Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
E-Kleen 154

Product Use
Acidic Metal Cleaner, Aluminum Etchant.

Details of the supplier of the safety data sheet
Electrochemical Products Inc.
17000 West Lincoln Ave
New Berlin, WI 53151
Phone: 262-786-9330
Emergency Phone #: NCEC (#EPI-29003) +1 202 464 2554, +44 1865 407333
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.
Acute Toxicity - Oral - Category 4
Acute Toxicity - Dermal - Category 3
Acute Toxicity - Inhalation - Vapor - Category 2
Skin Corrosion/Irritation - Category 1
Serious Eye Damage/Eye Irritation - Category 1

GHS Label Elements
Symbol(s)

Signal Word
Danger

Hazard Statement(s)
Harmful if swallowed.
Toxic in contact with skin.
Fatal if inhaled.  
Causes severe skin burns and eye damage.

**Precautionary Statement(s)**

**Prevention**
Use only outdoors or in a well-ventilated area. 
Wear protective gloves/protective clothing/eye protection/face protection. 
Do not breathe dust/fume/gas/mist/vapours/spray. 
Wear respiratory protection. 
Wash thoroughly after handling. 
Do not eat, drink or smoke when using this product.

**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. 
Take off immediately all contaminated clothing and wash it before reuse. 
Wash contaminated clothing before reuse. 
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. 
Immediately call a POISON CENTER or doctor. 
Specific treatment is urgent (see label).

**Storage**
Store in a well-ventilated place. Keep container tightly closed. 
Store locked up.

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

**Statement of Unknown Toxicity**
5.03% of the mixture consists of ingredient(s) of unknown acute toxicity.

**Other Hazards**
May be fatal if swallowed and enters airways.

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

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>25-45</td>
</tr>
<tr>
<td>7664-38-2</td>
<td>Phosphoric acid</td>
<td>40-60</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Surfactants</td>
<td>1-3</td>
</tr>
</tbody>
</table>
Safety Data Sheet

Material Name: E-Kleen 154

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>77-92-9</td>
<td>Citric acid</td>
</tr>
<tr>
<td>111-76-2</td>
<td>2-Butoxyethanol</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

Inhalation
Allow the victim to rest in a well ventilated area. Monitor for respiratory distress. Seek immediate medical attention.

Skin
If the chemical got onto the clothed portion of the body, remove the contaminated clothes, shoes, and jewelry, protecting your own hands and body. Place the victim under a deluge shower for at least 15 minutes. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap or epsom salts. If irritation persists, seek medical attention. Wash contaminated clothing before reusing, discard contaminated shoes.

Eyes
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek immediate medical attention.

Ingestion
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. If conscious, give lots of water, milk, or dilute solution of any soluble calcium or magnesium salt to rinse mouth and drink. Seek immediate medical attention.

Section 5 - FIRE FIGHTING MEASURES

Hazardous Combustion Products
Oxides of carbon. Irritating and toxic gases may be released during a fire.

Fire Fighting Measures
Dry chemical, foam, carbon dioxide, water fog.

Section 6 - ACCIDENTAL RELEASE MEASURES

Environmental Precautions
Dike the spill with sand or earth. Sweep up and shovel into suitable containers for disposal.
Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Wash thoroughly after handling.

Conditions for Safe Storage, Including any Incompatibilities
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Keep container tightly closed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>ACGIH limits</th>
<th>NIOSH limits</th>
<th>Europe limits</th>
<th>OSHA (US) limits</th>
<th>Mexico limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>7664-38-2</td>
<td>1 mg/m3 TWA</td>
<td>3 mg/m3 STEL</td>
<td>1 mg/m3 TWA</td>
<td>2 mg/m3 STEL</td>
<td>1 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>20 ppm TWA</td>
<td>5 ppm TWA ; 24 mg/m3 TWA</td>
<td>20 ppm TWA ; 98 mg/m3 TWA</td>
<td>20 ppm TWA ; 98 mg/m3 TWA</td>
<td>20 ppm TWA ; 98 mg/m3 TWA</td>
</tr>
</tbody>
</table>
Possibility of significant uptake through the skin
50 ppm STEL ; 246 mg/m³ STEL
OSHA (US): 50 ppm TWA ; 240 mg/m³ TWA
prevent or reduce skin absorption
Mexico: 26 ppm TWA VLE-PPT; 120 mg/m³ TWA VLE-PPT
75 ppm STEL [PPT-CT]; 360 mg/m³ STEL [PPT-CT]
Skin - potential for cutaneous absorption

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures
There are no biological limit values for any of this product's components.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
2-Butoxyethanol (111-76-2)
200 mg/g creatinine Medium: urine Time: end of shift Parameter: Butoxyacetic acid with hydrolysis

Engineering Controls
Use local exhaust ventilation.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection
Safety glasses or chemical goggles. It is generally recognized that contact lenses should not be worn when working with chemicals because they may contribute to the severity of an eye injury.

Skin Protection
The use of rubber gloves, long sleeved shirt and trousers are required.

Respiratory Protection
Wear a dust mask if dust is generated above exposure limits.

Glove Recommendations
The use of rubber gloves is recommended.

Protective Materials
Eye wash fountain and emergency showers are recommended.

---

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Clear solution.</th>
<th>Physical State</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Slight musty odor</td>
<td>Color</td>
<td>Colorless.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
<td>pH</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not available</td>
<td>Boiling Point</td>
<td>212 °F</td>
</tr>
<tr>
<td>Property</td>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezing point</td>
<td>32 °F (0 °C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>(Approx. equal to Water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>(Approx. equal to water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>1.3 - 1.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Completely</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
<td></td>
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</tr>
<tr>
<td>Density</td>
<td>Not available</td>
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</tr>
<tr>
<td>VOC</td>
<td>0</td>
<td></td>
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</tr>
<tr>
<td>Molecular Weight</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section 10 - STABILITY AND REACTIVITY**

**Reactivity**
Will not occur.

**Chemical Stability**
This is a stable material.

**Possibility of Hazardous Reactions**
Will not occur.

**Conditions to Avoid**
Avoid strong oxidizing agents. Avoid Strong reducing agents. This product may react with strong alkalies.

**Incompatible Materials**
None identified.

**Hazardous decomposition products**
None identified.
Thermal decomposition products
Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

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:
Water (7732-18-5)
Oral LD50 Rat >90 mL/kg
Phosphoric acid (7664-38-2)
Oral LD50 Rat 1530 mg/kg
Dermal LD50 Rabbit 2740 mg/kg
Inhalation LC50 Rat >850 mg/m³ 1 h
Citric acid (77-92-9)
Oral LD50 Rat 3 g/kg
2-Butoxyethanol (111-76-2)
Oral LD50 Rat 470 mg/kg
Dermal LD50 Rabbit 99 mg/kg
Inhalation LC50 Rat 450 ppm 4 h

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans</td>
</tr>
<tr>
<td>ACGIH:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IARC:</td>
<td></td>
<td>Monograph 88 [2006] (Group 3 (not classifiable))</td>
</tr>
<tr>
<td>DFG:</td>
<td></td>
<td>Category 4 (no significant contribution to human cancer)</td>
</tr>
</tbody>
</table>

Germ Cell Mutagenicity
No data available.

**Tumorigenic Data**
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**
No data available.

---

**Section 12 - ECOLOGICAL INFORMATION**

**Component Analysis - Aquatic Toxicity**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
</tr>
<tr>
<td>Fish:</td>
<td>LC50 96 h Lepomis macrochirus 1516 mg/L [static ]</td>
</tr>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
</tr>
<tr>
<td>Fish:</td>
<td>LC50 96 h Lepomis macrochirus 1490 mg/L [static ]; LC50 96 h Lepomis macrochirus 2950 mg/L</td>
</tr>
<tr>
<td>Invertebrate:</td>
<td>EC50 48 h Daphnia magna &gt;1000 mg/L EPA</td>
</tr>
</tbody>
</table>

---

**Section 13 - DISPOSAL CONSIDERATIONS**

**Disposal Methods**
Waste must be handled in accordance with all federal, state, provincial, and local regulations. Transport waste material to an authorized waste location, or incinerate under controlled conditions.

---

**Section 14 - TRANSPORT INFORMATION**
US DOT Information:
Shipping Name: Phosphoric acid, solution
Hazard Class: 8
UN/NA #: UN1805
Packing Group: III
Required Label(s): Corrosive

TDG Information:
Shipping Name: Phosphoric acid, solution
Hazard Class: 8
UN#: UN1805
Packing Group: III
Required Label(s): Corrosive

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>7664-38-2</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>CERCLA:</td>
<td>5000 lb final RQ ; 2270 kg final RQ</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

All components are on the U.S. EPA TSCA Inventory List. This product is in compliance with TSCA.

SARA Section 311/312 (40 CFR 370 Subparts B and C)
Acute Health: no Chronic Health: no Fire: no Pressure: no Reactivity: no

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>Water</td>
<td>7732-18-5</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Phosphoric acid</td>
<td>7664-38-2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Not listed under California Proposition 65

Canada Regulations
This material is a controlled product under Canadian WHMIS regulations.

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>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>7664-38-2</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
<td>Yes</td>
<td>Yes</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>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>Yes</td>
<td>Yes</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>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Component Analysis - Inventory

**Water (7732-18-5)**

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

**Phosphoric acid (7664-38-2)**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<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>Yes</td>
</tr>
</tbody>
</table>

**Citric acid (77-92-9)**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<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>Yes</td>
</tr>
</tbody>
</table>

**2-Butoxyethanol (111-76-2)**

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<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>Yes</td>
</tr>
</tbody>
</table>

---

### Section 16 - OTHER INFORMATION

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

NFPA Ratings
Health: 2 Fire: 0 Reactivity: 0
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; ENCS - Japan Existing and New Chemical Substance Inventory; 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; ISHL - Japan Industrial Safety and Health Law; JP - Japan; Kow - Octanol/water partition coefficient; KECL - Korea Existing Chemicals List; KECI - Korea Existing Chemicals Inventory; KECI - Korea Existing Chemicals Inventory; Kow - Octanol/water partition coefficient; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; 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; TCCA – Korea Toxic Chemicals Control Act.; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information
Disclaimer:
Reasonable care has been taken in the preparation of this information; however, the manufacturer makes no warranty whatsoever including the warranty of merchantability, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental, consequential, or other such damages resulting from its use or misuse.