

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

Ashland	Regulatory Information Number	1-800-325-3751
P.O. Box 2219	Telephone	614-790-3333
Columbus, OH 43216	Emergency telephone	1-800-ASHLAND (1-800-274-5263)

Product name	Zerex® Dex Cool™ ANTIFREEZE COOLANT
Product code	ZXEL1
Product Use Description	No data

**2. HAZARDS IDENTIFICATION**

**Emergency Overview**

Appearance: liquid, orange

CAUTION! MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY BE HARMFUL IF SWALLOWED. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION.

**Potential Health Effects**

**Routes of exposure**

Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

**Eye contact**

Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

**Skin contact**

Can cause skin irritation. Symptoms may include redness and burning of skin, and other skin damage. Although rare, skin contact with ethylene glycol may cause allergic skin reaction (delayed skin rash which may be followed by blistering, scaling and other skin effects). Skin absorption of this material (or a component) may be increased through injured skin.

**Ingestion**

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. Liver, kidney and brain damage in humans has resulted from swallowing lethal or near-lethal amounts of ethylene glycol.

### **Inhalation**

Breathing of vapor or mist is possible. Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.).

### **Aggravated Medical Condition**

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: lung (for example, asthma-like conditions), Liver, kidney, Central nervous system, Skin, upper respiratory tract, Exposure to this material may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.

### **Symptoms**

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), cough, central nervous system excitation (giddiness, liveliness, light-headed feeling) followed by central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness) and other central nervous system effects, involuntary eye movement, cyanosis (causes blue coloring of the skin and nails from lack of oxygen), lung edema (fluid buildup in the lung tissue), acute kidney failure (sudden slowing or stopping of urine production), liver damage, convulsions, coma

### **Target Organs**

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: reproductive effects, kidney damage, liver damage, central nervous system damage, effects on male fertility, Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: liver damage, kidney damage

### **Carcinogenicity**

This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1**Reproductive hazard**

Ethylene glycol has caused birth defects in animal studies at high oral doses. However, it did not cause harm to the pregnant animal or to the fetus when applied to the skin of the pregnant animal., 2-Ethylhexanoic acid has been shown to cause birth defects in laboratory animal studies. The relevance of these findings to humans is uncertain.

**Other information**

No data

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Components</b>	<b>CAS-No.</b>	<b>Concentration</b>
ETHYLENE GLYCOL	107-21-1	<=100%
DIETHYLENE GLYCOL	111-46-6	>=5-<10%
POTASSIUM HYDROXIDE	1310-58-3	>=5-<10%
2-ETHYLHEXANOIC ACID	149-57-5	>=5-<10%

**4. FIRST AID MEASURES****Eyes**

If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention. Do not remove the victim from water access for transport to a medical facility unless instructed to do so by qualified medical personnel. If possible, continue flushing the eye gently with water while transporting the victim.

**Skin**

Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

**Ingestion**

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

**Inhalation**

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

### **Notes to physician**

**Hazards:** Effects of acute ethylene glycol poisoning appear in three fairly distinct stages. The initial stage occurs shortly after exposure, lasts 6-12 hours, and is characterized by central nervous system effects (transient exhilaration, nausea, vomiting, and in severe cases, coma, convulsions, and possible death). The second stage lasts from 12-36 hours after exposure and is initiated by the onset of coma. This phase is characterized by tachypnea, tachycardia, mild hypotension, cyanosis, and in severe cases, pulmonary edema, bronchopneumonia, cardiac enlargement, and congestive failure. The final stage occurs 24-72 post-exposure and is characterized by renal failure, ranging from a mild increase in blood urea nitrogen and creatinine followed by recovery, to complete anuria with acute tubular necrosis that can lead to death. Oxaluria is found in most cases. The most significant laboratory finding in ethylene glycol intoxication is severe metabolic acidosis. Ingestion or other significant exposure to this material (or a component) may cause metabolic acidosis.

**Treatment:** This product contains ethylene glycol. Ethanol decreases the metabolism of ethylene glycol to toxic metabolites. Ethanol should be administered as soon as possible in cases of severe poisoning since the elimination half-life of ethylene glycol is 3 hours. If medical care will be delayed several hours, give the patient three to four 1-ounce oral "shots" of 86-proof or higher whiskey before or during transport to the hospital. Fomepizole (4-methylpyrazole) is an effective antagonist of alcohol dehydrogenase, and as such, may be used as an antidote in the treatment of ethylene glycol poisoning. Hemodialysis effectively removes ethylene glycol and its metabolites from the body. Fomepizole (4-methylpyrazole) is an effective antagonist of alcohol dehydrogenase, and as such, may be used as an antidote in the treatment of ethylene glycol, diethylene glycol and methanol poisoning.

## **5. FIRE-FIGHTING MEASURES**

### **Suitable extinguishing media**

Dry chemical, Carbon dioxide (CO<sub>2</sub>)

### **Hazardous combustion products**

alcohols, aldehydes, carbon dioxide and carbon monoxide, ethers, toxic fumes

### **Precautions for fire-fighting**

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

**Flammability Class for Flammable Liquids**  
Combustible Liquid Class IIIB

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**

For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

**Environmental precautions**

Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

**Methods for cleaning up**

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

**Other information**

Comply with all applicable federal, state, and local regulations.

**7. HANDLING AND STORAGE**

**Handling**

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

**Storage**

Store in a cool, dry, ventilated area.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

### Exposure Guidelines

<b>ETHYLENE GLYCOL</b>		<b>107-21-1</b>	
ACGIH	Ceiling Limit Value:	100 mg/m3	Aerosol.
<b>POTASSIUM HYDROXIDE</b>		<b>1310-58-3</b>	
ACGIH	Ceiling Limit Value:	2 mg/m3	
NIOSH	Recommended exposure limit (REL):	2 mg/m3	
<b>2-ETHYLHEXANOIC ACID</b>		<b>149-57-5</b>	
ACGIH	time weighted average	5 mg/m3	Inhalable fraction and vapor

### General advice

These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

### Exposure controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

### Eye protection

Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

### Skin and body protection

Wear resistant gloves (consult your safety equipment supplier).  
Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local safety equipment supplier to determine the proper personal protective equipment for your use.

### Respiratory protection

A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical state</b>	liquid
<b>Form</b>	No data
<b>Colour</b>	orange
<b>Odour</b>	No data
<b>Boiling point/boiling range</b>	311 °F / 155 °C @ 760 mmHg
<b>Melting point/range</b>	-34.6 °F / -37.0 °C
<b>pH</b>	8.3 - 9.0
<b>Flash point</b>	250.0 °F / 121.1 °C, Closed Cup
<b>Evaporation rate</b>	No data
<b>Explosion limits</b>	3.2 %(V) 15.3 %(V)
<b>Vapour pressure</b>	17.5 mmHg
<b>Vapour density</b>	No data
<b>Density</b>	1.1175 g/cm <sup>3</sup> @ 60.01 °F / 15.56 °C 9.299 lb/gal @ 77.00 °F / 25.00 °C
<b>Solubility</b>	No data
<b>Partition coefficient: n-octanol/water</b>	No data
<b>Autoignition temperature</b>	No data

**10. STABILITY AND REACTIVITY**

**Stability**  
Stable.

**Conditions to avoid**

**Incompatible products**

Avoid contact with: Alkaline earth metals, Alkali metals, strong acids, strong alkalis, strong oxidizing agents, sulphur compounds, strong bases, acids, aluminum, chlorinated solvents, halogenated hydrocarbons, Metals, Zinc, Amines, ammonia, reducing agents

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

**Hazardous decomposition products**

May form: carbon dioxide and carbon monoxide, hydrocarbons

**Hazardous reactions**

Product will not undergo hazardous polymerization.

**Thermal decomposition**

No data

**11. TOXICOLOGICAL INFORMATION**

**Acute oral toxicity**

ETHYLENE GLYCOL	LD 50 Rat: 6,140 mg/kg LD 50 Mouse: 14,600 mg/kg
DIETHYLENE GLYCOL	LD 50 Rat: 12,565 mg/kg
2-ETHYLHEXANOIC ACID	LD 50 Rat: 3 g/kg

**Acute inhalation toxicity**

DIETHYLENE GLYCOL	LC Lo Mouse: 130 mg/m <sup>3</sup> , 2 h
2-ETHYLHEXANOIC ACID	LC 50 Rat: 600 ppm, 4 h

**Acute dermal toxicity**

ETHYLENE GLYCOL	LD 50 Rabbit: 10,611 mg/kg
DIETHYLENE GLYCOL	LD 50 Rabbit: 11,890 mg/kg
POTASSIUM HYDROXIDE	LD 50 Rabbit: 1,260 mg/kg
2-ETHYLHEXANOIC ACID	LD 50 Rabbit: 1,138 mg/kg



Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

**12. ECOLOGICAL INFORMATION**

**Aquatic toxicity**

**Acute and Prolonged Toxicity to Fish**

No data

**Acute Toxicity to Aquatic Invertebrates**

No data

**Environmental fate and pathways**

No data

**13. DISPOSAL CONSIDERATIONS**

**Waste disposal methods** For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution's Environmental Services Group at 800-637-7922.

**14. TRANSPORT INFORMATION**

Dangerous goods descriptions (if indicated above) may not reflect package size, quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

**15. REGULATORY INFORMATION**

**California Prop. 65**

Proposition 65 warnings are not required for this product based on the results of a risk assessment.

**SARA Hazard Classification** Acute Health Hazard

**SARA 313 Component(s)**

ETHYLENE GLYCOL 107-21-1 100.014%

Health	Flammability	Reactivity	Other
--------	--------------	------------	-------

**ASHLAND**  
**SAFETY DATA SHEET**

Page: 10  
Revision Date: 11/20/2007  
Print Date: 1/2/2008  
MSDS Number: R0318755  
Version: 1.1

Zerex® Dex Cool™ ANTIFREEZE  
COOLANT ZXEL1

<b>HMIS</b>	1	1	0
<b>NFPA</b>	1	1	0

**16. OTHER INFORMATION**

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).