MATERIAL SAFETY DATA SHEET

MANUFACTURER: James River Petroleum
ADDRESS: P.O. 7200 Richmond, VA 23221

PRODUCT IDENTIFICATION

TRADE NAME: ENERGOL HLP 680
AM# 715-020-906 (Pint)
715-020-900 (Bulk)

CAS NUMBER: Mixture
SYNONYM(S): Lubricating Oil, Hydraulic Oil
CHEMICAL FAMILY: Hydrocarbon
MOLECULAR FORMULA: Mixture
MOLECULAR WEIGHT: ND
SHILO PRODUCT CODE: P 3427
MSDS NUMBER: B69

HIERARCHY: 050.060

PRODUCT HAZARD SUMMARY

HEALTH
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT

REACTIVITY
STABLE

PRODUCT HEALTH HAZARD INFORMATION

EFFECTS OF OVEREXPOSURE

ROUTE OF EXPOSURE

INGESTION:
PRACTICALLY NON-TOXIC. Estimated rat oral LD50 = >5 gms/kg. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

SKIN:
PRACTICALLY NON-TOXIC. Estimated rabbit dermal LD50 = >5 gms/kg. SLIGHTLY IRRITATING. Repeated or prolonged contact may result in defatting, oil acne, redness, itching, inflammation, cracking and possible secondary infection. May cause allergic reactions in some individuals. Contact with heated material may cause thermal burns. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first; within a few hours, tissue will become swollen, discolored and extremely painful (see Notes to Physician section).

EYE:
SLIGHTLY IRRITATING. Contact with heated material may cause thermal burns.

INHALATION:
May cause respiratory tract irritation. Exposure to high concentrations of dense oil mist may lead to oil pneumonia.
SPECIAL TOXIC EFFECTS:

ND

NOTE: This product has not been tested as a whole for all potential health effects. It may have other health hazards related to its components. See "Ingredient/Health Hazards" for additional information.

FIRST AID

INGESTION:
DO NOT INDUCE VOMITING. If spontaneous vomiting occurs, monitor for breathing difficulty. Get immediate medical attention.

SKIN CONTACT:
Remove contaminated clothing immediately. Wash area of contact thoroughly with soap and water. Get medical attention if irritation persists. Thermal burns require immediate medical attention. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention.

EYE CONTACT:
Flush immediately with large amounts of water. Eye lids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists. Thermal burns require immediate medical attention.

INHALATION:
Remove affected person from source of exposure. Get medical attention if irritation persists.

NOTES TO PHYSICIAN

The possible aspiration of high viscosity petroleum products is very slight. However, if aspirated, petroleum products may cause severe pneumonitis (oil pneumonia). In unconscious victims, use of an endotracheal tube should be considered if gastric lavage is undertaken.

In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

PERSONAL PROTECTION INFORMATION

EYE PROTECTION:
Wear safety glasses or chemical goggles to prevent eye contact. Have eye baths readily available where eye contact can occur. Do not wear contact lenses when working with this substance.

SKIN PROTECTION:
Wear impervious gloves and protective clothing to prevent skin contact.

RESPIRATORY PROTECTION:
Use NIOSH or MSHA approved equipment when airborne exposure limits are exceeded. Ventilation may be used to control or reduce airborne concentrations.

ND = No Data
NA = Not Applicable
PHYSICAL PROPERTIES

BOILING POINT, C (F): 371.1 (700) SPECIFIC GRAVITY: 0.92 @ 60 F
FREEzing POINT, C (F): NA % VOLATILE: 0 @ 100 F
VAPOR PRESSURE, mm Hg: Negligible 0 @ 100 F EVAPORATION RATE (WATER=1): Very Slow
VAPOR DENSITY (AIR=1): Heavier VISCOSITY, cSt: 687-762 @ 100 F
SOLUBILITY IN WATER, %: Insoluble POUR POINT: -4 C (25 F)

APPEARANCE/ODOR: Orange to brown clear liquid with a petroleum oil odor.

PHYSICAL PROPERTIES

FIRE AND EXPLOSION DATA

FLASH POINT, C (F): 243 (470)
AUTOIGNITION TEMPERATURE, C (F): ND
FLAMMABILITY LIMITS IN AIR (% BY VOL.): LOWER: ND UPPER: ND
BASIC FIREFIGHTING PROCEDURES: Use water spray, dry chemical, foam or carbon dioxide to extinguish fire. Water or foam may cause frothing, with further application leading to boilover. Use a water spray to cool fire-exposed containers, structures and to protect personnel. Use water to flush spills away from sources of ignition. Do not flush down public sewers.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Combustible at high temperatures. Irritating or toxic substances may be emitted upon thermal decomposition. Exposed firefighters should wear MSHA/NIOSH approved self-contained breathing apparatus, with full face mask and full protective equipment.

REACTIVITY DATA

STABILITY/INCOMPATIBILITY:
Stable under normal conditions of use. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:
Combustion may produce CO, CO₂ and reactive hydrocarbons. May also produce SOₓ.

ENVIRONMENTAL INFORMATION

SPILL OR RELEASE TO THE ENVIRONMENT:
If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures.

-- Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material.

-- For technical advice and assistance related to chemicals, contact CHEMTREC (800/424-9300) and your local fire department.

-- Notify the National Response Center, if required.
Emergency Action:
Keep unnecessary people away. Keep ignition sources out of area.

Spill or Leak Procedure:
Stop leak if you can do it without risk. Small Spills: Take up with sand or other noncombustible absorbent material or other sorbent known to be compatible, then flush area with water. Large Spills: Dike far ahead of spill for later disposal.

Notification:
Any spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties.

WASTE DISPOSAL:
This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:
There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:
Avoid extremes of temperature in storage. Store in tightly closed containers in cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Do not store in unlabeled containers. Do not eat, drink or smoke in areas of use or storage.

Empty containers may contain flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld or reuse containers unless adequate precautions are taken against these hazards.

ND = No Data
NA = Not Applicable
TRANSPORTATION REQUIREMENTS

DOT HAZARD CLASS (49 CFR 172.101): NA
D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): NA
D.O.T. LABELS REQUIRED (49 CFR 172.101): NA
D.O.T. PLACARDS REQUIRED: NA
BILL OF LADING DESCRIPTION: Lubricating Oil (Motor), Petroleum Lubricating Oil (Rail)
UN/NA CODE: NA

INGREDIENT/HEALTH HAZARD INFORMATION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>%</th>
<th>EXPOSURE LIMITS - REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distillates (petroleum), solvent refined heavy paraffinic.</td>
<td>64741-88-4</td>
<td>*20-30</td>
<td>5 mg/M³ ACGIH TLV and OSHA PEL for mineral oil mists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 mg/M³ ACGIH STEL</td>
</tr>
<tr>
<td>Health Hazards:</td>
<td>Orally - practically non-toxic. Possible aspiration hazard (depending on viscosity). Dermally - practically non-toxic. Skin - slightly irritating. May cause allergic skin reactions in some individuals. Eye - slightly irritating. May cause respiratory tract irritation. Published studies of the dermal tumorigenicity of severely solvent-refined paraffinic petroleum oils generally report a lack of carcinogenic effect. One study reports results that suggest a weak dermal carcinogenic potential for such oils. However, the International Agency for Research on Cancer (IARC), in its review of a large body of literature, has determined that there is &quot;no evidence that severely solvent-refined oils are carcinogenic to experimental animals&quot;.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Distillates (petroleum), heavy paraffinic, deasphalted and solvent dewaxed. | ND | 50-70 | 5 mg/M³ ACGIH TLV and OSHA PEL for mineral oil mists |
|                      |         |    | 10 mg/M³ ACGIH STEL |
| Health Hazards:     | Skin - repeated or prolonged contact may cause mild skin irritation. Published studies of the dermal tumorigenicity of severely solvent-refined paraffinic petroleum oils generally report a lack of carcinogenic effect. One study reports results that suggest a weak dermal carcinogenic potential for such oils. However, the International Agency for Research on Cancer (IARC), in its review of a large body of literature, has determined that there is "no evidence that severely solvent-refined oils are carcinogenic to experimental animals". |

Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).

Mixture Trace NA

NOTE: An alternate formulation for this product may be used depending on manufacturing conditions. The oil indicated below is used with the same remaining components.

ND = No Data
NA = Not Applicable
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>%</th>
<th>EXPOSURE LIMITS - REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual oil (petroleum), hydrotreated</td>
<td>64742-57-0</td>
<td>40-50</td>
<td>5 mg/m³ ACGIH TLV and OSHA PEL for mineral oil mists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 mg/m³ ACGIH STEL</td>
</tr>
</tbody>
</table>

Health Hazards: Orally - practically non-toxic. Dermally - practically non-toxic. Skin - slightly irritating. Eye - slightly irritating. Inhalation - practically non-toxic. Published studies of the dermal tumorigenicity of severely solvent-refined paraffinic petroleum oils generally report a lack of carcinogenic effect. One study reports results that suggest a weak dermal carcinogenic potential for such oils. However, the International Agency for Research on Cancer (IARC), in its review of a large body of literature, has determined that there is no evidence that severely solvent-refined oils are carcinogenic to experimental animals. This oil is also hydrotreated. IARC has also indicated that the combination of hydrotreating and solvent refining appears to reduce or eliminate skin tumorigenicity.

**EFFECTIVE DATE:** 4/1/86  
**COMPLETED BY:** R. K. Rigney  
**APPROVED BY:** RW/MA