Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
E-Pik 219

Product Use
Copper Etchant and Activator.

Manufacturer Information
Electrochemical Products Inc.
17000 West Lincoln Ave
New Berlin, WI 53151
Phone: 262-786-9330
Emergency Phone #: Chemtrec #800-424-9300 (CCN7498)
E-mail: us-sales@epi.com
www.epi.com
Fax: 262-786-9403

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Skin Corrosion/Irritation - Category 1
Serious Eye Damage/Eye Irritation - Category 1
Respiratory Sensitization - Category 1A
Skin Sensitization - Category 1A

GHS Label Elements
Symbol(s)

Signal Word
Danger

Hazard Statement(s)
Causes severe skin burns and eye damage
May cause allergic or asthmatic symptoms or breathing difficulties if inhaled
May cause allergic skin reaction

**Precautionary Statement(s)**

**Prevention**
Wear protective gloves/protective clothing/eye protection/face protection
Wear respiratory protection
Wash thoroughly after handling
Contaminated work clothing must not be allowed out of the workplace
Do not breathe dusts or mists
Wear protective gloves

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

**Storage**
Store locked up

**Disposal**
Dispose of contents/container in accordance with local/regional/national/international regulations

**Other Hazards**
Causes severe eye, skin and respiratory tract irritation. Ingestion of this preparation is unlikely. However, ingestion may produce gastrointestinal irritation and disturbances. Inhalation may cause nose bleeds and irritation of the upper respiratory passages with coughing and discomfort.

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**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10058-23-8</td>
<td>Monopotassium peroxymonosulfate</td>
<td>30-50</td>
</tr>
<tr>
<td>7646-93-7</td>
<td>Potassium hydrogen sulfate</td>
<td>20-35</td>
</tr>
<tr>
<td>7778-80-5</td>
<td>Sulfuric acid, dipotassium salt</td>
<td>20-30</td>
</tr>
<tr>
<td>7727-21-1</td>
<td>Potassium persulfate</td>
<td>1-6</td>
</tr>
</tbody>
</table>
Section 4 - FIRST AID MEASURES

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

Skin
Immediately flush skin with lots of running water for 30 minutes. Remove contaminated clothing and shoes. Wash before reuse. Get immediate medical attention.

Eyes
Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

Ingestion
If swallowed, give milk or water to dilute. Seek medical attention immediately. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

Note to Physicians
None identified.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media
Water. Do not use carbon dioxide or other gas-filled fire extinguishers; they will have no effect on decomposing persulfates.

Special Hazards Arising from the Chemical
Will release oxygen when heated, intensifying a fire. Acidic mist may be present; self contained breathing apparatus should be used.

Hazardous Combustion Products
When heated over 570°, sulfur dioxide and sulfur trioxide are formed.

Fire Fighting Measures
Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. Firefighters should avoid inhaling any combustion products.

Section 6 - ACCIDENTAL RELEASE MEASURES
**Personal Precautions, Protective Equipment and Emergency Procedures**
Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this SDS. Isolate area. Keep unnecessary personnel away.

**Methods and Materials for Containment and Cleaning Up**
Sweep up solid. Flush liquid spills with low pressure water. Contain the discharged material, if this is without risk.

**Environmental Precautions**
Comply with Federal, State, and local regulations. Solutions greater than 3% by weight have a pH < 2.0, and may be a RCRA hazardous waste upon disposal due to the acidic pH characteristic of the solution. If approved, flush to sewer or waste treatment plant. Large quantities should be neutralized with soda ash.

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**Section 7 - HANDLING AND STORAGE**

**Precautions for Safe Handling**
Avoid getting this material into contact with your eyes. Wash thoroughly after handling. Avoid the formation of airborne dusts. Keep container tightly closed and store at room temperature.

**Conditions for Safe Storage, Including any Incompatibilities**
Store locked up
Keep the container tightly closed in original container and in a cool, well-ventilated place. Keep away from incompatible materials.

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**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Component Exposure Limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium persulfate</td>
<td>7727-21-1</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>0.1 mg/m3 TWA as Persulfate (related to Persulfates, inorganic, n.o.s.)</td>
</tr>
<tr>
<td>Magnesium carbonate</td>
<td>546-93-0</td>
</tr>
<tr>
<td>NIOSH:</td>
<td>10 mg/m3 TWAtotal dust; 5 mg/m3TWAreaspirable dust</td>
</tr>
<tr>
<td>OSHA (US):</td>
<td>15 mg/m3 TWAtotal dust; 5 mg/m3TWAreaspirable fraction (related to Magnesite (Mg(CO3)))</td>
</tr>
<tr>
<td>Mexico:</td>
<td>10 mg/m3TWA LMPE-PPT (related to Magnesite (Mg(CO3)))</td>
</tr>
</tbody>
</table>
Biological limit value
There are no biological limit values for any of this product's components.

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

Individual Protection Measures, such as Personal Protective Equipment

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

Skin Protection
Use of protective coveralls and long sleeves is recommended. Use of an impervious apron is recommended.

Respiratory Protection
Respirators: A NIOSH approved air-purifying respirator with an appropriate particulate cartridge or canister may be used under circumstances where airborne concentrations are expected to exceed exposure limits.

Glove Recommendations
Use of impervious gloves is recommended. Wear chemical impervious gloves.

Protective Materials
Eye wash fountain and emergency showers are recommended in the workplace. Use good industrial hygiene practices in handling this material.

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**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Odor</th>
<th>Odor Threshold</th>
<th>Melting Point</th>
<th>Freezing point</th>
<th>Boiling Point Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>White to Off White powder</td>
<td>Odorless</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Physical State</td>
<td>Color</td>
<td>pH</td>
<td>Boiling Point</td>
<td>Evaporation Rate</td>
<td>Flammability (solid, gas)</td>
</tr>
<tr>
<td>Powder</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>
Section 10 - STABILITY AND REACTIVITY

Reactivity
See section on incompatibility.

Chemical Stability
This is a stable material. Stable when handled and stored as indicated.

Possibility of Hazardous Reactions
Will not occur.

Conditions to Avoid
Avoid contact with extreme heat.

Incompatible Materials
The mixture of this product with compounds containing halides or active halogens (bromine, chlorine, iodine) can cause the release of the respective halogen gas, if moisture is present. Avoid these gases (bromine and chlorine) because they are very irritating to eyes and lungs even at low concentrations. Never mix concentrated product with dry or concentrated bromine-containing chemicals, such as bromates, bromides, or any concentrated bromine pool chemicals. Mixing concentrated product with dry or concentrated chlorine-containing chemicals, such as hypochlorites ("Hypo" for pools), sodium dichloroisocyanurate (dichlor), sodium triisocyanurate (trichlor) or with sodium chloride (salt), may cause the release of chlorine gas. Mixing with cyanides can cause release of hydrogen cyanide gas. Mixing with heavy metal salts such as those of cobalt, nickel, copper, or manganese can cause decomposition with release of oxygen and heat.

Hazardous decomposition products
Decomposes when heated or dampened, releasing oxygen and heat of decomposition.

Section 11 - TOXICOLOGICAL INFORMATION

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
Potassium hydrogen sulfate (7646-93-7)
Oral LD50Rat 2340 mg/kg
Sulfuric acid, dipotassium salt (7778-80-5)
Oral LD50Rat 6600 mg/kg
Potassium persulfate (7727-21-1)
Oral LD50Rat 802 mg/kg
Dermal LD50Rabbit >10000 mg/kg

Immediate Effects
No information on significant adverse effects.

Delayed Effects
No information on significant adverse effects.

Irritation/Corrosivity Data
No data available.

Respiratory Sensitization
No data available.

Dermal Sensitization
No data available.

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

Germ Cell Mutagenicity
No data available.

Reproductive Toxicity
No data available.

Specific Target Organ Toxicity - Single Exposure
No data available.

Specific Target Organ Toxicity - Repeated Exposure
No data available.

Aspiration hazard
No data available.

Medical Conditions Aggravated by Exposure
Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

<table>
<thead>
<tr>
<th>Component Analysis</th>
<th>Aquatic Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid,</td>
<td>7778-80-5</td>
</tr>
<tr>
<td>dipotassium salt</td>
<td></td>
</tr>
<tr>
<td>Fish:</td>
<td>LC50 96 h Lepomis macrochirus 653 mg/L; LC50 96 h</td>
</tr>
<tr>
<td></td>
<td>Lepomis macrochirus 3550 mg/L [static]; LC50 96 h</td>
</tr>
<tr>
<td></td>
<td>Pimephales promelas 510 - 880 mg/L [static]</td>
</tr>
<tr>
<td>Algae:</td>
<td>EC50 72 h Desmodesmus subspicatus 2900 mg/L IUCLID</td>
</tr>
<tr>
<td>Invertebrate:</td>
<td>EC50 48 h Daphnia magna 890 mg/L IUCLID</td>
</tr>
</tbody>
</table>

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of waste material in accordance with all applicable Federal, State or provincial and local environmental regulations. See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. Decomposes and releases toxic gases if heated. High heat can cause decomposition.

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: Corrosive Solid, n.o.s., (Contains: Acidic, Inorganic, n.o.s. (Monopersulfate Compound))
Hazard Class: 8
UN/NA #: 3260
Packing Group: II
Required Label(s): Corrosive

TDG Information:

Shipping Name: Corrosive Solid, n.o.s., (Contains: Acidic, Inorganic, n.o.s. (Monopersulfate Compound))
Hazard Class: 8
UN#: 3260
Packing Group: II
Required Label(s): Corrosive
Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations
None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium hydrogen sulfate</td>
<td>7646-93-7</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Potassium persulfate</td>
<td>7727-21-1</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Magnesium carbonate</td>
<td>546-93-0</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Not listed under California Proposition 65

Canadian WHMIS Ingredient Disclosure List (IDL)
Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL.

<table>
<thead>
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<th>Component</th>
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<td></td>
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<tr>
<td></td>
<td>1 %</td>
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</tr>
<tr>
<td>Potassium persulfate</td>
<td>7727-21-1</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>0.1 % (related to Persulfates)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Component Analysis - Inventory
Monopotassium peroxymonosulfate (10058-23-8)

<table>
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<tbody>
<tr>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Potassium hydrogen sulfate (7646-93-7)

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</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Section 16 - OTHER INFORMATION

HMIS Rating

Health: 3 Fire: 0 Reactivity: 1
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

NFPA Ratings

Health: 3 Fire: 0 Reactivity: 1
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™
Safety Data Sheet

Material Name: E-Pik 219

- ChemADVISOR’s Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.