS-No.    | Australia           | Mexico              |
|----------------|------------|---------------------|---------------------|
| Fluoboric Acid | 16872-11-0 | 2.5 mg/3 TWA (as F) | 2.5 mg/3 TWA (as F) |

### Appropriate engineering controls

#### Engineering measures to reduce exposure:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

### Individual protection measures, such as personal protective equipment

#### Personal Protective Equipment

**Eye protection:** Goggles or Face-shield.

**Skin and body protection:** Chemical resistant apron  
Long sleeved clothing  
Gloves  
If working with large quantities:  
Chemical resistant protective suit  
Boots

**Respiratory protection:** Respiratory protection is not necessary for normal handling. Good room ventilation or use of local exhaust (fume hood) is sufficient. Use a vapor respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapor, inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical state:**  
Liquid

**Appearance:**  
No information available.

**Color:**  
Colorless.

**Odor:**  
Odorless.

**Taste**  
No information available.

**Formula:**  
HBF<sub>4</sub>

**Molecular/Formula weight (g/mole):**  
87.81

**Flammability:**  
No information available

**Flashpoint (°C/°F):**  
No information available.

**Flash Point Tested according to:**  
Not available

**Autoignition Temperature (°C/°F):**  
No information available

**Lower Explosion Limit (%):**  
No information available

**Upper Explosion Limit (%):**  
No information available

**Melting point/range(°C/°F):**  
-75°C/ -103°F

**Decomposition temperature(°C/°F):**  
No information available

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**Boiling point/range(°C/°F):**  
130°C/ 266°F

**Bulk density:**  
No information available

**Density (g/cm3):**  
No information available

**Specific gravity:**  
1.84

**pH:**  
No information available

**Vapor pressure @ 20°C (kPa):**  
0.7

**Evaporation rate:**  
No information available

**Vapor density:**  
3

**VOC content (g/L):**  
No information available

**Odor threshold (ppm):**  
No information available

**Partition coefficient  
(n-octanol/water):**  
No information available

**Viscosity:**  
No information available

**Miscibility:**  
No information available

**Solubility:**  
Easily soluble in cold water  
Easily soluble in hot water

## 10. STABILITY AND REACTIVITY

### Reactivity

Reactive with metals  
Contact with metals may evolve flammable hydrogen gas  
Reactive with alkalis

### Chemical stability

**Stability:** Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization does not occur

**Conditions to avoid:** Incompatible materials.

**Incompatible Materials:** Metals  
Bases

**Hazardous decomposition products:** Hydrogen fluoride. Boron oxides.

### Other Information

**Corrosivity:** Extremely corrosive in presence of aluminum  
Slightly corrosive in presence of stainless steel (304)  
Slightly corrosive in presence of stainless steel (316)

**Special Remarks on Corrosivity:** Minor corrosive effect on bronze

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

**Principal Routes of Exposure:**  
Skin. Eyes.

### Acute Toxicity

### Component Information

Fluoboric Acid

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|         |            |
|---------|------------|
| CAS-No. | 16872-11-0 |
|---------|------------|

**LD50/oral/rat** = 100 - 200 mg/kg Oral LD50 Rat; 100 mg/kg Oral LD50 Rat  
**LD50/oral/mouse** = 50 mg/kg  
**LD50/dermal/rabbit** = No information available  
**LD50/dermal/rat** = No information available  
**LC50/inhalation/rat** = No information available  
**LC50/inhalation/mouse** = No information available  
**Other LD50 or LC50 information** = No information available

#### Product Information

**LD50/oral/rat** =  
**VALUE- Acute Tox Oral** = 100 mg/kg

**LD50/oral/mouse** =  
**Value - Acute Tox Oral** = 50 mg/kg

**LD50/dermal/rabbit**  
**VALUE-Acute Tox Dermal** = No information available

**LD50/dermal/rat**  
**VALUE -Acute Tox Dermal** = No information available

**LC50/inhalation/rat**  
**VALUE-Vapor** = No information available  
**VALUE-Gas** = No information available  
**VALUE-Dust/Mist** = No information available

**LC50/Inhalation/mouse**  
**VALUE-Vapor** = No information available  
**VALUE - Gas** = No information available  
**VALUE - Dust/Mist** = No information available

#### Symptoms

**Skin Contact:** Corrosive. Causes severe irritation and burns.

**Eye Contact:** Corrosive. Causes severe eye irritation and possible burns. Possible eye damage.

**Inhalation** Causes respiratory tract irritation with possible chemical burns. Symptoms may include coughing and shortness of breath. It may cause pulmonary edema.

**Ingestion** Harmful if swallowed. Causes digestive tract/gastrointestinal tract burns with nausea, vomiting, diarrhea, loss of appetite, headache, weakness, ataxia, somnolence, convulsions, collapse, and possible death. May affect the kidneys. May affect the blood.

**Aspiration hazard** No information available.

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Chronic Toxicity** Prolonged or repeated ingestion may affect the kidneys. Prolonged or repeated ingestion may affect the blood (anemia). Prolonged or repeated ingestion may affect the blood (leukopenia). It may cause discoloration of teeth, malaise, weight loss.

**Sensitization:** No information available.

**Mutagenic Effects:** No information available

**Carcinogenic effects:** Not considered carcinogenic.

| Components     | CAS-No.    | IARC       | ACGIH - Carcinogens | NTP        | OSHA HCS - Carcinogens | Australia - Notifiable Carcinogenic Substances | Australia - Prohibited Carcinogenic Substances |
|----------------|------------|------------|---------------------|------------|------------------------|--|--|
| Fluoboric Acid | 16872-11-0 | Not listed | Not listed          | Not listed | Not listed             | Not listed                                     | Not listed                                     |

*ACGIH (American Conference of Governmental Industrial Hygienists)*

*IARC (International Agency for Research on Cancer)*

*NTP (National Toxicology Program)*

*OSHA (Occupational Safety and Health Administration of the US Department of Labor)*

**Reproductive toxicity** No data is available

**Reproductive Effects:** No information available

**Developmental Effects:** No information available

**Teratogenic Effects:** No information available

### Specific Target Organ Toxicity

**STOT - single exposure** No information available.

**STOT - repeated exposure** No information available.

**Target Organs:** Lungs. Mucous membrane.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

*Fluoboric Acid - 16872-11-0*

**Freshwater Fish Species Data:** 2600 mg/L LC50 Brachydanio rerio 96 h static 1 20 mg/L LC50 Carassius auratus 72 h 1

**Persistence and degradability:** No information available

**Bioaccumulative potential:** No information available.

**Mobility:** No information available.

## 13. DISPOSAL CONSIDERATIONS

### Disposal Methods

#### **Waste from residues / unused products:**

Waste must be disposed of in accordance with Federal, State and Local regulation.

#### **Contaminated packaging:**

Empty containers should be taken for local recycling, recovery or waste disposal

| Components     | CAS-No.    | RCRA - F Series Wastes | RCRA - K Series Wastes | RCRA - P Series Wastes | RCRA - U Series Wastes |
|----------------|------------|------------------------|------------------------|------------------------|------------------------|
| Fluoboric Acid | 16872-11-0 | None                   | None                   | None                   | None                   |

## 14. TRANSPORT INFORMATION

**Product code:** F1075

**Product name:** FLUOBORIC ACID,  
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**DOT**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Subsidiary Class:** No information available  
**Packing group:** II  
**Emergency Response Guide Number:** 154  
**Marine Pollutant:** No data available  
**DOT RQ (lbs):** No information available  
**Special Provisions:** A6, A7, B2, B15, IB2, N3, N34, T7, TP2  
**Symbol(s):** No information available  
**Description:** UN1775, Fluoroboric acid, 8, II

**TDG (Canada)**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Subsidiary Risk:** No information available  
**Packing Group:** II  
**Marine Pollutant:** No Information available  
**Description:** UN1775, Fluoroboric acid, 8, II

**ADR**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Packing Group:** II  
**Subsidiary Risk:** No information available  
**Description:** UN1775, Fluoroboric acid, 8, II

**IMO / IMDG**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Subsidiary Risk:** No information available  
**Packing Group:** II  
**Marine Pollutant:** No information available  
**EMS:** F-A  
**Description:** UN1775, Fluoroboric acid, 8, II

**RID**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Subsidiary Risk:** No information available  
**Packing Group:** II  
**Description:** UN1775, Fluoroboric acid, 8, II

**ICAO**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Subsidiary Risk:** No information available  
**Packing Group:** II  
**Description:** UN1775, Fluoroboric acid, 8, II

**IATA**

**UN-No:** UN1775  
**Proper Shipping Name:** Fluoroboric acid  
**Hazard Class:** 8  
**Subsidiary Risk:** No information available  
**Packing Group:** II  
**ERG Code:** 8L  
**Special Provisions** No information available  
**Description:** UN1775, Fluoroboric acid, 8, II

|                                   |
|-----------------------------------|
| <b>15. REGULATORY INFORMATION</b> |
|-----------------------------------|

**International Inventories**

| Components            | CAS-No.    | U.S. TSCA         | KOREA KECL          | Philippines (PICCS) | Japan ENCS     | CHINA   | Australia (AICS) | EINECS-No.           |
|-----------------------|------------|-------------------|---------------------|---------------------|----------------|---------|------------------|----------------------|
| <i>Fluoboric Acid</i> | 16872-11-0 | Present<br>ACTIVE | Present<br>KE-33424 | Present             | Present (1)-46 | Present | Present          | Present<br>240-898-3 |

**U.S. Regulations***Fluoboric Acid***New Jersey RTK Hazardous Substance List:** sn 0934**California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.****Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

**Chemicals Known to the State of California to Cause Reproductive Toxicity:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

| Components            | CAS-No.    | Carcinogen | Developmental Toxicity | Male Reproductive Toxicity | Female Reproductive Toxicity: |
|-----------------------|------------|------------|------------------------|----------------------------|-------------------------------|
| <i>Fluoboric Acid</i> | 16872-11-0 | Not Listed | Not Listed             | Not Listed                 | Not Listed                    |

**CERCLA/SARA**

| Components            | CAS-No.    | CERCLA - Hazardous Substances and their Reportable Quantities | Section 302 Extremely Hazardous Substances and TPQs | Section 302 Extremely Hazardous Substances and RQs | Section 313 - Chemical Category | Section 313 - Reporting de minimis |
|-----------------------|------------|---|---|--|---------------------------------|------------------------------------|
| <i>Fluoboric Acid</i> | 16872-11-0 | None  | None  | None   | None                            | None                               |

**U.S. TSCA**

| Components            | CAS-No.    | TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS) | TSCA 8(d) -Health and Safety Reporting |
|-----------------------|------------|---|--|
| <i>Fluoboric Acid</i> | 16872-11-0 | Not Applicable  | Not Applicable                         |

**Canada****WHMIS 2015 - GHS Classifications**

WHMIS 2015 Hazard Classification Information:

The WHMIS 2015 classification of this product has not been validated or reviewed yet.

**Product code:** F1075**Product name:** FLUOBORIC ACID,  
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**Canada Hazardous Products Regulation** This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

### Inventory

| Components     | CAS-No.    | Canada (DSL) | Canada (NDSL) |
|----------------|------------|--------------|---------------|
| Fluoboric Acid | 16872-11-0 | Present      | Not Listed    |

| Components     | CAS-No.    | CEPA Schedule I - Toxic Substances                          |
|----------------|------------|---|
| Fluoboric Acid | 16872-11-0 | Not listed  |
| Components     | CAS-No.    | CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting |
| Fluoboric Acid | 16872-11-0 | Not listed  |

### EU Classification

#### EU GHS - SV - CLP 1272/2008

| Components     | CAS-No.    | EU GHS - SV - CLP (1272/2008)   |
|----------------|------------|---|
| Fluoboric Acid | 16872-11-0 | Skin corrosion/irritation - Skin Corr. 1B: H314 Causes severe skin burns and eye damage. (C >= 25 %)<br>Skin corrosion/irritation - Skin Corr. 1B: H314 Causes severe skin burns and eye damage. (C >= 25 %); Skin corrosion/irritation - Skin Irrit. 2: H315 Causes skin irritation. (10 % <= C <25 %); Serious Eye Damage/Eye Irritation - Eye Irrit. 2: H319 Causes serious eye irritation. (10 % <= C <25 %)<br>%009-010-00-X |

#### EU - CLP (1272/2008)

#### R-phrase(s)

R34 - Causes burns.

#### S -phrase(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S27 - Take off immediately all contaminated clothing.

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

S 1/2 - Keep locked up and out of the reach of children.

| Components     | CAS-No.    | Classification | Concentration Limits:                     | Safety Phrases    |
|----------------|------------|----------------|---|-------------------|
| Fluoboric Acid | 16872-11-0 | C; R34         | 10%<=C<25% Xi;<br>R36/38<br>25%<=C C; R34 | S: (1/2)-26-27-45 |

The product is classified in accordance with Annex VI to Directive 67/548/EEC

#### Indication of danger:

C - Corrosive.



## 16. OTHER INFORMATION

**Preparation Date:** 07/13/2015  
**Revision Date:** 09/21/2018  
**Prepared by:** Sonia Owen

**Disclaimer:** All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) 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 SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. 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 SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

**End of Safety Data Sheet**