SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT USE: Organic Solvent Mixture
TRADE NAME: EBR PG
Positive Radiation Resist Edge Bead Remover
PRODUCT #: G042075
SUPPLIER: MicroChem Corporation
90 Oak Street, PO Box 426
Newton, MA 02464-0002
TELEPHONE: (617) 965-5511
FAX: (617) 965-5818
CHEMTREC USA
EMERGENCY #: (800) 424-9300
CHEMTREC INTL
EMERGENCY #: (703) 527-3887
MSDS DATE: 18 December 2008

SECTION 2. HAZARDS IDENTIFICATION

Hazardous Classification
Flammable liquids - Category 2
Serious eye damage/eye irritation - Category 2A
Skin corrosion/irritation - Category 2
Target organ systemic toxicant single exp - Category 3
Target organ systemic toxicant repeat exp - Category 2

Signal Word: DANGER!

Hazards
Highly flammable liquid and vapour.
Causes serious eye irritation.
Causes skin irritation.
May cause damage to organs through prolonged or repeated exposure.
May cause drowsiness and dizziness.
May cause respiratory irritation.

Precautions
Use only outdoors or in a well-ventilated area.
Do not breathe mist or vapors.
Keep away from heat, sparks and open flame. - No smoking.
Use explosion-proof equipment.
Wear protective gloves and eye/face protection.
Take precautionary measures against static discharge.
If skin irritation occurs, get medical advice/attention.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
SAFETY DATA SHEET

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IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Take off contaminated clothing and wash before re-use.
Call a POISON CENTRE or doctor/physician if you feel unwell.
Use extinguishing measures that are appropriate to local circumstances

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS: 1,3-Dioxolane (CAS: 646-06-0); 70-80%.
               Propylene glycol monomethyl ether (107-98-2); 20-30%

SECTION 4. FIRST AID MEASURES

INHALATION: If inhaled, remove to fresh air. If patient has stopped breathing,
give artificial respiration. If breathing is difficult give oxygen.
Consult a physician.

INGESTION: Drink plenty of water if conscious. Do not induce vomiting. Consult a physician.

SKIN CONTACT: Wash off immediately with soap and plenty of water removing all
contaminated clothes and shoes.

EYE CONTACT: Rinse immediately with water, flush for 15 min. lifting eyelids
frequently. Consult a physician.

SECTION 5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, water spray or alcohol foam.

SPECIAL FIRE FIGHTING PRECAUTIONS: Wear self-contained breathing apparatus (SCBA) and full
personal protective equipment to prevent contact with skin
and eyes.

UNUSUAL FIRE OR EXPLOSION HAZARDS: Extremely flammable. Vapors are heavier than air and may
spread along floors to source of ignition and flash back.
Formaldehyde may form when burned or in contact with strong acids.

SECTION 6. ACCIDENTAL RELEASE MEASURES

EVACUATION PROCEDURES & SAFETY: Wear appropriate protective gear for the situation. See Personal
Protection information in Section 8. Eliminate all sources of ignition. Do not breathe vapors or dust.

CLEANUP & DISPOSAL OF SPILL: Absorb with an inert absorbent. Sweep up and place in an
appropriate closed container. Use clean, non-sparking tools to collect absorbed material.
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ENVIRONMENTAL & REGULATORY REPORTING: Do not flush to drain. If required proper authorities should be notified

SECTION 7. HANDLING AND STORAGE---------------------------------------------

PRECAUTIONS: Store container tightly in well-ventilated place.

STORAGE: Store in inert atmosphere or keep well sealed to prevent the development of peroxides and other oxidation products.

HANDLING: Highly flammable. Keep away from heat, sparks, and flames. Take precautions against static discharge. Do not breathe vapors or spray mist. Use with adequate ventilation. Do not contact with skin, eyes, and clothing. Avoid prolonged or repeated exposure. Wear heavy rubber (butyl or neoprene) gloves. Wash with soap and water after handling. Have safety shower and eye wash available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION-----------------------------

OCCUPATIONAL EXPOSURE LIMITS: Propylene glycol monomethyl ether: ACGIH TLV 100 ppm 8hr TWA,
STEL 150 ppm.
1,3-Dioxolane: ACGIH TLV 20 ppm 8hr TWA.

RESPIRATORY PROTECTION: Use NIOSH approved respirator when ventilation is inadequate.

VENTILATION: Local or general mechanical ventilation is required.

SKIN PROTECTION: Lightweight protective clothing. Chemical resistant apron. Solvent-resistant gloves (butyl or neoprene).

EYE PROTECTION: Tightly fitting safety goggles are highly recommended.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES-------------------------------

APPEARANCE: Colorless to pale yellow liquid
ODO: Ethereal
BOILING POINT: 74-120 °C (168-248 °F)
SPECIFIC GRAVITY: 1.030
VAPOR PRESSURE: 70 mm @ 20 °C (68 °F)
VAPOR DENSITY: 2.6 (air=1)
H₂O SOLUBILITY: 100% @ 20 °C, by wt.
% VOLATILE: 100% by wt
EVAPORATION RATE: 3.5 (BuAc=1)
FLASH POINT: -6 °C (21 °F) COC
AUTOIGNITION TEMP: 274 °C (525 °F)
EXPLOSION LIMITS: 2.1 lower (vol%) 20.5 upper (vol%)

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SECTION 10. STABILITY AND REACTIVITY

STABILITY:
If exposed to air, organic peroxides will develop.

INCOMPATIBILITY:
Strong Oxidizing Agents, Strong Acids

HAZARDOUS POLYMERIZATION:
Can occur.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Formaldehyde may form when burned or in contact with strong acids.

SECTION 11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, ingestion, eye and skin contact

Symptoms of Exposure: Causes severe eye irritation. Causes skin irritation. May cause upper respiratory tract irritation, central nervous system depression, shortness of breath, drowsiness and confusion. Prolonged, repeated exposure to high concentrations can cause adverse effects to liver, kidney and lungs. Chronic exposure may cause headache, tiredness, confusion, tremors, memory loss, slurred speech and anorexia.

Acute Toxicity

Acute Oral Toxicity
Component: 1,3-Dioxolane
LD50 rat 3000 mg/kg
Component: Propylene glycol monomethyl ether
LD50 rat 6100 mg/kg

Acute Dermal Toxicity
Component: 1,3-Dioxolane
LD50 rabbit 8480 mg/kg
Component: Propylene glycol monomethyl ether
LD50 rat 13,000 mg/kg

Acute Inhalation Toxicity
Component: 1,3-Dioxolane
LC50 rat 68.4 mg/l
Component: Propylene glycol monomethyl ether
LC50 rat 54.6 mg/l 4 hr

Specific Concentration Limits
The values listed below represent the percentages of ingredients of unknown toxicity:
0% Acute oral toxicity
0% Acute dermal toxicity
0% Acute inhalation toxicity

Skin corrosion/irritation
Component: 1,3-Dioxolane
Acute Skin Irritation: Causes skin irritation.
Component: Propylene glycol monomethyl ether
   Acute Skin Irritation: this substance is a mild skin irritant

**Serious eye damage/eye irritation**
Component: 1,3-Dioxolane
   Acute Eye Irritation: Severely irritating to eyes.
Component: Propylene glycol monomethyl ether
   Acute Eye Irritation: Liquid is not irritating to eye. Mild eye irritation reported with vapor.

**Respiratory or Skin Sensitisation**
Component: Propylene glycol monomethyl ether
   Skin sensitization - Did not induce skin sensitization

**Carcinogenicity**
Component: 1,3-Dioxolane
   Not considered carcinogenic by NTP, IARC, ACGIH or OSHA.
Component: Propylene glycol monomethyl ether
   Studies in laboratory animals indicate that this substance is not carcinogenic.

**Germ Cell Mutagenicity**
Component: 1,3-Dioxolane
   Ames Test – negative with and without metabolic activation
Component: Propylene glycol monomethyl ether
   No evidence of genotoxicity in standard bacterial and mammalian test systems in vitro.

**Specific Target Organ Systemic Toxicity (single exposure)**
Component: 1,3-Dioxolane
   Central Nervous system
Component: Propylene glycol monomethyl ether
   Central Nervous System

**Specific Target Organ Systemic Toxicity (repeated exposure)**
Component: 1,3-Dioxolane
   Central Nervous System, Liver, Kidney, Lung
Component: Propylene glycol monomethyl ether
   Central Nervous System, Liver, Kidney

**Toxicity to Reproduction**
Component: 1,3-Dioxolane
   No adverse effects to reproduction or adverse developmental effects known.
Component: Propylene glycol monomethyl ether
   This substance is not expected to cause adverse reproductive effects at dose levels that are not also toxic to the parent.

**Aspiration Hazards**
No data found.
SECTION 12. ECOLOGICAL INFORMATION

Acute aquatic toxicity

*Acute toxicity to fish*
Component: 1,3-Dioxolane
  48 hr LC50 Sheephead minnow: 12,000 mg/L
Component: Propylene glycol monomethyl ether
  96-h LC50 (Pimephales promelas): 20,800 mg/L

*Acute toxicity to aquatic invertebrates*
Component: 1,3-Dioxolane
  EC50 Daphnia magna: 7650 mg/L
Component: Propylene glycol monomethyl ether
  96-h EC50 Daphnia magna: 23,300 mg/L

*Acute toxicity to algae*
Component: 1,3-Dioxolane
  14 day NOEC Algae 1000 mg/l
Component: Propylene glycol monomethyl ether
  96 hr EC50 green algae >1,000 mg/l

Specific concentration limits
The values listed below represent the percentages of ingredients of unknown toxicity.
0% Acute aquatic toxicity – fish
0% Acute aquatic toxicity – aquatic invertebrates
0% Acute aquatic toxicity - algae

Chronic aquatic toxicity

*Chronic toxicity to fish*
No data found

*Chronic toxicity to aquatic invertebrates*
No data found

*Chronic toxicity to algae*
No data found

Persistence/Degradability
Component: Propylene glycol monomethyl ether
Biodegradable under aerobic or anaerobic conditions. Aerobic biodegradation of 96% after 28 days. Anaerobic biodegradation of 38% after 81 days (30 day lag period).

Bioaccumulation
Component: Propylene glycol monomethyl ether
Not expected to bioaccumulate in aquatic organisms. Log Kow (calculated):
-0.437
Mobility
Component: Propylene glycol monomethyl ether
Rapid dissipation in soil expected. Koc value between 1 and 50 indicating very high soil mobility.

SECTION 13. DISPOSAL CONSIDERATIONS

Precautions
CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all MSDS and label warnings even after container is emptied. Dispose of contents/container in accordance with local regulation.

Disposal
Comply with applicable local, state or international regulations regarding the proper disposal of this material and/or containers. Dispose of contents/container in accordance with local regulations.

SECTION 14. TRANSPORTATION INFORMATION

HAZARD CLASSIFICATION: Flammable Liquid
SHIPPING NAME: Dioxolane Solution
UN NUMBER: UN 1166
PACKING GROUP II

SECTION 15. REGULATORY INFORMATION

US AND INTERNATIONAL INFORMATION
Chemical Inventories: TSCA (US) – Listed.
EINECS/ELINCS/NLP (EU) – Listed.
China – Listed.
Japan – Listed.
DSL/NDSL (Canada) – Listed.
AICS (Australia) – Listed.
Korea – Listed.
Philippines – Listed.

SARA Title III: This product IS NOT subject to SARA Title III, Section 313 Reporting Requirements.

Calif. SCAQMD Rule 443.1 VOC’s: 1030 g/L

SECTION 16. OTHER INFORMATION

National Fire Protection Association Hazard Ratings – NFPA:

2 Health Hazard Rating
3 Flammability Rating
1 Reactivity Rating
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For additional information contact: productsafety@microchem.com

To the best of our knowledge, the above information is believed to be accurate but does not claim to be all-inclusive and is intended to be used only as a guide. The supplier makes no warranty of any kind, expressed or implied, concerning the use of this product and shall not be held liable for any damage resulting from handling or from contact with the above product. User assumes all risks incident to its use.

MSDS Revision Information: NEW