

### Section 1 - Manufacturer Information

Manufacturer/Distributor	IMS Company 10373 Stafford Road Chagrin Falls, OH 44023-5296	Emergency Phone Prepared by Prepared/Revised	800-424-9300 Product Safety Advisor June 8, 2007
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Trade Name .....UG-10, Universal Ethylene Glycol Circulating Fluid

Item Numbers .....	125174	5 gallon pail
	125175	55 gallon drum

### Hazardous Material Information System

**Health .....2\***      **Flammability..... 1**      **Reactivity ..... 0**      **Protection..... X**

\* Chronic (Accumulates)

0 Normal use Material	0 Will Not Burn	0 Stable	X = Consult the MSDS and your supervisor for your special workplace need
1 Slight Hazard (temporary)	1 Possible to Burn	1 Unstable if Heated	
2 Health Affected (lengthy)	2 Burns if Heated	2 Violent Chemical Change	
3 Extreme Danger	3 Easily Burns	3 Shock and Heat Sensitive	
4 Severe or Fatal	4 Very Easily Burns	4 May Explode	

NOTE: The HMIS may not be enough hazard information for this chemical in all workplaces. The HMIS system requires employee training about the system and about information in this MSDS.

### Section 2 - Hazardous Ingredients

Chemical/Common Name	CAS-Number	%	PEL-OSHA	TLV-ACGIH
Ethylene Glycol <sup>(4) (5)</sup>	107-21-1	75 to 95	125 mg/m <sup>3</sup> (50 ppm)	100 mg/m <sup>3</sup> <sup>(2)</sup> (39.4 ppm) <sup>(2)</sup>
Diethylene Glycol <sup>(4)</sup>	111-46-6	0.1 to 10	<sup>(1) (3)</sup>	<sup>(1) (3)</sup>
Organic & Inorganic Salts in solution <sup>(5)</sup>	7732-18-5	0.1 to 10	<sup>(1)</sup>	<sup>(1)</sup>

<sup>(1)</sup> Not Established<sup>(2)</sup> Ceiling – not to exceed<sup>(3)</sup> 50 ppm/10 mg/m<sup>3</sup> AIHA WEEL<sup>(4)</sup> Subject to reporting under SARA Title III, section 313<sup>(5)</sup> WARNING: This product contains a chemical known to the State of California to cause cancer, or birth defects, or other reproductive harm.**Does this product contain carcinogens according to NTP, IARC, or OSHA? NO**

### Section 3 - Health Hazard Data

**HEALTH EFFECTS** - (Acute and Chronic) Intentional abuse, misuse, or other massive exposure may cause multiple organ damage and/or health problems. Irritations as noted. Early to moderate CNS depression may be evidenced by giddiness, headache, dizziness, and nausea. In extreme cases, unconsciousness and death may occur. Kidney damage may be evidenced by changes in urine output, urine appearance, or edema (swelling from fluid retention). Liver damage may be evidenced by loss of appetite, jaundice, (yellowish skin color) and sometimes pain in the upper abdomen on the right side.

MAY CAUSE KIDNEY AND CENTRAL NERVOUS SYSTEM DAMAGE. CAUSES BIRTH DEFECTS IN LABORATORY ANIMALS. Repeated inhalation may produce signs of central nervous system involvement, particularly dizziness and nystagmus.

**Inhalation** Vapors are mildly to markedly irritating to the lungs depending on the exposure level. **PROLONGED OR REPEATED BREATHING OF AEROSOL OR VAPOR IS HARMFUL.** May cause irritation of the nose and throat with headache, particularly from mist. High vapor concentrations, caused by heating the material in an enclosed and poorly ventilated workplace, may produce nausea, vomiting, headache, dizziness, and irregular eye movements.

**Ingestion** **FATAL OR HARMFUL IF SWALLOWED.** May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma.

Cardiac failure, pulmonary edema, and severe kidney damage may develop. A few reports have been published describing the development of weakness of the facial muscles, diminished hearing, and difficulty with swallowing, during the late stages of severe poisoning.

**Eyes** Product is moderately to severely irritating to the eyes. Vapors can also cause severe eye irritation.

**Skin** Mildly irritating to the skin and slightly toxic on prolonged or repeated contact.

**Chronic** The findings of chronic toxic effects in lab animals overexposed to components of this product indicate toxicity to humans. Over-exposure should be avoided. Failure to do so could result in injury, illness, or even death

**PRIMARY ROUTES OF ENTRY** Inhalation, eye

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE** Preexisting skin, eye, and respiratory disorders may be aggravated by exposure to this product. Impaired kidney and liver functions from preexisting disorders may be aggravated by exposure to this product.

May aggravate an existing kidney disease.

### EMERGENCY FIRST AID PROCEDURES

**Eye Contact** Immediately Flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Remove contact lenses. Get medical attention.

**Skin Contact** Remove contaminated clothing and shoes immediately. Wash exposed area with soap and water for at least 15 minutes. Wash contaminated clothing before re-use. If irritation persists, or if contact has been prolonged, get medical attention.

**Inhalation** Remove victim to fresh air and provide oxygen if breathing is difficult. If breathing has stopped, administer artificial respiration. Get medical attention.

**Ingestion** **Get Medical Help at once.** Do not give liquids if victim is unconscious or very drowsy. Otherwise, if patient is fully conscious, give no more than two glasses of water and induce vomiting by giving 30 cc (2 tablespoons) syrup of Ipecac\*. If Ipecac is unavailable, give 2 glasses of water and induce vomiting by touching finger to back of victim's throat. Keep victim's head below hips while vomiting.

### Notes to Medical Personnel

If victim is a child, give no more than 1 glass of water and 15 cc (1 tablespoon) of syrup of Ipecac. If symptoms such as loss of gag reflex, convulsion, or unconsciousness occur before emeses, gastric lavage should be considered following intubation with a cuffed endotracheal tube.

Lethal oral dose to adults is estimated of the order of 1.0 ml/kg. Ethylene glycol is metabolized by alcohol dehydrogenase to various metabolites including glycoaldehyde, glycolic acid, and oxalic acid, which cause an elevated anion-gap metabolic acidosis and renal tubular injury. The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, CNS depression, and kidney injury. Urinalysis may show albuminuria, hematuria, and oxaluria. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. The currently recommended medical management of ethylene glycol poisoning includes elimination of ethylene glycol and metabolites, correction of metabolic acidosis, and prevention of kidney injury. It is essential to have immediate and follow-up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance and renal function tests. A continuous infusion of 5% sodium bicarbonate with frequent monitoring of electrolytes and fluid balance is used to achieve correction of metabolic acidosis and forced diuresis. As a competitive substrate for alcohol dehydrogenase, ethanol is antidotal. Given in the early stages of intoxication, it blocks the formation of nephrotoxic metabolites. A therapeutically effective blood concentration of ethanol is in the range 100-150 mg/dl, and should be achieved by a rapid loading dose and maintained by intravenous infusion. For severe and/or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who are symptomatic, have severe metabolic acidosis, a blood ethylene glycol concentration greater than 25 mg/dl, or compromise of renal functions.

A more effective intravenous antidote for physician use is 4-methylpyrazole, a potent inhibitor of alcohol dehydrogenases, which effectively blocks the formation of toxic metabolites of ethylene glycol. It has been used to decrease the metabolic consequences of ethylene glycol poisoning before metabolic acidosis, coma, seizures, and renal failure have occurred. A generally recommended protocol is a loading dose of 15 mg/kg followed by 10 mg/kg every 12 hr for 4 doses, and then 15 mg/kg every 12 hr until ethylene glycol concentrations are below 20 mg/100 ml.

Slow intravenous infusion is required. Since 4-methylpyrazole is dialyzable, increased dosage may be necessary during hemodialysis. Additional therapeutic measures may include the administration of cofactors involved in the metabolism of ethylene glycol. Thiamin (100 mg) and pyridoxine (50 mg) should be given every six hours. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol in origin in several cases. Respiratory support with mechanical ventilation and positive end expiratory pressure may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving the seventh, eighth, and ninth cranial nerves, presenting with bilateral facial paralysis, diminished hearing, and dysphagia.

There are animal studies reporting malformed fetuses and lethality to fetuses at all dose levels except for the lowest, >1.0 g/kg.

#### Section 4 - Chemical Data

Boiling Point (100% concentration) ....	330° F	Specific Gravity (Water=1) .....	1.137
Vapor Pressure at 20° C .....	0.06 mmHg	Percent Volatile by Volume (%).....	96.3
Vapor Density (Air=1) .....	>1	Evaporation Rate (butyl acetate=1).....	<0.01
VOC .....	1072.18 g/l	Pour point .....	-40° F
Solubility in Water .....	100 %	PH .....	10.5
Melting point (50% concentration) .....	-34° F		

**Appearance and Odor Information** Colorless to green, slightly viscous liquid. Mild odor

#### Section 5 - Physical Hazard Data

Flash Point (Setaflash) .....	246° F	Flammable Limits: LEL = 3.2%	UEL = ~15%
Autoignition temperature .....	752° F	LEL/UEL based on of components	

**Extinguishing Media** Water spray, alcohol-type foam, or all-purpose-type foam, for large fires. Carbon dioxide or dry chemical for small fires.

**Special Fire Fighting Procedures** Material will not burn unless preheated. Cool exposed containers with water. Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Firefighters should wear full bunker gear, self-contained, positive-pressure breathing apparatus, and protective clothing.

**Unusual Fire and Explosion Hazards** See **Work Practices**.

**Incompatibility (Materials to Avoid)** Avoid strong oxidizers, strong acids, and strong bases at elevated temperatures. Avoid contamination with strong oxidizing agents and materials reactive with hydroxyl compounds.

**Hazardous Combustion Products** Carbon monoxide, carbon dioxide, and unidentified organic compounds.

**Will Hazardous Polymerization Occur?** No

**Conditions to Avoid for Polymerization:** See Incompatibility

**Is the Product Stable?** Yes

**Conditions to Avoid for Stability** See Incompatibility

#### Section 6 - Spill or Leak Procedures

**Steps to be Taken in Case Material is Released or Spilled** May burn although not readily ignitable. Use cautious judgment when cleaning up large spills. Large Spills should be contained and collected. Wear appropriate personal protective equipment according to the conditions such as respirator and protective clothing. Shut off source of leak if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand, or other suitable material. Dispose of properly. Flush area with water to remove trace residues, but do not let product or contaminated water get to drains, sewers, or rainfall. Small spills can be collected or may be absorbed with appropriate liquid absorbing materials. All spill response should be carried out in accordance with Federal, State, Provincial, and local requirements.

**Waste Disposal Methods** Consult Federal, State, Provincial, and Local regulations. Ethylene glycol from many applications is readily reclaimed; reclamation of ethylene glycol from spent fluids is encouraged where possible. At

low concentrations in water, this product is biodegradable in a biological wastewater treatment plant. Where ethylene glycol reclamation is not viable, this product may be incinerated where permitted under Federal, State, and local regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

### Section 7 - Exposure Control Information

**Ventilation** General (mechanical) room ventilation may be adequate, to maintain product and its components below TLV/PEL, if handled at ambient temperatures or in covered equipment. If ambient temperatures are exceeded or operations exist, which may produce mist, aerosol, or vapor, local exhaust ventilation or other engineering controls may be required

**Respiratory Protection** If personnel exposure exceeds exposure limit 39.4 ppm (100 mg/m<sup>3</sup>) (aerosol and vapor combined) at any time, select respiratory protection equipment in accordance with 29 CFR 1910.134. NIOSH approved atmosphere-supplying respirator or a NIOSH approved air-purifying respirator with organic vapor cartridge and dust/mist pre-filter is recommended.

**Protective Gloves** Natural rubber, neoprene, nitrile (NBR), and butyl are recommended materials.

**Other Protective Equipment** Chemical goggles will provide protection in most situations. Do not wear contact lenses.

**Other Engineering Controls** To determine exposure levels, monitoring should be performed. Eye bath and safety shower station should be available.

**Work Practices** Sudden release of hot organic chemical vapor or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into hot equipment under vacuum, may result in ignitions without the presence of obvious ignition sources. Published "Autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

Avoid contact with eyes. Wear chemical goggles if there is likelihood of contact. Avoid prolonged or repeated contact with skin. Wear chemical resistant gloves and other clothing as required to minimize contact.

Do not use in confined or closed space. Ventilation should maintain the concentration of the product or its components below their TLV/PEL values.

**Hygienic Practices** Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using restroom after using this or any chemical product. Launder contaminated clothing before reuse.

### Section 8 - Special Precautions

**Precautions to be Taken in Handling and Storage** Store in accordance with good industrial practices. These include: store in cool, dry area out of direct sunlight (below 120° F). Do not puncture or burn containers.

**Maintenance Precautions** Do not remove or deface label. Keep container closed.

**Other Precautions** Vapors are heavier than air and will collect in low areas. Read and follow directions and cautions on the container label, and any accompanying literature.

**CAUTION Intentional misuse of this chemical product, as with any industrial chemical, in contact with the body can be harmful or fatal. This includes such things as deliberately breathing, placing in mouth, swallowing, placing on skin, or any other body contact, or repeated, or continuous contact.**

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