1. Product and Company Identification

- **Material name**: Worthington High Activity Stainless Steel Soldering Flux
- **Version #**: 01
- **Issue date**: 18-June-2013
- **Revision date**: -
- **Supersedes date**: -
- **CAS #**: Mixture
- **MSDS Number**: WC019
- **Product use**: Soldering flux.

**Manufacturer information**

- **Manufacturer/Supplier**: Worthington Cylinder Corporation
  
  - **Address**: 1690 Lowery Street
  
  - Winston-Salem, NC 27101
  
  - United States
  
  - **Contact Person**: Melissa Grimes
  
  - Melissa.Grimes@worthingtonindustries.com
  
  - **Telephone Number**: 336-831-8601
  
  - CHEMTREC - 24 HOURS: (800) 424-9300

2. Hazards Identification

- **Physical state**: Liquid.
- **Appearance**: Clear, colorless liquid.
- **Emergency overview**: DANGER
  
  Causes skin and eye burns. Harmful if swallowed. Irritating to respiratory system.

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

**Potential health effects**

- **Routes of exposure**
  
  - Fume inhalation. Ingestion. Skin contact. Eye contact.

- **Eyes**: Causes eye burns.

- **Skin**: Causes skin burns.

- **Inhalation**: Irritating to respiratory system. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the respiratory tract.

- **Ingestion**: Harmful if swallowed. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.

- **Target organs**: Eyes. Skin. Respiratory system.

- **Signs and symptoms**: Symptoms of overexposure include: pulmonary edema, abdominal pain, vomiting, eye damage, and skin burn.

- **Potential environmental effects**: Very toxic to aquatic organisms. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc chloride</td>
<td>7646-85-7</td>
<td>30 - 45</td>
</tr>
<tr>
<td>Ammonium chloride</td>
<td>12125-02-9</td>
<td>4 - 15</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td>3 - 15</td>
</tr>
<tr>
<td>Ammonium bifluoride</td>
<td>1341-49-7</td>
<td>3 - 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

First aid procedures

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact
Remove and isolate contaminated clothing and shoes. Immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately. Wash clothing separately before reuse.

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion
Rinse mouth and drink plenty of water. Induce vomiting, if person is conscious. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Notes to physician
Treat symptomatically.

General advice
Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties
Hydrogen fluoride, a corrosive and toxic gas, and other potentially hazardous fluorine-containing compounds may be released upon combustion.

Extinguishing media

Suitable extinguishing media
Dry chemical, foam, carbon dioxide.

Unsuitable extinguishing media
None.

Protection of firefighters

Specific hazards arising from the chemical
Fire may produce irritating, corrosive and/or toxic gases.

Protective equipment and precautions for firefighters
Firefighters should wear full protective clothing including self contained breathing apparatus.

Fire fighting equipment/instructions
Move containers from fire area if you can do it without risk.

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

6. Accidental Release Measures

Personal precautions
Use personal protection as recommended in Section 8 of the MSDS. Avoid inhalation of dust and contact with skin and eyes.

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

Methods for cleaning up
Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Neutralize with Sodium Bicarbonate or Soda Ash. Flush with water to dilute. For waste disposal, see Section 13 of the MSDS.

7. Handling and Storage

Handling
Wear appropriate personal protective equipment (See Section 8). Use only with adequate ventilation. Do not breathe fumes. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

Storage
Store in plastic containers in cool area away from heat. Do not store in glass or porcelain containers. Store away from incompatible materials.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>STEL</td>
<td>2 mg/m³</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

Worthington High Activity Stainless Steel Soldering Flux

CPH MSDS NA

913394     Version #: 01     Revision date:  -    Issue date: 18-June-2013
### US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>PEL</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>Ceiling</td>
<td>7 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>PEL</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

### US. OSHA Table Z-2 (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>Dust.</td>
</tr>
</tbody>
</table>

### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Ceiling</td>
<td>3 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>STEL</td>
<td>2 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>TWA</td>
<td>1 mg/m³</td>
<td></td>
<td>Fume.</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>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Ceiling</td>
<td>2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>STEL</td>
<td>2 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>TWA</td>
<td>1 mg/m³</td>
<td></td>
<td>Fume.</td>
</tr>
</tbody>
</table>

### Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Ceiling</td>
<td>2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>STEL</td>
<td>2 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>TWA</td>
<td>1 mg/m³</td>
<td></td>
<td>Fume.</td>
</tr>
</tbody>
</table>
Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>Ceiling</td>
<td>7.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>TWA</td>
<td>5 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Mexico. Occupational Exposure Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td>Ceiling</td>
<td>7 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>STEL</td>
<td>5 ppm</td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td>TWA</td>
<td>2 mg/m³</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

Exposure guidelines
Use personal protective equipment as required. Keep working clothes separately.

Engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment
Eye / face protection
Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, if needed.

Skin protection
Chemical resistant gloves. Rubber apron.

Respiratory protection
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

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. Provide eyewash station and safety shower.

9. Physical & Chemical Properties

Appearance
Clear, colorless liquid.

Physical state
Liquid.

Form
Liquid.

Color
Clear, colorless.

Odor
Odorless.

Odor threshold
Not available.

pH
0.1

Vapor pressure
Not available.

Vapor density
Not available.

Boiling point
219.2 °F (104 °C)

Melting point/Freezing point
32 °F (0 °C)

Solubility (water)
Unlimited.
Specific gravity 1.5
Flash point Not available.
Flammability limits in air, upper, % by volume Not available.
Flammability limits in air, lower, % by volume Not available.
Auto-ignition temperature Not available.
Evaporation rate 0.6 (Butyl acetate = 1)
Percent volatile 55 %

10. Chemical Stability & Reactivity Information
Chemical stability Material is stable under normal conditions.
Conditions to avoid Contact with metals. Excessive heat or cold.
Possibility of hazardous reactions Hazardous polymerization does not occur.

11. Toxicological Information

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium bifluoride (CAS 1341-49-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>130 mg/kg</td>
</tr>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>1650 mg/kg</td>
</tr>
<tr>
<td>Hydrochloric acid (CAS 7647-01-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>1449 mg/kg</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>3124 mg/l, 1 Hours</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>900 mg/kg</td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&lt;= 1.975 mg/l, 10 Minutes</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>350 mg/kg</td>
</tr>
</tbody>
</table>

Sensitization Not available.
Acute effects Causes burns. Be aware that symptoms of chemical pneumonia (shortness of breath) may occur several hours after exposure. Harmful if swallowed.
Local effects Causes burns. Irritating to respiratory system.
Chronic effects Can cause delayed lung injury.
Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH Carcinogens
Ammonium bifluoride (CAS 1341-49-7) A4 Not classifiable as a human carcinogen.
12. Ecological Information

Ecotoxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worthington High Activity Stainless Steel Soldering Flux (CAS Mixture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish</td>
</tr>
<tr>
<td><strong>Components</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc chloride (CAS 7646-85-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>American or virginia oyster (Crassostrea virginica)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Rainbow trout, donaldson trout (Oncorhynchus mykiss)</td>
</tr>
</tbody>
</table>

Ecotoxicity
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Persistence and degradability
No data is available on the degradability of this product.

Bioaccumulation / Accumulation
Not available.

13. Disposal Considerations

Waste codes
D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

Disposal instructions
Dispose waste and residues in accordance with applicable federal, state, and local regulations.

Waste from residues / unused products
Dispose in accordance with all applicable regulations.

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

14. Transport Information

DOT

Basic shipping requirements:
UN number: UN3264
Proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Zinc chloride, Hydrochloric acid)
Hazard class: 8
Packing group: III

Additional information:
Special provisions: IB3, T7, TP1, TP28
Packaging exceptions: 154
Packaging non bulk: 203
Packaging bulk: 241

IATA
UN number: UN3264
UN proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Zinc chloride, Hydrochloric acid)
Transport hazard class(es): 8
Packing group: III
ERG code: 8L

IMDG
UN number: UN3264
UN proper shipping name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Zinc chloride, Hydrochloric acid)
Transport hazard class(es): 8
Packing group: III
EmS: F-A, S-B
TDG
UN number  UN3264
Proper shipping name  CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Zinc chloride, Hydrochloric acid)
Hazard class  8
Packing group  III
Marine pollutant  D
Special provisions  16

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.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Hydrochloric acid (CAS 7647-01-0)

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity
Hydrochloric acid (CAS 7647-01-0)  5000 lbs

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity
Hydrochloric acid (CAS 7647-01-0)  500 lbs

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration
Ammonium bifluoride (CAS 1341-49-7)  1.0 %
Ammonium chloride (CAS 12125-02-9)  1.0 %
Hydrochloric acid (CAS 7647-01-0)  1.0 %
Zinc chloride (CAS 7646-85-7)  1.0 % N982

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance
Ammonium bifluoride (CAS 1341-49-7)  Listed.
Ammonium chloride (CAS 12125-02-9)  Listed.
Hydrochloric acid (CAS 7647-01-0)  Listed.
Zinc chloride (CAS 7646-85-7)  N982 Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)
Zinc chloride: 1000
Ammonium chloride: 5000
Hydrochloric acid: 5000
Ammonium bifluoride: 100

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 (40 CFR 355, Appendix A)  No

SARA 311/312 Hazardous chemical  Yes

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)  Not controlled

Canadian regulations  This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status  Controlled
WHMIS classification  D1A - Immediate/Serious-VERY TOXIC
D2B - Other Toxic Effects-TOXIC
### WHMIS labeling

**Inventory status**

<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 (NDLS)</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).

**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**

- Ammonium bifluoride (CAS 1341-49-7) Listed.
- Ammonium chloride (CAS 12125-02-9) Listed.
- Hydrochloric acid (CAS 7647-01-0) Listed.
- Zinc chloride (CAS 7646-85-7) Listed.

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

**US - New Jersey RTK - Substances: Listed substance**

- Ammonium bifluoride (CAS 1341-49-7) Listed.
- Ammonium chloride (CAS 12125-02-9) Listed.
- Hydrochloric acid (CAS 7647-01-0) Listed.
- Zinc chloride (CAS 7646-85-7) Listed.

**US - Massachusetts RTK - Substance List**

- Ammonium bifluoride (CAS 1341-49-7) Listed.
- Ammonium chloride (CAS 12125-02-9) Listed.
- Hydrochloric acid (CAS 7647-01-0) Listed.
- Zinc chloride (CAS 7646-85-7) Listed.

**US. New Jersey Worker and Community Right-to-Know Act**

- Hydrochloric acid (CAS 7647-01-0) 500 lbs
- Zinc chloride (CAS 7646-85-7) 500 lbs

**US. Pennsylvania RTK - Hazardous Substances**

- Ammonium bifluoride (CAS 1341-49-7) Listed.
- Ammonium chloride (CAS 12125-02-9) Listed.
- Hydrochloric acid (CAS 7647-01-0) Listed.
- Zinc chloride (CAS 7646-85-7) Listed.

**Mexico regulations**

This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

**16. Other Information**

**Further information**

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

**HMIS® ratings**

- Health: 3
- Flammability: 0
- Physical hazard: 0
NFPA ratings

Health: 3
Flammability: 0
Instability: 0

Disclaimer

All information in this Material Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user’s responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.