PAM OIL, INC.
Total Automotive Distribution

MATERIAL SAFETY DATA SHEET

SECTION I — IDENTIFICATION

PRODUCT NAME:	PAMGUARD ANTIFREEZE & SUMMER COOLANT
CHEMICAL NAME:	ETHYLENE GLYCOL INHIBITED
CHEMICAL FAMILY:	GLYCOLS
FORMULA:	C2H6O2/H2O
SYNONYMS:	EG; GLYCOL; 1,2-ETHANEDIOL
CAS # and	**107-21-1**
CAS NAME:	1, 2-ETHANEDIOL

SECTION II — PHYSICAL DATA (DETERMINED ON TYPICAL MATERIAL)

BOILING POINT, 760 MM Hg:	325°F MINIMUM
FREEZING POINT:	50% IN DISTILLED WATER -34°F(-37°C)MAXIMUM OR LOWER
SPECIFIC GRAVITY (H2O=1) AT 60/60°F(15.5°C):	1.110-1.145
VAPOR PRESSURE AT 20°C:	0.06mm Hg.
VAPOR DENSITY (air=1):	1.78 ± 0.2
SOLUBILITY IN WATER by WT:	100
EVAPORATION RATE (Butyl Acetate=1):	0.01
APPEARANCE AND ODOR:	BLUE GREEN COLOR, SLIGHTLY VISCOUS LIQUID, MILD ODOR

SECTION III — INGREDIENTS

MATERIAL	%	TLV (Units)	HAZARD
Ethylene Glycol (CAS# 107-21-1)	84-94	125ppm, OSHA & ACGIH	See section V
Diethylene Glycol (CAS# 111-46-6)	0-8	None established	See section V
Water (CAS# 7732-18-5)	2-4		Non-Hazardous
Inorganic/Organic Salts	2-4		See section V

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	APX. 246°F SETAFLASH
FLAMMABLE LIMITS IN AIR, % by volume:	NON ESTABLISHED
EXTINGUISHING MEDIA:	Apply alcohol-type or all-purpose type foams by manufacturers' recommended techniques for large fires. Use CO2 dry chemical media for small fires.
SPECIAL FIRE FIGHTING PROCEDURES:	Do not spray pool fires directly; a solid stream of water or foam directed into hot burning liquid can cause frothing. Use self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None

SECTION V — HEALTH HAZARD DATA

TLV AND SOURCE: See section III

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: 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 and pulmonary edema may develop. Severe kidney damage follows the swallowing of large volumes of ethylene glycol which may be fatal. 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.

SKIN ABSORPTION: No evidence of adverse effects from available information.

INHALATION: May cause irritation of the nose and throat with headache, particularly from mists. High vapor concentrations caused, for example, by heating the material in an enclosed and poorly ventilated work place, may produce nausea, vomiting, headache, dizziness, and irregular eye movements.

SKIN CONTACT: No evidence of adverse effects from available information.

EYE CONTACT: Liquid, vapor, and mist, may cause discomfort in the eye with persistent conjunctivitis, seen slight excess redness of conjunctiva. Serious corneal injury is not anticipated.

EFFECTS OF REPEATED OVEREXPOSURE: Inhalation of mist may produce signs of central nervous system involement, particularly dizziness and nystagmus.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

The available toxicology information and a knowledge of the physical and chemical properties of the material suggest that overexposure is unlikely to aggravate existing medical conditions.

SECTION V Cont

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HAZARD EVALUATION:

Ethylene Glycol has been shown to produce dose-relkated teratogenic effects in rats and mice when given by gavage or in drinking water at high concentrations or doses. The no-effect dose for developmental toxicity in the mouse receiving ethylene glycol by gavage has been determined to be 150 mg/kg/day over theperiod of organogenesis. Also, in a preliminary study to assess the effects of exposure of pregnant rats and mice to aerosols at concentrations 150, 1000 and 2500 mg/m3 for 6 hours a day throughout the period of organogenesis, teratogenic effects were produced at the highest concentration, but only in mice. The conditions of these latter experiments did not allow a conclusion as to whether the developmental toxicity was mediated by inhalation of aerosol, percutaneous absorption of ethylene glycol from contaminated skin, or swallowing ofethylene glycol as a result of grooming the wetted coat. In further study, comparing effects from high aerosol concentration by whole-body or nose-only exposure, it was shown that nose-only exposure resulted in maternal toxicity (1000 and 2500 mg/m3) and developmental toxicity with minimal evidence of teratogenicity (2500 mg/m3). The no-effects concentration (based on maternal toxicity) was 500 mg/m3. ethylene glycol was applied to the skin of pregnant mice over the period of organogenesis. The above observations suggest that ethylene glycol is to be regarded as an animal teratogen; there is currently no available information to suggest that ethylene glycol has caused birth defects in humans. Cutaneous application of ethylene glycol is ineffective in producing developmental toxicity; exposure to high aerosol concentration is only minimally effective in producing developmental toxity; the major route for producing developmental toxicity is perorally. Two chronic feeding studies, using rats and mice, have not produced any evidence that ethylene glycol causes dose-related increases in tumor incidence, or a different pattern of tumors compared to untreated controls. The absence of a carcinogenic potential for ethylene glycol has been supported by numerous in vitro genotoxicity studies showing that it does not produce mutagenic or clastogenic effects.

OTHER EFFECTS OF OVEREXPOSURE:

Repeated skin contact may, in a very small proportion of cases, cause sensitization with the development of allergic contact dermatitis. The incidence is significantly less than 1% with the undiluted material.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: If concious give two glasses of water and induce vomiting. Call a physician immediately.
SKIN: Remove contaminated clothing and flush skin with water.

INHALATION: Remove to fresh air. Call a physician if discomfort persists.

EYES: Immediately flush with water, and continue washing the eyes for several minutes.

NOTES TO PHYSICIAN:

The principal toxic effects of ethylene glycol, when swallowed, are kidney damage and metabolic acidosis. Ethanol is antidotal, and its early administration may block the formation of nephrotoxic of ethylene glycol in the liver. Ethanol should be given intravenously, as a 5% solution in sodium bicarbonate at a rate of about 10ml ethanol per hour. A desired therapeutic level of ethanol in blood is 100mg/dl. Hemodialysis may be required. 4-Methylpyrazole, a potent inhibitor of alcohol dehydrogenase, has been used therapeutically to decrease the metabolic con sequences of ethylene glycol poisoning before coma, seizure, and renal failure have occurred (20mg/kg/day).Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism of production has not been elucidated, but it appears to be nocardiogenic in origin in several cases. Respiratory support with mechanical ventilation and positive end-expiratory pressure maybe required.There may be cranial nerve involement 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.

SECTION VI — REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: None

INCOMPATIBILITY (materials to avoid):

Explosive decomposition may occur if combined with strong acids or strong bases and subjected to elevated temperatures. Therefore, avoid strong acids and strong bases at elevated temperatures. Avoid contamination with strong oxidizing agents and materials reactive with hydroxyl compounds.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide and/or carbon dioxide.

HAZARDOUS POLYMERIZATION:

Will not occur

CONDITIONS TO AVOID: None

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Wear suitable protective equipment. Small spills should be flushed with large quanities of water. Larger spills should be collected for disposal.

WASTE DISPOSAL METHOD:

Incinerate in a furnace where permitted under appropriate Federal, State, or local regulations. At a very low concentration in water, ethylene glycol is readily biodegradable in a biological waste water treatment plant.

SECTION VIII — SPECIAL PROTECTION INFORMATION

RESPIRSTORY PROTECTION (specify type):

NIOSH approved breathing air equipment or NIOSH approved face mask with organic vapor cartridge and dust or mist pre-filter (not for use in fire fighting or in atmospheres with reduced oxygen content).

VENTILATION: General (mechanical) room ventilation may be adequate if handled at ambient temperatures or in covered equipment. If ambient temperatures are exceeded or operations exist which may produce misting, local exhaust ventilation is needed.

PROTECTIVE GLOVES: Rubber or polyvinyl chloride coated.

EYE PROTECTION: Monogoggles or faceshield

OTHER PROTECTIVE EQUIPMENT: Eye bath and safety shower.

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

DANGER!!! Harmful or fatal if swallowed.
Prolonged or repeated breathing of mist or vapor harmful.
Causes eye irritation
May cause kidney and nervous system damage
Causes birth defects in laboratory animals
Do not Swallow
Do not breathe mist from spray
Avoid contact with eyes
Keep container closed
Use with adequate ventilation
Wash thoroughly after handling

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OTHER PRECAUTIONS: None Known