Material Safety Data Sheet

Section 1. Product and Company Identification

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Mercuric Chloride, GR</th>
<th>Product Code</th>
<th>MX0345</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>EMD Chemicals Inc.</td>
<td>Effective Date</td>
<td>3/9/2006</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 70</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>480 Democrat Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gibbstown, NJ 08027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior to January 1, 2003 EMD Chemicals Inc. was EM Industries, Inc. or EM Science, Division of EM Industries, Inc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>manufacturer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For More Information Call</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>856-423-6300 Technical Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday-Friday: 8:00 AM - 5:00 PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synonym</td>
<td>MERCURY BICHLORIDE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material Uses</td>
<td>Analytical reagent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical Family</td>
<td>Inorganic salt.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercuric Chloride</td>
<td>7487-94-7</td>
<td>100</td>
</tr>
</tbody>
</table>

Section 3. Hazards Identification

Physical State and Appearance

<table>
<thead>
<tr>
<th>Physical State and Appearance</th>
<th>Solid. (Powdered solid. Crystals solid.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Overview</td>
<td>DANGER! POISON! MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE EYE BURNS. LABORATORY TESTS INDICATE MATERIAL MAY BE CARCINOGENIC. VERY TOXIC TO AQUATIC ORGANISMS. CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, GASTROINTESTINAL TRACT, RESPIRATORY TRACT, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA, MUSCLE TISSUE. MAY BE HARMFUL TO ENVIRONMENT IF RELEASED IN LARGE AMOUNTS. WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.</td>
</tr>
<tr>
<td>Routes of Entry</td>
<td>Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.</td>
</tr>
<tr>
<td>Potential Acute Health Effects</td>
<td>Eyes Extremely hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching. Hazardous in case of eye contact (corrosive). May cause burns.</td>
</tr>
</tbody>
</table>

Continued on Next Page
Mercuric Chloride, GR

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 immediately.

**Skin Contact**
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

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

**Ingestion**
If swallowed, 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 immediately.

Section 5. Fire Fighting Measures

**Flammability of the Product**
May be combustible at high temperature.

**Auto-ignition Temperature**
Not available.

**Flash Points**
Not available.

**Flammable Limits**
Not available.

**Products of Combustion**
These products are carbon oxides (CO, CO2), halogenated compounds. Some metallic oxides.

**Fire Hazards in Presence of Various Substances**
Not available.

**Explosion Hazards in Presence of Various Substances**
Risk of explosion of the product in presence of static discharge: No.  
Risk of explosion of the product in presence of mechanical impact: No.

**Fire Fighting Media and Instructions**
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Protective Clothing (Fire)**
Be sure to use an approved/certified respirator or equivalent.
**Section 6. Accidental Release Measures**

**Small Spill and Leak**
Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill and Leak**
Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**Spill Kit Information**
No specific spill kit required for this product.

**Section 7. Handling and Storage**

**Handling**
Do not ingest. Do not breathe dust. Do not get in eyes, on skin, or on clothing.

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

**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**

**Eyes**
Splash goggles.

**Body**
Synthetic apron.

**Respiratory**
Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

**Hands**
Gloves.

**Feet**
Not applicable.

**Protective Clothing (Pictograms)**

**Personal Protection in Case of a Large Spill**
Splash goggles. Full suit. Vapor and 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.

**Product Name** | **Exposure Limits**
--- | ---
Mercuric Chloride | INRS (France, 1996). Skin  
VME: 0.1 mg/m³ 8 hour(s).  
AFS (Sweden, 1996). Skin  
NGV: 0.03 mg/m³ 8 hour(s).  
Lijst Grenswaarden (Belgium, 2002). Skin  
VL: 0.025 mg/m³ 8 hour(s).  
SUVA (Switzerland, 2001).  
MAK: 0.1 mg/m³ 8 hour(s). Form: Dust  
MAK-Werte Liste (Germany, 2000).  
Spitzenbegrenzung: 1 mg/m³ 1 times per shift, 30 minute(s).
Mercuric Chloride, GR

MX0345

TWA: 0.1 mg/m³ 8 hour(s).

Arbejdstilsynet (Denmark, 2000). Skin
GV: 0.025 mg/m³ 8 hour(s).

INSHT (Spain, 2001). Skin
TWA: 0.025 mg/m³ 8 hour(s).

Työterveyslaitos (Finland, 2002). Skin
TWA: 0.05 mg/m³ 8 hour(s).

NAOSH (Ireland, 2002).
OEL: 0.025 mg/m³ 8 hour(s).

Arbeidstilsynet (Norway, 2001).
AN: 0.05 mg/m³ 8 hour(s).

ACGIH TLV (United States, 2002). Skin Notes: 1994-1995 Adoption
Identifies substances identified in the BEI documentations for
Methemoglobin inducers (for which methemoglobin is the principle
toxicity) and organophosphorous cholinesterase inhibitors are part of
this notation. Refers to Appendix A -- Carcinogens.
TWA: 0.03 mg/m³ 8 hour(s). Form: Inorganic

NIOSH REL (United States, 2001). Skin
CEIL: 0.1 mg/m³ Form: Other than Hg Vapor
TWA: 0.05 mg/m³ 10 hour(s). Form: Hg Vapor

CEIL: 0.1 mg/m³

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Color</td>
<td>White.</td>
</tr>
<tr>
<td>Physical State and Appearance</td>
<td>Solid. (Powdered solid. Crystals solid.)</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>271.49 g/mole</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>Cl₂-Hg</td>
</tr>
<tr>
<td>pH</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boiling/Condensation Point</td>
<td>301.9°C (575.4°F)</td>
</tr>
<tr>
<td>Melting/Freezing Point</td>
<td>276.9°C (530.4°F)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>5.4 (Water = 1)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>LogKₐw</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Partially soluble in water.</td>
</tr>
</tbody>
</table>

Continued on Next Page
Section 10. Stability and Reactivity

Stability and Reactivity
The product is stable.

Conditions of Instability
Not available.

Incompatibility with Various Substances
Not available.

Rem/Incompatibility
Not available.

Hazardous Decomposition Products
These products are halogenated compounds.

Hazardous Polymerization
Will not occur.

Section 11. Toxicological Information

RTECS Number: Mercuric Chloride OV9100000

Toxicity
Acute oral toxicity (LD_{50}): 1 mg/kg [Rat].
Acute dermal toxicity (LD_{50}): 41 mg/kg [Rat].

Chronic Effects on Humans
Not available.

Acute Effects on Humans
Extremely hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching. Hazardous in case of eye contact (corrosive). May cause burns. Extremely hazardous in case of skin contact (permeator, irritant). May be fatal if absorbed. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Extremely hazardous in case of inhalation (lung irritant). May be fatal if inhaled. Extremely hazardous in case of ingestion. May be fatal if swallowed.

Synergetic Products (Toxicologically)
Not available.

Irritancy
Draize Test (Rabbit):
Skin: 500mg/24h. Reaction: Severe.
Eye: 50 ug/24h severe

Sensitization
Not available.

Carcinogenic Effects
LABORATORY TESTS INDICATE MATERIAL MAY BE CARCINOGENIC.
Classified 3 by IARC

Toxicity to Reproductive System
Tests on laboratory animals for reproductive effects are cited in Registry of Toxic Effects on Chemical Substances (RTECS).

Teratogenic Effects
Not available.

Mutagenic Effects
Tests on laboratory animals for mutagenic effects are cited in Registry of Toxic Effects of Chemical Substances (RTECS).

Section 12. Ecological Information

Ecotoxicity
Ecotoxicity in water (LC50): 0.0015 mg/l [EC50, Intoxication], 48 hours [Daphnia (Daphnia magna)]. 0.0038 mg/l [EC50, Intoxication], 48 hours [Daphnia (Daphnia pulex)]. 0.0052 mg/l [EC50, Intoxication], 48 hours [Daphnia (Daphnia magna)]. 0.016 mg/l [LC50, Mortality], 96 hours [Fish (Oncorhynchus mykiss)]. 0.035 mg/l [LC50, Mortality], 96 hours [Daphnia (Daphnia magna)]. 0.04 mg/l [LC50, Mortality], 96 hours [Fish (Cyprinus carpio)].

BOD5 and COD
Not available.

Toxicity of the Products of Biodegradation
The products of degradation are as toxic as the product itself.

Continued on Next Page
Section 13. Disposal Considerations

EPA Waste Number D009   U151   D002

Specified Technology - Contact your local permitted waste disposal site (TSD) for permissible treatment sites. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

Section 14. Transport Information

DOT Classification
Proper Shipping Name: MERCURIC CHLORIDE
Hazard Class: 6.1
UN number: UN1624
Packing Group: II
RQ: Not applicable.

TDG Classification Not available.

IMO/IMDG Classification
Proper Shipping Name: MERCURIC CHLORIDE
Hazard Class: 6.1
UN number: UN1624
Packing Group: II
RQ: Not applicable.

ICAO/IATA Classification Not available.

Section 15. Regulatory Information

U.S. Federal Regulations
TSCA 8(b) inventory: Mercuric Chloride
SARA 302/304/311/312 extremely hazardous substances: Mercuric Chloride
SARA 302/304 emergency planning and notification: Mercuric Chloride
SARA 302/304/311/312 hazardous chemicals: Mercuric Chloride
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Mercuric Chloride:
Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
SARA 313 toxic chemical notification and release reporting: Mercuric Chloride
Clean Water Act (CWA) 307: Mercuric Chloride
Clean Water Act (CWA) 311: No products were found.
Clean air act (CAA) 112 accidental release prevention: No products were found.
Clean air act (CAA) 112 regulated flammable substances: No products were found.
Clean air act (CAA) 112 regulated toxic substances: No products were found.

WHMIS (Canada) Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
Class D-2A: Material causing other toxic effects (VERY TOXIC).
WHMIS Class D-2B: Material causing other toxic effects (TOXIC).

CEPA DSL: Mercuric Chloride
This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and the MSDS contains all required information.

International Regulations
EINECS Mercuric Chloride 231-299-8

DSCL (EEC) R28- Very toxic if swallowed.
R48/24/25- Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R34- Causes burns.
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
International Lists
- Australia (NICNAS): Mercuric Chloride
- China: Mercuric Chloride
- Germany water class: Mercuric Chloride
- Japan (MITI): Mercuric Chloride
- Korea (TCCL): Mercuric Chloride
- Philippines (RA6969): Mercuric Chloride
- China: Mercuric Chloride

State Regulations
- Pennsylvania RTK: Mercuric Chloride: (environmental hazard, generic environmental hazard)
- Massachusetts RTK: Mercuric Chloride
- New Jersey: Mercuric Chloride
- California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mercuric Chloride
- 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: Mercuric Chloride

Section 16. Other Information

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

Fire Hazard
- Health: 3
- Reactivity: 0
- Specific Hazard

Changed Since Last Revision +

Notice to Reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.