This MSDS should be attached or kept with the respective product with which it is associated.

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

ASHLAND
P.O. BOX 2219
COLUMBUS, OH 43216

REGULATORY INFORMATION NUMBER: 1-800-325-3751
TELEPHONE: 614-790-3333
EMERGENCY TELEPHONE: 1-800-ASHLAND (1-800-274-5263)

PRODUCT NAME: ZEREX(R*) ORIGINAL RTU ANTIFREEZE COOLANT
PRODUCT COC: ZXR2

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:
APPEARANCE: LIQUID, GREEN
CAUTION!
MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY BE HARMFUL IF SWALLOWED, MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE EYE IRRITATION.

POTENTIAL HEALTH EFFECTS:
ROUTINES OF EXPOSURE: SKIN ABSORPTION, SKIN CONTACT, EYE CONTACT, INHALATION, INGESTION
EYE CONTACT: CAN CAUSE EYE IRRITATION. SYMPTOMS INCLUDE STUDDING, TEARING, REDNESS, AND SWELLING OF EYES.

SKIN CONTACT: MAY CAUSE MILD SKIN IRRITATION. SYMPTOMS MAY INCLUDE REDNESS AND BURNING OF SKIN. ALTHOUGH RARE, SKIN CONTACT WITH ETHYLENE GLYCOL MAY CAUSE ALLERGIC SKIN REACTION (DELAYED SKIN RASH WHICH MAY BE FOLLOWED BY BLISTING, SCALING AND OTHER SKIN EFFECTS). PASSAGE OF THIS MATERIAL INTO THE BODY THROUGH THE SKIN IS POSSIBLE, AND MAY ADD TO TOXIC EFFECTS FROM BREATHING OR SWALLOWING.

INGESTION: 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-LETAL AMOUNTS OF ETHYLENE GLYCOL.

INHALATION: BREATHING OF VAPOR OR FUME 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, EXPOSURE TO THIS MATERIAL MAY AGGRAVATE ANY PREEXISTING CONDITION SENSITIVE TO A DECREASE IN AVAILABLE OXYGEN, SUCH AS ORGANIC 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 UPTAKE (NAUSEA, VOMITING, DIARRHEA), IRRITATION (BURN, TUMESCENT, RUPTURED OR INFLAMED), SKIN, CENTRAL NERVOUS SYSTEM EXCITATION (DIZZINESS, LIVELINESS, LIGHT-HEADED FEELING) FOLLOWED BY CENTRAL NERVOUS SYSTEM DEPRESSION (DIZZINESS, BRONCHOSIS, WEARINESS, FATIGUE, NAUSEA, HEADACHE, UNCONSCIOUSNESS) AND OTHER CENTRAL NERVOUS SYSTEM EFFECTS, INOLVATORY EYE MOVEMENT, CAVITATION (COUSES 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 ORGAN:
OVEREXPOSURE TO THIS MATERIAL (OR ITS COMPONENTS) HAS BEEN SUGGESTED AS A CAUSE OF THE FOLLOWING EFFECTS IN LABORATORY ANIMALS:
KIDNEY DAMAGE, LIVER DAMAGE, REPRODUCTIVE EFFECTS, OVEREXPOSURE TO THIS MATERIAL (OR ITS COMPONENTS) HAS BEEN SUGGESTED AS A CAUSE OF THE FOLLOWING EFFECTS IN HUMANS: KIDNEY DAMAGE, LIVER DAMAGE

CARCINOGENICITY:
BASED ON THE AVAILABLE INFORMATION, THIS MATERIAL CANNOT BE CLASSIFIED WITH REGARD TO CARCINOGENICITY.

REPRODUCTIVE HAZARD:
ETHYLENE GLYCOL HAS CAUSED BIRTH DEFECTS IN ANIMAL STUDIES AT HIGH ORAL CONCENTRATIONS. IT DID NOT CAUSE HARM TO THE FETUS WHEN APPLIED TO THE SKIN OF THE PREGNANT ANIMAL.

3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS
CAS-NO.
CONCENTRATION
ETHYLENE GLYCOL 107-21-1 >=50-%<60%

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.

SKIN:
REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH SOAP AND WATER. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION. LAUNDER CLOTHING BEFORE USE.

INGESTION:
SEEK MEDICAL ATTENTION. IF INDIVIDUAL IS DRUNKY OR UNCONSCIOUS, DO NOT GIVE ANYTHING BY MOUTH; PLACE INDIVIDUAL ON THE LEFT SIDE WITH THE HEAD LOW. CONTACT A PHYSICIAN, MEDICAL CENTER OR LOCAL TOXIC CONTROL CENTER FOR ADVICE ABOUT WHETHER TO INDUCE VOMITING. IF POSSIBLE, DO NOT LEAVE INDIVIDUAL UNATTENDED.

INHALATION:
IF SYMPTOMS DEVELOP, IMMEDIATELY MOVE INDIVIDUAL AWAY FROM EXPOSURE AND INTO FRESH AIR. SEEK IMMEDIATE MEDICAL ATTENTION; KEEP PERSON WARM AND QUIET. IF INDIVIDUAL IS BREATHING, BEGIN ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN.

NOTES TO PHYSICIAN:
EFFECFS 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 EXCITATION, NAUSEA, VOMITING AND IN SEVERE CASES, CONFUSIONS, 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 TACHYPIA, TACHYCARDIA, MILD HYPOVENTILATION, CYANOSIS, AND IN SEVERE CASES, PULMONARY EDema, BRONCHOPNEUMONIA, CARDIC ENLARGEMENT, AND CONGITIVE 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 HEMODIALYSIS EFFECTIVELY REMOVES ETHYLENE GLYCOL THROUGH THE SKIN OF THE PREGNANT ANIMAL.

86-PROOF OR HIGHER WHISKEY BEFORE OR DURING TRANSPORT TO THE HOSPITAL. IF MEDICAL CARE WILL BE DELAYED SEVERAL HOURS, GIVE THE PATIENT THREE TO FOUR 1-OUNCE ORAL "SHOTS" OF ETHANOL SHOULD BE ADMINISTERED AS AN ANTIDOTE IN THE TREATMENT OF ETHYLENE GLYCOL INTOXICATION IS SEVERE 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 INTOXICATION. HEMODIALYSIS EFFECTIVELY REMOVES ETHYLENE GLYCOL AND ITS METABOLITES FROM THE BODY.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:
WATER MIST, CARBON DIOXIDE (CO2), DRY CHEMICAL, ALCOHOL-RESISTANT FOAM

HAZARDOUS COMBUSTION PRODUCTS:
MAY FORM: CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS

PRECAUTIONS FOR FIRE-FIGHTING:
NEVER USE MILDING OR CUTTING TOOLS OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY. WEAR FULL FIREFIGHTING TURN-OUT GEAR (FULL BUMPER GEAR), AND RESPIRATORY PROTECTION (SCBA).

FLAMMABILITY CLASS FOR FLAMMABLE LIQUIDS: COMBUSTIBLE LIQUID CLASS IIIB

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: NO DATA

ENVIRONMENTAL PRECAUTIONS: NO DATA

METHODS FOR CLEANING UP:
PERSONAL SAFETY AND PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIRE AREA OF SPILL TO PREVENT SPREADING. PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORPTION MATERIAL, AND SHOVED INTO CONTAINERS. ABSORB LIQUID ON VOMICULITE, FLOOR ABSORBENT OR OTHER ABSORBENT MATERIAL.

7. HANDLING AND STORAGE

HANDLING:
CONDITIONS OF THIS MATERIAL M Ay BE HAZARDOUS WHEN EMITTED. SINCE EMTTED CONTAINERS CONTAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBEDED.

STORAGE:
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ETHYLENE GLYCOL 107-21-1:

ACGIH:
CEILING LIMIT VALUE: 100 MG/M3 AEROSOL.

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:
NOT REQUIRED UNDER NORMAL CONDITIONS OF USE. WEAR SPLASH-PROOF SAFETY GOGGLES IF MATERIAL COULD BE MISTED OR SPLASHED INTO EYES.

SKIN AND BODY PROTECTION:
WEAR RESISTANT 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:
RESPIRATORY PROTECTION IS NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID

FORM: NO DATA

COLOR: GREEN

ODOR: NO DATA

BOILING POINT/BOILING RANGE: 226.00 DEG. F / 226 DEG. F @ 760.00 MMHG

PH (AVERAGE): 10.5

FLASH POINT: (>1250 DEG. F / 121 DEG. C

EVAPORATION RATE: NO DATA

EXPLOSION LIMITS: 3.2% (V) 15.3% (V)

VAPOR PRESSURE: 23.33 HPA @ 68 DEG. F / 20 DEG. C

VAPOR DENSITY: NO DATA

DENSITY (AVERAGE): 1.0825 G/CM3 @ 60.01 DEG. F / 15.56 DEG. C

8.956 LB/GAL

SOLUBILITY: NO DATA

PARTITION COEFFICIENT n-OCTANOL/WATER: NO DATA

LOG POW: NO DATA AVAILABLE

AUTOIGNITION TEMPERATURE: NO DATA

10. STABILITY AND REACTIVITY

STABILITY: STABLE

CONDITIONS TO AVOID:
INCOMPATIBLE PRODUCTS:
AVOID CONTACT WITH: STRONG OXIDIZING AGENTS

HAZARDOUS DECOMPOSITION PRODUCTS:
MAY FORM: CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS

HAZARDOUS REACTIONS:
PRODUCT WILL NOT UNDERGO HAZARDOUS POLYMERIZATION.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY:
ETHYLENE GLYCOL:
LD50 RAT: 6,140 MG/KG
LD50 MOUSE: 14,800 MG/KG

ACUTE INHALATION TOXICITY:
ETHYLENE GLYCOL: NO DATA AVAILABLE

ACUTE DERMAL TOXICITY:
ETHYLENE GLYCOL:
LD50 RABBIT: 10,611 MG/KG

12. ECOCLOGICAL INFORMATION

AQUATIC TOXICITY:
ACUTE AND PROLONGED TOXICITY TO FISH: NO DATA
ACUTE TOXICITY TO AQUATIC INVERTEBRATES: NO DATA

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS:
DESTROY BY LIQUID INCINERATION. DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. 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:
WARNING!
THIS PRODUCT CONTAINS A CHEMICAL KNOWN IN THE STATE OF CALIFORNIA TO CAUSE CANCER.

1,4-DIOXANE
LEAD
NICKEL
ARSENIC
CALCIUM
ACETALDEHYDE
WARNING!
THIS PRODUCT CONTAINS A CHEMICAL KNOWN IN THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

LEAD
MERCURY
CALCIUM

SARA HAZARD CLASSIFICATION: ACUTE HEALTH HAZARD

SARA 313 COMPONENT(S):
ETHYLENE GLYCOL 107-21-1 51.4689%

REPORTABLE QUANTITY - PRODUCT:
US. EPA CERCLA HAZARDOUS SUBSTANCES (40 CFR 302): 9714 LBS

REPORTABLE QUANTITY - COMPONENTS:
ETHYLENE GLYCOL 107-21-1 5000 LBS

HMIS NFPA

HEALTH 1*
FLAMMABILITY 1*
REACTIVITY 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).