1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: EKC1020™
General Use: Negative Photoresist Remover
Product Description: Organic Solvent Blend
Revision and Date: Revision H, November 8, 2005

MANUFACTURER
EKC Technology, Inc.
2520 Barrington Court
Hayward, CA 94545-1133
(510) 784-9105

EMERGENCY PHONE NUMBERS
(800) 424-9300
CHEMTREC
24 hours/day, 7 days/week

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>WT. %</th>
<th>CAS REGISTRY #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkylbenzene Sulfonic Acid</td>
<td>Proprietary 68584-22-5</td>
</tr>
<tr>
<td>Heavy Aromatic Solvent Naphtha</td>
<td>Proprietary 64742-94-5</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>Proprietary 91-20-3</td>
</tr>
</tbody>
</table>

EXPOSURE LIMITS 8 hrs. TWA (ppm)

<table>
<thead>
<tr>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>DUPONT AEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkylbenzene Sulfonic Acid</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Heavy Aromatic Solvent Naphtha</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>10 ppm</td>
<td>10 ppm</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Ruby red liquid with an aromatic odor. Causes skin and eye burns. Harmful if inhaled. May cause respiratory tract irritation. May be toxic to aquatic organisms.

POTENTIAL HEALTH EFFECTS

INHALATION
Harmful if inhaled. May cause irritation to the upper respiratory tract.

EYE CONTACT
Causes burns
SKIN CONTACT
Causes burns

INGESTION
Swallowing this material causes burns to the mouth, throat, and stomach.

TARGET ORGANS
Central nervous system, blood, heart, stomach, liver, bladder, kidneys, eyes, lungs, thyroid, spleen, and skin

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Overexposure may aggravate existing respiratory, blood, or liver conditions or dermatitis.

CARCINOGENICITY
- National Toxicology Program (NTP): Not listed
- IARC Monographs: Not listed
- OSHA: Not listed
- ACGIH: Not listed

POTENTIAL ENVIRONMENTAL EFFECTS
May be toxic to aquatic organisms.

4. FIRST AID MEASURES

INHALATION
Remove to fresh air immediately. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.

EYE CONTACT
Immediately flush eyes with water for at least 15 minutes. Have eyes examined and treated by a physician.

SKIN CONTACT
Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. If redness or irritation occurs, seek medical attention.

INGESTION
DO NOT INDUCE VOMITING. Seek immediate medical attention. Maintain an open airway. Administer artificial respiration if necessary. Never give anything by mouth to an unconscious person.
NOTE TO PHYSICIAN

Evacuation of stomach contents should be done by means least likely to cause aspiration, such as gastric lavage after endotracheal intubation.

5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashpoint and Method</td>
<td>200°F (93°C)</td>
</tr>
<tr>
<td>Flammable Limits in Air</td>
<td>Tag Closed Cup (TCC)</td>
</tr>
<tr>
<td>% by volume</td>
<td>Lower: Not available</td>
</tr>
<tr>
<td></td>
<td>Upper: Not available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Extinguishing Media</td>
<td>Foam, carbon dioxide, dry chemical</td>
</tr>
</tbody>
</table>

UNUSUAL FIRE AND EXPLOSION HAZARDS

Do not mix with strong oxidizers. Keep work areas free of ignition sources.

FIRE FIGHTING INSTRUCTIONS

Use water spray to cool containers and fire exposed surfaces. Shut off fuel to fire if possible to do so without hazard.

FIRE FIGHTING EQUIPMENT

Wear full protective clothing with self-contained positive pressure breathing apparatus. Do not use water except as fog.

HAZARDOUS COMBUSTION PRODUCTS

Carbon monoxide, Sulfuric acid, Sulfur dioxides, Nitrogen oxides

6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES

Evacuate area and keep personnel upwind. Cut off any source of ignition and ventilate the spill area. Contain spill with absorbent material. Transfer absorbent and other contaminated materials to a UN approved covered container for disposal. Consult with Federal, State, and local regulatory agencies to determine acceptable clean-up levels. Comply with federal, state, and local regulations on reporting releases.
7. HANDLING AND STORAGE

STORAGE TEMPERATURE
Storage in a dry, well-ventilated area 40° to 90°F (5° to 32°C) is recommended.

GENERAL
Keep in original tightly closed containers.
Keep away from strong oxidizing agents or acids.
Prevent skin and eye contact.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTION

RESPIRATORY PROTECTION
No respiratory protection is required when this material is handled under proper ventilation, such as a wet bench or fume hood. If proper ventilation is not available, use a NIOSH approved full-face respirator with canisters or cartridges specifically approved for organic vapors/acid gases. Whenever cartridges or canister respirators are used, ensure the frequent changing of the filter element. Use a supplied air respirator when in doubt of the atmospheric concentration. Consult 29 CFR 1910.134 regarding use of respirators.

PROTECTIVE CLOTHING
Take all precautions to prevent skin contact. Wear Nitrile, Neoprene or Latex clothing and gloves, and chemical resistant boots when there is a probability of liquid contact.

EYE / FACE PROTECTION
Wear chemical goggles or use chemical goggles under face shield when there is a probability of liquid contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Pressure:</td>
<td>0.4 mmHg @ 68°F (20°C)</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>&gt;1 (Air=1)</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>0.99 – 1.03</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>&lt;1 (Butyl Acetate = 1)</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Negligible</td>
</tr>
<tr>
<td>pH:</td>
<td>1.66 - 1.76</td>
</tr>
<tr>
<td>Freezing Point:</td>
<td>Not available</td>
</tr>
<tr>
<td>Appearance:</td>
<td>Ruby Red</td>
</tr>
<tr>
<td>Boiling Range:</td>
<td>400° - 580°F (204° - 304°C)</td>
</tr>
<tr>
<td>Odor:</td>
<td>Aromatic</td>
</tr>
<tr>
<td>Physical State:</td>
<td>Liquid</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

GENERAL
This product is stable at normal temperatures and conditions of storage.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID
Strong oxidizing agents
Corrosive when mixed with water

HAZARDOUS DECOMPOSITION
Carbon monoxide, Sulfuric acid, Sulfur dioxides, Nitrogen oxides

HAZARDOUS POLYMERIZATION
Will not normally occur.

11. TOXICOLOGICAL INFORMATION

DATA FOR EKC1020™

INHALATION
LC_{50}, rat (4 hr): 3.29 mg/l, toxic

EYE CONTACT
No information is available on this mixture.

SKIN CONTACT
LD_{50}, rabbit: >2000 mg/kg, not harmful. Considered corrosive from in vitro assay results.

INGESTION
LD_{50}, rat: 4060 mg/kg, not harmful.

GENOTOXICITY
Not mutagenic in bacterial cells in culture.

TARGET ORGANS
Central nervous system, blood, heart, stomach, liver, bladder, kidneys, eyes, lungs, thyroid, spleen, gastrointestinal tract, and skin
DATA FOR HEAVY AROMATIC SOLVENT NAPTHA, A COMPONENT OF EKC1020™

EYE CONTACT
FHSA score: <12/110, slightly irritating.

SKIN CONTACT
Repeated exposure of humans to a 50% concentration did not cause irritation. There was no evidence of sensitization or photosensitization in a 100 subject human patch test.

GENOTOXICITY
Did not cause chromosome damage in whole animal studies.

DEVELOPMENTAL TOXICITY
Gavage study (rat, days 6-15 of gestation):
- LOAEL for maternal toxicity = 450 mg/kg
- NOAEL for maternal toxicity = 150 mg/kg
- NOAEL for developmental toxicity = 450 mg/kg, the highest dose tested.
Decreased maternal weight gain and food consumption noted during the first 3 days of treatment.

SUBCHRONIC TOXICITY
Gavage study (rat, 13 weeks):
- LOAEL = 300 mg/kg, the lowest dose tested
- Decreased body weights and food consumption, hematologic and serum chemistry changes, increased kidney and liver weights, liver enlargement, thyroid and bladder hyperplasia, and inflammation and necrosis in the stomach noted
TARGET ORGANS
Central nervous system, blood, bladder, thyroid, spleen, and stomach

DATA FOR ALKYLBENZENE SULFONIC ACID, A COMPONENT OF EKC1020™

EYE CONTACT
Corrosive.

TARGET ORGANS
Eyes, skin, liver, and gastrointestinal tract

SUBCHRONIC TOXICITY
Dietary study (sodium salt) (rat, 12 weeks):
- NOAEL = 250 mg/kg, the highest dose given.

DATA FOR NAPHTHALENE, A COMPONENT OF EKC1020™

INHALATION
Overexposure in humans has caused headache, confusion, excitement, nausea, vomiting, sweating, irritation of the bladder, liver damage, and hemolysis.
DATA FOR NAPHTHALENE, A COMPONENT OF EKC1020™ (CONT.)

EYE CONTACT
FHSA score: 3.8/110 (unrinsed eyes), slightly irritating.
Has caused cataracts, based on human experience and animal studies.

SKIN CONTACT
Not a sensitizer.

INGESTION
LD$_{50}$, rat: 490 mg/kg, toxic.
LD$_{50}$, mouse: 533 mg/kg, harmful.

GENOTOXICITY
Not mutagenic in bacterial cells in culture; caused chromosome damage in mammalian cells in culture.

TARGET ORGANS
Nervous system, blood, heart, stomach, liver, bladder, kidneys, eyes, lungs, nasal mucosa, and skin

DEVELOPMENTAL TOXICITY
Gavage study (mouse, days 7-15 of gestation):
LOAEL = 300 mg/kg
Mortality and decreased body weight gain noted in maternal mice and decreased pup viability at birth; no evidence of selective effect on offspring.

Gavage study (rabbit, days 6-19 of gestation):
NOAEL = 120 mg/kg, the highest dose tested.

SUBCHRONIC TOXICITY
Gavage study (mouse, 90 days)
NOAEL = 133 mg/kg, the highest dose tested.
Organ weight and serum chemistry changes noted at this dose not considered adverse.

CHRONIC TOXICITY
Inhalation study (mouse, 6 hr/day, 5 days/wk, 104 weeks).
'NOAEL = 10 ppm
LOAEL = 30 ppm
Increase in benign lung tumors noted in females; inflammation in lungs in both sexes.

Inhalation study (rat, 6 hr/day, 5 days/wk, 105 weeks).
LOAEL = 10 ppm, the lowest concentration tested
Increase in nasal tumors and lesions noted.

12. ECOLOGICAL INFORMATION

No data are available for EKC1020™. Data for the components are summarized below.
DATA FOR HEAVY AROMATIC SOLVENT NAPTHA, A COMPONENT OF EKC1020™

FATE
In water, expected to biodegrade readily, bioaccumulate to some extent in aquatic species, adsorb to a moderate extent to sediments, and evaporate with an estimated half-life of 5.5 hours for a river and 5.3 days for a lake. In soil, expected to adsorb to a moderate degree and leach only slightly. Both biodegradation and evaporation expected to contribute to removal from soil. In air, expected to react with hydroxyl radicals with a half-life of approximately 2 hours.

AQUATIC TOXICITY
Expected to be toxic to aquatic organisms.

DATA FOR ALKYLBENZENE SULFONIC ACID, A COMPONENT OF EKC1020™

FATE
Expected to be slightly soluble in water; bioconcentration expected to be low, and strong adsorption to sediments expected. Rapid biodegradation predicted in soil with a half-life of weeks. Predicted to leach somewhat in soil, with strong soil adsorption. In air, expected to be removed at a moderate rate by reaction with hydroxyl radicals, with an estimated half-life of 8 hours.

AQUATIC TOXICITY
96 hr LC₅₀ Goldfish: 5.0 mg/L, toxic

DATA FOR NAPHTHALENE, A COMPONENT OF NRS EKC 1020™

FATE
Once in the atmosphere, naphthalene rapidly biodegrades with a half-life of 3-8 hours. Photolysis, evaporation, biodegradation, and adsorption may occur in water. The half-life for photolysis is 3 days. Biodegradation can occur in deep or murky water with a half-life of 7 days or several months. A moderate degree of bioconcentration occurs in fish. It is adsorbed to soil to a moderate degree.

AQUATIC TOXICITY
24 hr EC₅₀, Brine shrimp: 2.89 mg/L, toxic.
24 hr EC₅₀, Green algae: 33 mg/L, harmful.
48 hr LC₅₀, Midge: 20.7 mg/L, harmful.
48 hr LC₅₀, Daphnia magna: 3.4 mg/L, toxic.
96 hr LC₅₀, Coho salmon: 3.22 mg/L, toxic.
13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Consult 40 CFR, Parts 261 and 268, state, and local regulations for guidance on disposal of this product. Incineration at a facility with appropriate permits or authorizations is the recommended method of disposal.

CONTAINER DISPOSAL
Empty containers retain product residue. Observe all hazard precautions. Keep away from heat, sparks, and flames. Do not distribute, make available, or reuse empty containers except for storage and shipment of original product. Remove all hazardous product residue, and puncture or otherwise destroy empty containers before disposal. Consult 40 CFR, Parts 261 and 268 for guidance on disposal.

14. TRANSPORT INFORMATION

DOT/IMO/ICAO/IATA

<table>
<thead>
<tr>
<th>Proper shipping name</th>
<th>CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CONTAINS ALKYLbensene SULFONIC ACID)</td>
<td></td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Identification number</td>
<td>UN 3265</td>
</tr>
<tr>
<td>Packing group</td>
<td>II</td>
</tr>
<tr>
<td>Labels required</td>
<td>Corrosive</td>
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<tr>
<td>IMDG page number</td>
<td>8147-1</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCE CONTROL ACT)
Components of this product are listed on the TSCA Inventory.

PROPOSITION 65
WARNING. This product contains a chemical known to the State of California to cause cancer.
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 Hazard Categories

Acute

313

This product contains naphthalene at an upperbound concentration of 3% which is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION AND LIABILITY ACT)

Naphthalene

RQ = 100 lbs.

We recommend you contact local authorities to determine if there are may be other local reporting requirements.

16. OTHER INFORMATION

Because the health effects from exposure to EKC1020™ have not been fully evaluated, exposure should be kept to the lowest level possible. This material is for industrial use and should only be used under the supervision of a technically qualified individual.

LABEL INFORMATION

NFPA CODES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
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<tr>
<td>Fire</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
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<tr>
<td>Specific Hazard</td>
<td>COR</td>
</tr>
</tbody>
</table>

REVISION SUMMARY

Rev. H Revision of Label

Prepared by: Steven C. Dawson, CIH
Manager, Industrial Hygiene & Health

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Material Safety Data Sheet
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