

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: **EKC865™**
General Use: Posistrip® Positive Photoresist Remover
Product Description: Organic Solvent Blend
Revision and Date: Revision D, February 14, 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

	<u>WT. %</u>	<u>CAS REGISTRY #</u>
N-Methylpyrrolidone	Proprietary	872-50-4
N-(2-Hydroxyethyl)-2-Pyrrolidone	Proprietary	3445-11-2

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)

EXPOSURE LIMITS 8 hrs. TWA (ppm)

	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>DUPONT AEL</u>
N-Methylpyrrolidone	None	None	5
N-(2-Hydroxyethyl)-2-Pyrrolidone	None	None	None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Light straw colored liquid with an amine odor.
May cause eye irritation.

POTENTIAL HEALTH EFFECTS

INHALATION

May cause irritation.

EYE CONTACT

May cause irritation.

SKIN CONTACT

May cause irritation.

INGESTION

Swallowing this material may cause irritation of the mouth, throat, and stomach.

REPRODUCTIVE TOXICITY

Prolonged or repeated exposure may cause reproductive disorders and birth defects based on tests with laboratory animals.

TARGET ORGANS

Lungs, blood, lymph nodes, testes, thymus and eyes

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Overexposure may aggravate existing respiratory conditions or dermatitis.

CARCINOGENICITY

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

4. FIRST AID MEASURES

INHALATION

Remove to fresh air.

EYE CONTACT

Flush eyes with water. Have eyes examined and treated by a physician.

SKIN CONTACT

Flush skin with water. If redness or irritation occurs, seek medical attention.

INGESTION

Maintain an open airway. Consult a physician.

5. FIRE FIGHTING MEASURES

Flashpoint and Method	>200°F (>93°C) Seta Flash Closed Cup (SFCC)
Flammable Limits in Air % by volume	Lower: 2.2 Upper: 12.2
Autoignition Temperature	Not available
Extinguishing Media	Water, foam, carbon dioxide, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS

None have been identified.

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 standard fire-fighting bunker gear.

HAZARDOUS COMBUSTION PRODUCTS

Carbon monoxide, nitrogen oxides

6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES

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 and acids.
Prevent 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. 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

Wear neoprene clothing, gloves, and chemical resistant boots when there is a probability of liquid contact.

EYE/FACE PROTECTION

Wear chemical goggles or safety glasses.

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure:	<1 mm Hg at 70°F (21°C)	Freezing Point:	Not available
Vapor Density:	>1 (Air = 1)	Appearance:	Light straw color
Specific Gravity:	0.95-1.10	Boiling Range:	395-563°F (202-295°C)
Evaporation Rate:	<1 (Butyl Acetate = 1)	Odor:	Amine
Solubility in Water:	Complete	Physical State:	Liquid
pH:	Not applicable		

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, acids

HAZARDOUS DECOMPOSITION

Carbon monoxide, nitrogen oxides

HAZARDOUS POLYMERIZATION

Will not normally occur.

11. TOXICOLOGICAL INFORMATION

DATA FOR EKC865™

INHALATION

LC₅₀, rat (4 hr): >5.35 mg/L, the highest concentration attainable; nontoxic.

EYE CONTACT

No information is available.

SKIN CONTACT

LD₅₀, rabbit: >2000 mg/kg, not harmful.

INGESTION

LD₅₀, rat: 4097 mg/kg, not harmful.

GENOTOXICITY

Not mutagenic in bacterial cells in culture.

TARGET ORGANS

Lungs, blood, lymph nodes, testes, thymus, and eyes

DATA FOR N-METHYLPYRROLIDONE, A COMPONENT OF EKC865™ :

EYE CONTACT

Moderately irritating.

SKIN CONTACT

Slightly irritating.

GENOTOXICITY

Not mutagenic in bacterial cells in culture; caused chromosome damage in yeast cells.

DEVELOPMENTAL TOXICITY

Gavage study (rabbit, days 6-18 of gestation):

NOAEL for maternal toxicity = 55 mg/kg

LOAEL for maternal toxicity = 175 mg/kg

NOAEL for developmental toxicity = 175 mg/kg

LOAEL for developmental toxicity = 540 mg/kg

Malformations and resorptions noted; no selective effect on fetus.

Dermal study (rat, days 6-15 of gestation):

NOAEL for maternal toxicity = 237 mg/kg

LOAEL for maternal toxicity = 750 mg/kg

NOAEL for developmental toxicity = 237 mg/kg

LOAEL for developmental toxicity = 750 mg/kg

Embryotoxicity and malformations noted, no selective effect on fetus.

Inhalation study (rat, 6 hr/day, days 6-15 of gestation):

NOAEL for maternal and developmental toxicity = 0.36 mg/L, the highest level tested.

REPRODUCTION

Dietary study (rat):

NOAEL = 160 mg/kg

LOAEL = 500 mg/kg

Decreased maternal weight gain, fertility and fecundity, and embryo- and fetotoxicity noted.

SUBCHRONIC TOXICITY

Dietary study (13 weeks, dog):

NOAEL = 250 mg/kg (highest dose tested)

Inhalation study (6 hr/day for 90 days plus 4 week recovery, rat):

NOAEL = 1 mg/L

LOAEL = 3 mg/L

Respiratory irritation, decreased weight gain, and effects on testes noted.

Inhalation study (6 hr/day for 4 weeks plus 2 week recovery, rat):

NOAEL = 0.5 mg/L

LOAEL = 1.0 mg/L

Damage to lungs, blood cells, lymph nodes, and thymus noted.

DATA FOR N-METHYLPYRROLIDONE, A COMPONENT OF EKC865™ (CONT.):

Dietary study (rat, 90 days):

NOAEL \cong 230 mg/kg

LOAEL \cong 592 mg/kg

Decreased body weight gains, liver changes, and neurobehavioral effects noted.

Dietary study (mouse, 90 days):

NOAEL \cong 150 mg/kg

LOAEL \cong 375 mg/kg

Decreased body weight gains, liver changes, and neurobehavioral effects noted

CHRONIC TOXICITY

Inhalation study (6 hr/day for 2 years, rat):

NOAEL – 0.4 mg/L (highest dose tested)

Dietary study (rat, 2 years):

NOAEL \cong 250 mg/kg

LOAEL \cong 750 mg/kg

Decreased weight gain and food consumption in both sexes and decreased survival and increased nephropathy in males noted.

Dietary study (mouse, 18 months):

NOAEL \cong 284 mg/kg

LOAEL \cong 1244mg/kg

Increased liver tumors and other liver alterations in both sexes; potentially reversible effects on liver weight and size of liver cells at the NOAEL noted; no effects at about 102 mg/kg.

DATA FOR N-(2-HYDROXYETHYL)-2-PYRROLIDONE, A COMPONENT OF EKC865™:

EYE CONTACT

FHSA score: 0.8/110, practically nonirritating.

SKIN CONTACT

Primary Irritation Index: 0.0/8.0, practically nonirritating.

Not a primary irritant in humans; not a sensitizer except in unusual cases of atopic individuals

GENOTOXICITY

Mutagenic in bacterial cells and weakly mutagenic in mammalian cells in culture; did not damage chromosomes in mammalian cells. Did not cause cell transformation.

TARGET ORGANS

None have been identified.

DATA FOR N-(2-HYDROXYETHYL)-2-PYRROLIDONE, A COMPONENT OF EKC865™:

REPRODUCTION

Gavage study (rat, days 0-5 or 4-5 of gestation):
LOAEL = 90.3 mg/kg, the only dose tested
Early resorptions noted in all maternal rats
LOAEL = 90.3 mg/kg, the only dose tested
Early resorptions noted in all maternal rats.

12. ECOLOGICAL INFORMATION

No data are available for EKC865™. Data for the components are summarized below.

DATA FOR N-METHYLPYRROLIDONE, A COMPONENT OF EKC865™:

FATE

Potentially biodegradable under aerobic conditions. Expected to be highly mobile in soil. It may slowly volatilize from dry soil, but is not expected to significantly evaporate from moist soil or from water. It is not expected to significantly bioconcentrate in fish and aquatic organisms. In air, it has been found to react with hydroxyl and nitrate radicals; the tropospheric lifetime is a few hours.

AQUATIC TOXICITY

48 hr EC₅₀ Golden orfe: >4600<10,000 mg/L, not harmful.
24 hr EC₅₀ Daphnia magna: >1000 mg/L, not harmful.
72 hr EC₅₀ Algae: >500, not harmful.
96 hr LC₅₀ Rainbow trout: >500 mg/L, not harmful.

DATA FOR N-(2-HYDROXYETHYL)-2-PYRROLIDONE, A COMPONENT OF EKC865™:

FATE

Very soluble in water; not expected to evaporate from water. Bioconcentration expected to be negligible. Low degree of adsorption to sediments predicted. Expected to be readily biodegradable. Rapid biodegradation predicted in soil and water with ultimate degradation occurring in weeks. Adsorption to soil predicted to be low, with significant leaching. Removal from air expected at a moderate rate by reaction with hydroxyl radicals.

AQUATIC TOXICITY

Not expected to be harmful to aquatic organisms.

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 261 and 268 for guidance on disposal.

14. TRANSPORT INFORMATION

DOT/IMO/ICAO/IATA

Proper shipping name

Not Regulated

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 birth defects or other reproductive harm.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 Hazard Categories	Acute, chronic
313	This product is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of CFR 372.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION AND LIABILITY ACT)

Not reportable. We recommend you contact local authorities to determine if there may be other local reporting requirements.

16. OTHER INFORMATION

Because the health effects from exposure to EKC865™ 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

Health	2
Fire	1
Reactivity	0
Specific Hazard	None

REVISION SUMMARY

Rev. D	Revision of Section 5, 6, 7, and 8
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