MARATHON PETROLEUM

JORDAN TECHNOLOGIES, INC.

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: **M25055**

MSDS DATE: **May 2003**

PRODUCT NAME: **INHIBITED ETHYLENE GLYCOL – INDUSTRIAL GRADE – V R COOLANT**

24 Hour Emergency Phone: 502-267-8344

I. PRODUCT IDENTIFICATION

SARA / TITLE III HAZARD CATEGORIES (Sec Section X)

Immediate (ACUTE) Health:	No	Reactive Hazard:	No
Delayed (Chronic) Health:	Yes	Sudden Release of Pressure:	No
Fire Hazard:	No		

Manufacturer's Name and Address:

Jordan Technologies, Inc.
2820 S. English Station Road
Louisville, Kentucky 40299
Phone: 502-267-8344

CHEMICAL NAME: * Inhibited Ethylene Glycol CAS NUMBER: 107-21-1

SYNONYMS / COMMON NAMES: Monoethylene Glycol, EG, Glycol, V R Coolant

CHEMICAL FORMULA: C2H602

DOT INFORMATION: Not Regulated

II. HEALTH HAZARD INFORMATION

EMERGENCY AND FIRST AID PROCEDURES

Eyes:

IMMEDIATELY flush eyes with a directed stream of water for at least 5 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION.

Skin:

IMMEDIATELY remove contaminated clothing and shoes. Wash exposed area with soap and water. Wash clothing before reuse. If irritation occurs, GET MEDICAL ATTENTION.

Inhalation:

Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.

Ingestion:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Have patient drink several glasses of water, then induce vomiting by having patient tickle the back of the throat with finger. Keep airway clear. GET MEDICAL ATTENTION IMMEDIATELY.

NOTES TO PHYSICIAN:

This product contains ethylene glycol. Ethanol reduces 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, use of three to four 1-ounce oral "shots" of 86-proof or higher whiskey before or during transport to the hospital. Hemodialysis effectively removes ethylene glycol and its metabolites from the body.

Effects of acute ethylene glycol poisoning appear in three fairly distinct stages. The initial stage occurs shortly after exposure, lasts 6 to 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 to 36 hours after exposure and is initiated by the onset of coma. This phase is characterized by tachypnia, tachycardia, mild hypertension, cyanosis, and in severe cases, pulmonary edema, bronchopneumonia, cardiac enlargement, and congestive failure. The final stage occurs 24 to 72 hours 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.

HEALTH HAZARD INFORMATION (continued)

ROUTES OF ENTRY

Inhalation:

Under normal conditions inhalation exposure is unlikely. Exposure to aerosol sprays or mists may cause mucous membrane irritation. Exposure to glycol vapor or mist from heating may produce dizziness, mental sluggishness, nausea, headache, accumulation in the lungs, and irregular eye movements.

Skin:

Most likely route of exposure. Typically does not cause irritation. Slightly toxic to animals by absorption.

Eye Contact:

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

Ingestion:

Ingestion of ethylene glycol can result in central nervous system depression and kidney injury which can be fatal. Initial symptom is feeling of drunkenness, followed by nausea, vomiting, and visual disturbances. Subsequently, rapid breathing, increased heart rate, and decreased urine volume may be experienced.

EFFECTS OF OVEREXPOSURE

ACUTE

Eyes:

Exposure causes eye irritation. Symptoms may include stinging, tearing, redness and swelling.

HEALTH HAZARD INFORMATION (continued)

Skin:

Exposure may cause mild skin irritation. Symptoms may include redness and burning.

Skin absorption is possible, but harmful effects are not expected from this route of exposure under normal conditions of handling and use.

Breathing:

Exposure is possible under certain conditions of handling and use (i.e. during heating, spraying or stirring).

Short term inhalation toxicity is low. Breathing small amounts during normal handling is not likely to cause harmful effects; breathing large amounts may be harmful.

Symptoms are more typically seen at air concentrations exceeding the recommended exposure limits. Symptoms of exposure may include:

- Irritation (nose, throat, respiratory tract) – pre-existing lung disorders, (i.e. asthma-like conditions) may be aggravated by exposure to this material.
- Cough.
- Central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness).

Swallowing:

Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful.

Symptoms may include:

- Gastrointestinal irritation (nausea, vomiting, diarrhea).
- Central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness).
- Pulmonary edema (swelling and collection of fluid in the lung).
- Cyanosis (characterized by blush discoloration of the skin and nails). This may aggravate any pre-existing condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.
- Liver damage.
- Kidney damage.
- Convulsions.
- Coma.
- And Death.

HEALTH HAZARD INFORMATION (continued)

CHRONIC

Liver, kidney, and brain damage in humans has resulted from swallowing lethal or near lethal amounts of ethylene glycol.

This material (or a component) may cause birth defects in humans based on positive test results with laboratory animals.

This material is not expected to be carcinogenic in humans based on negative evidence of carcinogenicity in laboratory animals.

This material is not listed as a carcinogen by IARC, NTP or OSHA. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals, and may aggravate pre-existing disorders of these organs in humans: liver damage, reproductive effects.

Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans and may aggravate pre-existing disorders of these organs: kidney damage, liver damage.

III. IMPORTANT COMPONENTS

CAS NUMBER / NAME: 107-21-1 1,2 – Ethanediol

EXPOSURE LIMITS:
PEL = 50 ppm; 125 mg/m3, Ceiling
TLV = 50 ppm; 127 mg/m3, Ceiling

PERCENTAGE:
VOL ND
WT 95-100

COMMON NAMES: Ethylene Glycol

Listed On (list legend below):

1 2

IMPORTANT COMPONENTS (continued)

CAS NUMBER / NAME: 111-46-6 Ethanol, 2,2' – oxybis –

EXPOSURE LIMITS:
PEL = Not Established
TLV = Not Established

PERCENTAGE:
VOL ND
WT 0-5

COMMON NAMES: Diethylene Glycol

Listed On (list legend below):

1 SARA Toxic Chem, Section 313 Title III
2 Hazardous Air Pollutant

It is recommended that the lower PEL is observed to ensure worker protection. This product may contain trace amounts of ethylene oxide which have the potential to accumulate in the head space of shipping and storage containers or in enclosed spaces where the product is being handled or used. The TLV and PEL of ethylene oxide is 1 ppm with an action level of 0.5 ppm (8 hour TWA). Refer to 29 CFR 1910.1047 for current OSHA regulations. It is listed as a potential human carcinogen by IARC, NTP, and OSHA. This chemical is subject to the reporting requirements of Section 313 of SARA Title III.

IV. FIRE AND EXPLOSION DATA

FLASH POINT: 241°F, 116°C AUTO IGNITION TEMPERATURE: ND

FLAMMABLE LIMITS IN AIR, % BY VOLUME: UPPER 15.3%
LOWER 3.2%

EXTINGUISHING MEDIA:

Water fog, alcohol foam, carbon dioxide, and dry chemical. Do not use a direct water stream.

SPECIAL FIRE FIGHTING PROCEDURES:

Shut off source of fuel if possible and without risk. Keep personnel removed and upwind. Wear full protective clothing and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Ethylene glycol mist in air is a moderate fire and explosion hazard. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

V. SPECIAL PROTECTION

VENTILATION REQUIREMENTS:

Sufficient mechanical (general) and/or local exhaust ventilation to maintain exposure below TVL(s).

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

Respiratory:

Use NIOSH/MSHA approved respiratory protection equipment; air purifying for dusts and mists in combination with organic vapor cartridges.

Air supplied – if other protective measures do not adequately control exposures to vapors and/or mists.

For emergencies and unknown concentrations, use positive pressure self-contained breathing apparatus.

Utilize respiratory protective equipment in accordance with 29 CFR 1910.134 (Respiratory Protection).

Eyes:

Chemical goggles plus full face shield if potential for splash exists.

Gloves:

Chemical resistant gloves (Butyl Rubber) and/or body protection when potential for splash or contact with material exists.

Other Clothing and Equipment:

Emergency eyewash fountains and safety showers should be available in the vicinity of any potential exposure. Clothing which becomes contaminated with this product should be removed and laundered before being re-worn. To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

VI. PHYSICAL DATA

BOILING POINT @ 760 mm Hg:	198°C (388°F)
FREEZING POINT:	-13°C (8.6°F)
VAPOR PRESSURE:	0.06 mm Hg @ 20°C
EVAPORATION RATE (BuAc=1):	0.01
SPECIFIC GRAVITY:	1.115 @ 20°C/20°C (polyester grade and industrial grade)
SOLUBILITY IN H_2O % BY WT.:	Complete
MELTING POINT:	-13°C (87.6°F)
% VOLATILES BY VOL.:	Essentially Zero
VAPOR DENSITY (Air=1):	2.1
APPEARANCE AND ODOR:	Clear colorless, slightly viscous liquid. Mild odor.
pH:	~9.5

VII. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY:

Ethylene glycol is stable.
Conditions to avoid: oxidizing agents, open flame

INCOMPATIBILITY:

Materials to avoid: strong acids, bases, and oxidizing materials (i.e. sulfuric acid, nitric acid, oxygen, hydrogen peroxide, perchloric acid, acetic anhydride)

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon dioxide and carbon monoxide.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:

Polymerization will not occur under normal conditions.

VIII. HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS

Store in a cool, dry, well ventilated area away from incompatible materials.

Do not mix with strong acids, bases, and oxidizing materials.

Keep away from heat, sparks, and flames.

Keep container closed when not in use.

Do not store in open, unlabeled or mislabeled containers.

Containers, even those that have been emptied, will retain product residue and vapors and should be handled as if they were full.

Avoid open heating or agitation which may generate vapors or mists.

Avoid contact with eyes, skid, and clothing. Wash thoroughly after handling.

Do not consume food, drink, or tobacco products in areas where they may become contaminated with this material.

IX. TRANSPORTATION

TRANSPORTATION

US Department of Transportation

DOT:	PROPER SHIPPING NAME:	Not Regulated
	Hazard Class:	Not Determined
	Identification Number:	Not Determined
	Label Required:	Not Determined

International Maritime Dangerous Goods

IMDG:	PROPER SHIPPING NAME:	Not Determined, Not Regulated

International Air Transport Association

IATA:	PROPER SHIPPING NAME:	Not Determined, Not Regulated

X. ENVIRONMENTAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Review Fire and Explosion Data. (Section 4).

Use appropriate personal protective equipment measures during cleanup. Dike to contain spill and prevent entry into sewers, waterways, and low areas. DO NOT FLUSH TO SEWERS. Absorb on fire retardant treated sawdust, diatomaceous earth. Scrape up and remove. All cleanup and disposal should be carried out in accordance with federal, state, and local regulations.

WASTE DISPOSAL METHOD

Incineration is the preferred method where permitted under appropriate federal, state, or local regulations. This product when spilled or disposed of is a non-hazardous solid waste as defined in Resource Conservation Recovery Act regulations (40 CFR 261).

XI. ADDITIONAL INFORMATION

OSHA Standard 20 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, Material Safety Data Sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in the Material Safety Data Sheet available to your employees.

To aid our customers in complying with regulatory requirements, SARA Title III hazard categories for this product are indicated in Section I. If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40 CFR Part 370. Please consult those regulations for details.

This product contains a toxic chemical or chemicals subject to the reporting requirements of SECTION 313 of TITLE III of the SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT of 1986 and 40 CFR Part 372. (See Section III List Legend 1).

XII. PREPARATION INFORMATION

For additional non-emergency health, safety, or environmental information telephone:

502-267-8344.

or write to: JORDAN TECHNOLOGIES, INC.
2820 S. English Station Road
Louisville, KY 40299

For Emergencies: 24 Hour Emergency Phone: 502-267-8344

This MSDS replaces MSDS M25054, dated February 2000

WARNING LABEL INFORMATION

SIGNAL WORD: Caution

STATEMENT OF HAZARDS:

Toxic if swallowed or inhaled. May cause central nervous system depression, kidney and liver damage.

Breathing spray or mist may irritate respiratory tract.

Contact with eyes may cause irritation.

Possible birth defect hazard. May cause birth defects based on animal data.

PRECAUTIONARY STATEMENTS:

Avoid contact with eyes, skin, and clothing.

Do not inhale vapors or mists.

Wash thoroughly after handling.

Avoid open heating or agitation.

Store in a cool, dry, ventilated area.

Keep away from heat, sparks, or flame.

Prevent contact with strong acids, bases, and oxidizing materials.

DO NOT REUSE THIS CONTAINER. Product residues may remain in this container. All labeled precautions MUST be observed. Dispose of container in manner meeting government regulations.

FIRST AID:

IN CASE OF CONTACT:

<u>For Eyes:</u>

IMMEDIATELY flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION.

WARNING LABEL INFORMATION (continued)

For Skin:

IMMEDIATELY remove contaminated clothing and shoes. Flush skin thoroughly with cool water. Wash thoroughly with soap and water. Wash clothing before reuse. If irritation occurs, GET MEDICAL ATTENTION:

If Inhaled:

Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.

If Swallowed:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Have patient drink several glasses of water, then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. GET MEDICAL ATTENTION IMMEDIATELY.

IN CASE OF:

Spill or Leak:

Use appropriate personal protective equipment. Dike to contain spills. DO NOT FLUSH TO SEWERS. Absorb on fire retardant treated sawdust, diatomaceous earth. Scrape up and remove.

Fire:

Use water fog, alcohol foam, dry chemical, carbon dioxide. Keep personnel upwind, wear full protective clothing, and self-contained breathing apparatus.

DISPOSAL:

This product, when spilled or disposed of, is a non-hazardous solid waste (40 CFR 261). Dispose of container in a manner meeting government regulations.

WARNING LABEL INFORMATION (continued)

INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS

This product contains:

CAS#:	Name
107211	1,2 – Ethanediol
111466	Ethanol, 2,2' – oxybis –

SPECIAL PRECAUTIONS OR OTHER COMMENTS

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.

WARNING!!

Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "auto-ignition" 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.

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.