1. Product and Company Identification

Material name: ZINC CHLORIDE
Version #: 02
Revision date: 08-30-2011
CAS #: 7646-85-7
Product Codes: J.T.Baker: 4320, 4321, 4322, 4326
Macron: 8772, 8780
Synonym(s): Zinc Chloride, Zinc Dichloride, Zinc Butter
Manufacturer: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway
Suite #200
Center Valley, PA 18034
US
Customer Service: 855-282-6867
24 Hour Emergency: 908-859-2151
Chemtrec: 800-424-9300

2. Hazards Identification

Emergency overview: DANGER
Corrosive. Causes severe skin and eye burns. Causes digestive tract burns. Harmful if inhaled or swallowed. Dust or vapor extremely irritating to the eyes and respiratory tract.

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

Potential health effects:

Routes of exposure: Ingestion. Inhalation. Skin contact. Eye contact.

Eyes: Corrosive. Causes severe eye burns. Dust or splashes from the mixture may cause permanent eye damage.

Skin: Corrosive. Causes severe skin burns.

Inhalation: Harmful if inhaled. Corrosive. May cause damage to mucous membranes in nose, throat, lungs and bronchial system.

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


Chronic effects: Corrosive. Prolonged contact causes serious tissue damage. May cause liver damage based on animal data.

Potential environmental effects: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic 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>97 - 100</td>
</tr>
</tbody>
</table>

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 immediately.
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 clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.

Inhalation
Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.

Notes to physician
Keep victim under observation. Treat symptomatically.

General advice
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Show this safety data sheet to the doctor in attendance. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties
The product is not flammable. No unusual fire or explosion hazards noted.

Extinguishing media
Suitable extinguishing media
Water spray. Carbon dioxide (CO2). Dry chemical powder. Foam.

Unsuitable extinguishing media
None known.

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

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Specific methods
In the event of fire and/or explosion do not breathe fumes.

6. Accidental Release Measures

Personal precautions
Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions
Do not allow to enter drains, sewers or watercourses. Prevent further leakage or spillage if safe to do so.

Methods for containment
Prevent entry into waterways, sewers, basements or confined areas. Stop leak if you can do so without risk. Dike the spilled material, where this is possible.

Methods for cleaning up
Avoid dust formation.

Large Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.

Small Spills: Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Neutralize spill area and washings with soda ash or lime. Collect in a non-combustible container for prompt disposal.

7. Handling and Storage

Handling
Wear appropriate personal protective equipment. Do not breathe dust or vapor. Do not get in eyes, on skin, on clothing. Do not taste or swallow. Wash thoroughly after handling. Do not eat, drink or smoke when using the product. See Section 8 of the MSDS for Personal Protective Equipment.
8. Exposure Controls / Personal Protection

ACGIH

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
</table>
| ZINC CHLORIDE (7646-85-7)| STEL | 2.0000 mg/m³ | Fume.
|                          | TWA  | 1.0000 mg/m³ | Fume.

Occupational exposure limits

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
</table>
| ZINC CHLORIDE (7646-85-7)| PEL  | 1.0000 mg/m³ | Fume.

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.

Skin protection
Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.

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. Respirator type: High-efficiency particulate respirator with full facepiece.

General hygiene considerations
Provide eyewash station and safety shower. 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.

General
Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties

Appearance
Crystalline. Granular.

Color
White.

Odor
Odorless.

Odor threshold
Not available.

Physical state
Solid.

Form
Crystalline. Granular.

pH
1 (6 M Solution)

Melting point
554 °F (290 °C)

Freezing point
554 °F (290 °C)

Boiling point
1349.6 °F (732 °C)

Flash point
Not available.

Flammability limits in air, upper, % by volume
Not available.

Flammability limits in air, lower, % by volume
Not available.

Specific gravity
2.907

Relative density
Not available.

Solubility (water)
4350 g/l at 70°F

Partition coefficient
(n-octanol/water)
Not available
### 10. Chemical Stability & Reactivity Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemical stability</strong></td>
<td>Stable under normal temperature conditions.</td>
</tr>
<tr>
<td><strong>Conditions to avoid</strong></td>
<td>Do not allow water to get into container because of reaction.</td>
</tr>
<tr>
<td><strong>Hazardous decomposition products</strong></td>
<td>Hydrogen chloride. Zinc oxide.</td>
</tr>
<tr>
<td><strong>Possibility of hazardous reactions</strong></td>
<td>Hazardous polymerization does not occur.</td>
</tr>
</tbody>
</table>

### 11. Toxicological Information

<table>
<thead>
<tr>
<th>Toxicological data</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td><strong>Acute Inhalation LC50</strong> Rat: 1.975 mg/l 10.00 Minutes</td>
</tr>
<tr>
<td>ZINC CHLORIDE (7646-85-7)</td>
<td>Acute Oral LD50 Rat: 350 mg/kg</td>
</tr>
</tbody>
</table>

#### Sensitization
- Not a skin sensitizer.

#### Acute effects
- Harmful if inhaled or swallowed. Strongly corrosive. May cause deep tissue damage. Vapors are corrosive. After some hours, injured persons may develop serious shortness of breath and lung edema.

#### Local effects
- Causes severe burns.

#### Chronic effects
- Corrosive. Prolonged contact causes serious tissue damage. May cause liver damage based on animal data.

#### Carcinogenicity
- This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

#### Skin corrosion/irritation
- Corrosive to skin and eyes.

#### Epidemiology
- No epidemiological data is available for this product.

#### Mutagenicity
- No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

#### Neurological effects
- No data available for this product.

#### Reproductive effects
- Contains no ingredient listed as toxic to reproduction

#### Symptoms and target organs
- Corrosive effects.

#### Further Information
- Danger of very serious irreversible effects. Symptoms may be delayed.

### 12. Ecological Information

<table>
<thead>
<tr>
<th>Ecotoxicological data</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td><strong>EC50 Water flea (Daphnia magna): 0.1 mg/l 48.00 hours</strong></td>
</tr>
<tr>
<td>ZINC CHLORIDE (7646-85-7)</td>
<td><strong>LC50 Inland silverside (Menidia beryllina): 0.03 mg/l 96.00 hours</strong></td>
</tr>
</tbody>
</table>

#### Ecotoxicity
- Expected to be very toxic to aquatic organisms. May cause long-term adverse effects in the environment. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

#### Persistence and degradability
- The product is not readily biodegradable.

#### Partition coefficient (n-octanol/water)
- Not available
13. Disposal Considerations

Disposal Instructions
Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.

Contaminated packaging
Since emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

14. Transport Information

DOT
Basic shipping requirements:
- UN number: UN2331
- Proper shipping name: Zinc chloride, anhydrous
- Hazard class: 8
- Packing group: III

Additional information:
- Special provisions: IB8, IP3, T1, TP33

IATA
Basic shipping requirements:
- UN number: 2331
- Proper shipping name: Zinc chloride, anhydrous
- Hazard class: 8
- Packing group: III

IMDG
Basic shipping requirements:
- UN number: 2331
- Proper shipping name: ZINC CHLORIDE, ANHYDROUS
- Hazard class: 8
- Packing group: III

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.
US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration
ZINC CHLORIDE (CAS 7646-85-7) 1.0 % N982

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance
ZINC CHLORIDE (CAS 7646-85-7) Listed. N982

CERCLA (Superfund) reportable quantity
ZINC CHLORIDE: 1000.0000

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 311 hazardous chemical
Yes

Clean Water Act (CWA)
Hazardous substance
Priority pollutant
Toxic pollutant

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 (NDSL)</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 that all components of this product comply with the inventory requirements 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 - New Jersey Community RTK (EHS Survey): Reportable threshold
ZINC CHLORIDE (CAS 7646-85-7) 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance
ZINC CHLORIDE (CAS 7646-85-7) Listed.

Saf-T-Data
- Health: 3 - Severe (Life)
- Flammability: 0 - None
- Reactivity: 1 - Slight
- Contact: 3 - Severe (Corrosive)
- Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
- Storage Color Code: W - White (Corrosive)

16. Labeling Info

Label Hazard Warning
DANGER

Corrosive. Causes severe skin and eye burns. Causes digestive tract burns. Harmful if inhaled or swallowed. Dust or vapor extremely irritating to the eyes and respiratory tract.
**Label Precautions**
Do not breathe dust. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation. Keep container closed. Wash thoroughly after handling.

**Label First Aid**
Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED:
Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance.

**17. Other Information**

**NFPA ratings**
- Health: 3
- Flammability: 0
- Instability: 0

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