1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE M-AD 1660 AERO known as ALODINE 1660 ADDITIVE
IDH number: 1006651
Product type: Conversion coating

Company address:
Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Contact information:
Telephone: 248.583.9300
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Physical state: Liquid
Color: Yellow
Odor: Odorless

HMSI:
HEALTH: *3
FLAMMABILITY: 0
PHYSICAL HAZARD: 0

Personal Protection: See MSDS Section 8

DANGER—CORROSIVE!: CAUSES EYE, SKIN AND RESPIRATORY TRACT BURNS.
MAY BE HARMFUL IF SWALLOWED OR ABSORBED THROUGH SKIN.

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects

Inhalation: Mists, vapors or liquid may cause severe irritation or burns. Inhalation of mists or vapors may produce upper airway edema, wheezing, pulmonary edema, pneumonitis and respiratory failure.

Skin contact: Corrosive to the skin. Contact with the skin or mucous membranes may cause severe irritation and burns. Liquid or vapor can cause fluoride-type irritation or burns which may not be immediately painful or visible.

Eye contact: This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.

Ingestion: This product may produce corrosive damage to the gastrointestinal tract if it is swallowed.

Existing conditions aggravated by exposure: Eye, skin, and respiratory disorders.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>CAS NUMBER</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrafluoroboric acid</td>
<td>16872-11-0</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Hexafluorozirconic acid</td>
<td>12021-95-3</td>
<td>5 - 10</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Inhalation: If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

Skin contact: Rinse with large amounts of running water. GET MEDICAL ATTENTION IMMEDIATELY! If iced 0.13% benzalkonium chloride (Zephiran) solution or 2.5% calcium gluconate gel are available, the rinsing may be limited to 5 minutes, with the soaks or gel applied as soon as the rinsing is stopped. If benzalkonium chloride or calcium gluconate gel is not available, rinsing must continue until medical treatment is provided.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: DO NOT induce vomiting unless directed to do so by medical personnel. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.

5. FIRE FIGHTING MEASURES

Flash point: Not applicable
Autoignition temperature: Not applicable
Flammable/Explosive limits - lower: Not applicable
Flammable/Explosive limits - upper: Not applicable
Extinguishing media: Use media appropriate for surrounding material.
Special firefighting procedures: Wear full protective clothing. Wear self-contained breathing apparatus.
Unusual fire or explosion hazards: This product is an aqueous mixture which will not burn.
Hazardous combustion products: Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate personal protective equipment.
Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Do not breathe gas/fumes/vapor/spray. Do not take internally. For industrial use only.

Storage: Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Manufacturer recommends storing above 4.4 ºC (40 ºF). If stored outside of this range, mix well before using.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>AIHA WEEL</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrafluoroboric acid</td>
<td>2 mg/m³ TWA Inhalable fraction. 6 mg/m³ STEL Inhalable fraction. 2.5 mg/m³ TWA (as F)</td>
<td>2.5 mg/m³ TWA (as F)</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Hexafluorozirconic acid</td>
<td>5 mg/m³ TWA (as Zr) 10 mg/m³ STEL (as Zr)</td>
<td>5 mg/m³ TWA (as Zr)</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**Engineering controls:**
Use general ventilation and use local exhaust, where possible, in confined or enclosed spaces.

**Respiratory protection:**
If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

**Eye/face protection:**
Wear chemical goggles; face shield (if splashing is possible).

**Skin protection:**
Chemical resistant, impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical state: Liquid
- Color: Yellow
- Odor: Odorless
- Odor threshold: Not available.
- pH: < 1
- Vapor pressure: Not determined
- Boiling point/range: > 100 °C (> 212°F) calculated
- Melting point/ range: Not determined
- Vapor density: Not determined
- Flash point: Not applicable
- Flammable/Explosive limits - lower: Not applicable
- Flammable/Explosive limits - upper: Not applicable
- Autoignition temperature: Not applicable
- Evaporation rate: Not available
- Solubility in water: Complete
- Partition coefficient (n-octanol/water): Not determined
- VOC content: Not applicable

10. STABILITY AND REACTIVITY

- Stability: Stable at normal conditions.
- Hazardous reactions: Will not occur.
- Hazardous decomposition products: May liberate hydrogen fluoride.
- Incompatible materials: This product may react with strong alkalies. This material will react with glass, concrete, certain metals, silica containing materials, rubber, leather, and many organics.
- Conditions to avoid: No data available.
11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>NTP Carcinogen</th>
<th>IARC Carcinogen</th>
<th>OSHA Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrafluoroboric acid</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Hexafluorozirconic acid</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>Health Effects/Target Organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrafluoroboric acid</td>
<td>Blood, Central nervous system, Corrosive, Eyes, Irritant, Kidney, Muscle, Skin, Teeth, Less weight gain and food intake.</td>
</tr>
<tr>
<td>Hexafluorozirconic acid</td>
<td>No Records</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

Ecological information: No data available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: This product, if discarded directly, would be a characteristic RCRA corrosive waste (D002).

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR)
- Proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Hexafluoro zirconic acid, Tetrafluoroboric acid)
- Hazard class or division: 8
- Identification number: UN 3264
- DOT Reportable quantity: Chromic acid

International Air Transportation (ICAO/IATA)
- Proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Hexafluoro zirconic acid, Tetrafluoroboric acid)
- Hazard class or division: 8
- Identification number: UN 3264
- Packing group: II

Water Transportation (IMO/IMDG)
- Proper shipping name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Hexafluoro zirconic acid, Tetrafluoroboric acid)
- Hazard class or division: 8
- Identification number: UN 3264
- Packing group: II

15. REGULATORY INFORMATION

United States Regulatory Information
- TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
- TSCA 12(b) Export Notification: None above reporting de minimus
- CERCLA/SARA Section 302 EHS: None above reporting de minimus
- CERCLA/SARA Section 311/312: Immediate Health, Delayed Health
- CERCLA/SARA 313: None above reporting de minimus

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California Proposition 65: This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

WHMIS hazard class: D.2.B, E

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: New Material Safety Data Sheet format.

Prepared by: Regulatory Affairs

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