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## MATERIAL SAFETY DATA SHEETS

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

GENERIC NAME: HYDRAULIC OIL

ISSUE DATE: March 2006

THIS GENERIC MSDS REPRESENTS THE FOLLOWING ENGINE ARMOUR PRODUCTS:  
 PREMIUM HYDRAULIC OIL A/W 32, 46, 68

CAS NUMBER: MIXTURE  
 SYNONYMS / GENERAL NAMES: HYDRAULIC OIL  
 24 HOUR EMERGENCY TELEPHONE: (CHEMTREC) 1-800-424-9300  
 TECHNICAL INFORMATION: 813-248-1988

### 2. COMPOSITION / INFORMATION ON INGREDIENTS / HAZARDOUS INGREDIENTS

COMPONENTS	CAS NO.	%	HAZARD DATA
HIGHLY REFINED LIGHT MINERAL BASE OILS	64742-55-8	0-99	ORAL (LD50): >5000 mg/kg
HIGHLY REFINED HEAVY MINERAL BASE OILS	64742-54-7	0-99	DERMAL (LD50): >2000 mg/kg
PETROLEUM ADDITIVES	MIXTURE	<2	

HAZARDOUS INGREDIENTS: NONE

HAZARDOUS PER 29 CFR 1916.1200: NO

### 3. HAZARDOUS IDENTIFICATION

ROUTES OF ENTRY:	SKIN CONTACT
TARGET ORGANS:	SKIN
IRRITANCY:	THIS MATERIAL CAN CAUSE MILD SKIN IRRITATION FROM PROLONGED OR REPEATED SKIN CONTACT.
REPRODUCTIVE EFFECTS:	N/A
CANCER INFORMATION:	THIS PRODUCT DOES NOT CONTAIN ANY COMPONENTS AT CONCENTRATIONS ABOVE 0.1% WHICH ARE CONSIDERED CARCINOGENIC BY OSHA, IARC, OR NTP.

### 4. FIRST AID MEASURES

EYES:	CHECK FOR AND REMOVE CONTACT LENSES. FLUSH EYES WITH COOL, CLEAN, LOW-PRESSURE WATER WHILE OCCASIONALLY LIFTING AND LOWERING EYELIDS. SEEK MEDICAL ATTENTION IF EXCESSIVE TEARING, REDNESS, OR PAIN PERSISTS.
DERMAL:	REMOVE CONTAMINATED SHOES AND CLOTHING. WIPE OFF EXCESS MATERIAL. WASH EXPOSED SKIN WITH SOAP AND WATER. SEEK MEDICAL ATTENTION IF TISSUE APPEARS DAMAGED OR IF IRRITATION PERSISTS. THOROUGHLY CLEAN CONTAMINATED CLOTHING BEFORE REUSE. DISCARD CONTAMINATED LEATHER GOODS. IF MATERIAL IS INJECTED UNDER THE SKIN, INTO MUSCLE, OR INTO THE BLOODSTREAM, SEEK MEDICAL ATTENTION IMMEDIATELY.
INGESTION:	DO NOT INDUCE VOMITING UNLESS DIRECTED TO BY A PHYSICIAN. DO NOT GIVE ANYTHING TO DRINK UNLESS DIRECTED TO BY A PHYSICIAN. NEVER GIVE ANYTHING BY MOUTH TO A PERSON WHO IS NOT FULLY CONSCIOUS. SEEK MEDICAL ATTENTION IMMEDIATELY.
INHALATION:	MOVE VICTIM TO FRESH AIR. IF VICTIM IS NOT BREATHING, IMMEDIATELY BEGIN RESCUE BREATHING. IF BREATHING IS DIFFICULT, 100 PERCENT HUMIDIFIED OXYGEN SHOULD BE ADMINISTERED BY A QUALIFIED INDIVIDUAL. SEEK MEDICAL ATTENTION IMMEDIATELY. KEEP THE AFFECTED INDIVIDUAL WARM AND AT REST.
INJECTION:	INJECTION OF PRESSURIZED HYDROCARBONS CAN CAUSE SEVERE, PERMANENT TISSUE DAMAGE. INITIAL SYMPTOMS MAY BE MINOR. INJECTION OF PETROLEUM HYDROCARBONS REQUIRES IMMEDIATE MEDICAL ATTENTION.

NA - NOT APPLICABLE

ND - NO DATA

NE - NOT ESTABLISHED

### 5. FIRE FIGHTING MEASURES

FLASH POINT, °C (°F): 242°C (468°F)  
 FLAMMABLE LIMITS (% BY VOLUME): LOWER: AP 1% UPPER: AP 7%  
 EXTINGUISHING MEDIA: USE DRY CHEMICAL, FOAM, CARBON DIOXIDE OR WATER FOG.  
 SPECIAL FIRE FIGHTING PROCEDURES: N/A  
 AUTOIGNITION TEMPERATURE: N/A  
 EXPLOSION DATA: N/A  
 NFPA RATING: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

**6. ACCIDENTAL RELEASE MEASURES**

**SPILL PROCEDURES:** DO NOT TOUCH DAMAGED CONTAINERS OR SPILLED MATERIAL UNLESS WEARING APPROPRIATE PROTECTIVE EQUIPMENT. SLIPPING HAZARD; DO NOT WALK THROUGH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO SO WITHOUT RISK. FOR SMALL SPILLS, ABSORB OR COVER WITH DRY EARTH, SAND, OR OTHER INERT NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO WASTE CONTAINERS FOR LATER DISPOSAL. CONTAIN LARGE SPILLS TO MAXIMIZE PRODUCT RECOVERY OR DISPOSAL. PREVENT ENTRY INTO WATERWAYS OR SEWERS. IN URBAN AREA, CLEANUP SPILL AS SOON AS POSSIBLE. IN NATURAL ENVIRONMENTS, SEEK CLEANUP ADVICE FROM SPECIALISTS TO MINIMIZE PHYSICAL HABITAT DAMAGE. THIS MATERIAL WILL FLOAT ON WATER. ABSORBENT PADS AND SIMILAR MATERIALS CAN BE USED. COMPLY WITH ALL LAWS AND REGULATIONS.

**7. HANDLING AND STORAGE**

**HANDLING PROCEDURES:** AVOID WATER CONTAMINATION AND EXTREME TEMPERATURES TO MINIMIZE PRODUCT DEGRADATION. EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUES THAT CAN IGNITE WITH EXPLOSIVE FORCE. DO NOT PRESSURIZE, CUT, WELD, BRAZE SOLDER, DRILL, GRIND OR EXPOSE CONTAINERS TO FLAMES, SPARKS, HEAT OR OTHER POTENTIAL IGNITION SOURCES. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL AUTHORITIES BEFORE REUSING, RECONDITIONING, RECLAIMING, RECYCLING OR DISPOSING OF EMPTY CONTAINERS AND/OR WASTE RESIDUES OF THIS PRODUCT.

**STORAGE PROCEDURES:** KEEP CONTAINER CLOSED. DO NOT STORE WITH STRONG OXIDIZING AGENTS. DO NOT STORE AT TEMPERATURES ABOVE 120°F OR IN DIRECT SUNLIGHT FOR EXTENDED PERIODS OF TIME. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL AUTHORITIES BEFORE REUSING, RECONDITIONING, RECLAIMING, RECYCLING OR DISPOSING OF EMPTY CONTAINERS OR WASTE RESIDUES OF THIS PRODUCT.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>ENGINEERING CONTROLS:</b>	PROVIDE EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO KEEP THE AIRBORNE CONCENTRATIONS OF MISTS AND/OR VAPORS BELOW THE RECOMMENDED EXPOSURE LIMITS. AN EYE WASH STATION AND SAFETY SHOWER SHOULD BE LOCATED NEAR THE WORK-STATION.
<b>GLOVES PROTECTION:</b>	USE GLOVES CONSTRUCTED OF CHEMICAL RESISTANT MATERIALS SUCH AS NEOPRENE OR HEAVY NITRILE RUBBER IF FREQUENT OR PROLONGED CONTACT IS EXPECTED. USE HEAT PROTECTIVE GLOVES WHEN HANDLING PRODUCT AT ELEVATED TEMPERATURES.
<b>EYE PROTECTION:</b>	SAFETY GLASSES EQUIPPED WITH SIDE SHIELDS SHOULD BE ADEQUATE PROTECTION UNDER MOST CONDITIONS OF USE. WEAR GOGGLES AND/OR FACE SHIELD IF SPLASHING OR SPRAYING IS LIKELY, ESPECIALLY IF MATERIAL IS HEATED ABOVE 125° F (OR 51° C). HAVE SUITABLE EYE WASH WATER AVAILABLE.
<b>RESPIRATORY PROTECTION:</b>	VAPORIZATION OR MISTING IS NOT EXPECTED AT AMBIENT TEMPERATURES. THEREFORE, THE NEED FOR RESPIRATORY PROTECTION IS NOT ANTICIPATED UNDER NORMAL USE CONDITIONS AND WITH ADEQUATE VENTILATION. IF ELEVATED AIRBORNE CONCENTRATIONS ABOVE APPLICABLE WORKPLACE EXPOSURE LEVELS ARE ANTICIPATED, A NIOSH-APPROVED ORGANIC VAPOR RESPIRATOR EQUIPPED WITH A DUST/MIST PREFILTER SHOULD BE USED. PROTECTION FACTORS VARY DEPENDING UPON THE TYPE OF RESPIRATOR USED. RESPIRATORS SHOULD BE USED IN ACCORDANCE WITH OSHA REQUIREMENTS (29 CFR 1910.134).
<b>CLOTHING RECOMMENDATION:</b>	USE CLEAN AND IMPERVIOUS PROTECTIVE CLOTHING (e.g., NEOPRENE OR TYVEK) IF SPLASHING OR SPRAYING CONDITIONS ARE PRESENT. PROTECTIVE CLOTHING MAY INCLUDE LONG-SLEEVE OUTER GARMENT, APRON, OR LAB COAT. IF SIGNIFICANT CONTACT OCCURS, REMOVE OIL-CONTAMINATED CLOTHING AS SOON AS POSSIBLE AND PROMPTLY SHOWER. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE OR DISCARD. WEAR HEAT PROTECTIVE BOOTS AND PROTECTIVE CLOTHING WHEN HANDLING MATERIAL AT ELEVATED TEMPERATURES.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE:	LIQUID
ODOR:	MILD PETROLEUM ODOR
pH:	N/A
VAPOR PRESSURE, mm Hg (25 °C):	<1 mm of Hg (@ 20 °C)
VAPOR DENSITY:	>1 (AIR = 1)
MELTING POINT:	NOT AVAILABLE.
BOILING POINT, 760 mm Hg, °C:	NOT AVAILABLE
SOLUBILITY IN WATER:	INSOLUBLE IN COLD WATER.
SPECIFIC GRAVITY:	0.87 (WATER = 1)
EVAPORATION RATE:	N/A
VISCOSITY 40°C (100°C)	44 @ 40° C
MOLECULAR WEIGHT:	N/A
PERCENT VOLATILE:	NEGLIGIBLE VOLATILITY

**10. STABILITY AND REACTIVITY**

STABILITY:	STABLE
INCOMPATIBILITY:	STRONG OXIDIZERS
POLYMERIZATION:	NOT EXPECTED TO OCCUR
THERMAL DECOMPOSITION:	CO <sub>2</sub> , CO, SMOKE, FUMES, UNBURNED HYDROCARBONS AND TRACE OXIDES OF SULFUR, NITROGEN, PHOSPHORUS AND ZINC.

**11. TOXICOLOGICAL INFORMATION**

EYE IRRITATION:	THIS PRODUCT CAN CAUSE MILD, TRANSIENT, EYE IRRITATION WITH SHORT-TERM CONTACT WITH LIQUID OR SPRAYS.
DERMAL IRRITATION:	THIS MATERIAL CAN CAUSE MILD SKIN IRRITATION FROM PROLONGED OR REPEATED SKIN CONTACT.
INHALATION TOXICITY:	AT ELEVATED TEMPERATURES, MIST OR VAPORS MAY IRRITATE THE MUCOUS MEMBRANES OF THE NOSE, THE THROAT, BRONCHI, AND LUNGS.
INGESTION IRRITATION:	IF SWALLOWED, NO SIGNIFICANT ADVERSE HEALTH EFFECTS ARE ANTICIPATED. INGESTION CAN CAUSE MILD IRRITATION TO THE DIGESTIVE TRACT OR CAUSE A LAXATIVE EFFECT. BECAUSE OF THE LOW VISCOSITY OF THIS MATERIAL, THIS MATERIAL CAN ENTER THE LUNGS DIRECTLY BY ASPIRATION (e.g. DURING SWALLOWING OR VOMITING). IF ASPIRATED INTO THE LUNGS, THIS MATERIAL CAN CAUSE SEVERE LUNG DAMAGE OR DEATH.
INJECTION SENSITATION:	INJECTION UNDER THE SKIN, IN MUSCLE, OR INTO THE BLOOD STREAM CAN CAUSE IRRITATION, INFLAMMATION, SWELLING, FEVER, AND SYSTEMIC EFFECTS AND MILD CENTRAL NERVOUS SYSTEM DEPRESSION. INJECTION OF PRESSURIZED HYDROCARBONS CAN CAUSE SEVERE, PERMANENT TISSUE DAMAGE. INITIAL SYMPTOMS MAY BE MINOR. INJECTION OF PETROLEUM HYDROCARBONS REQUIRES IMMEDIATE MEDICAL ATTENTION.

CHRONIC EXPOSURE SYMPTOMS	CONTAINS A PETROLEUM-BASED MINERAL OIL. PROLONGED OR REPEATED SKIN CONTACT CAN CAUSE MILD IRRITATION AND INFLAMMATION CHARACTERIZED BY DRYING, CRACKING, (DERMATITIS) OR OIL ACNE. INHALATION OF PETROLEUM-BASED MINERAL OILS CAN CAUSE RESPIRATORY IRRITATION OR OTHER PULMONARY EFFECTS AFTER REPEATED OR PROLONGED INHALATION OF OIL MISTS AT CONCENTRATIONS ABOVE APPLICABLE WORKPLACE EXPOSURE LEVELS.
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**12. HEALTH INFORMATION**

HMIS CODE: HEALTH: 1 FIRE: 1 REACTIVITY: 0

No	HIGHLY TOXIC	No	SENSITIZER
No	TOXIC	No	REPRODUCTIVE EFFECTS
No	CORROSIVE	No	MUTAGEN
No	IRRITANT		

**13. DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL:** It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal. Determine compliance status with all applicable requirements prior to disposal.

**14. TRANSPORT INFORMATION****DOT (DEPARTMENT OF TRANSPORTATION)**

<b>PROPER SHIPPING NAME:</b>	PETROLEUM OIL
<b>HAZARD CLASS:</b>	NOT A DOT CONTROLLED MATERIAL (UNITED STATES).
<b>HAZARD IDENTIFICATION NUMBER:</b>	N/A
<b>DOT PLACARD:</b>	N/A
<b>COMPATIBILITY CATEGORY:</b>	N/A

**15. REGULATORY INFORMATION****SARA SECTION 313 - TOXIC CHEMICALS:**

This product does not contain toxic chemicals under SARA Section 313 and 40 CFR Part 372.

**SARA SECTION 311 - HAZARD CATEGORIES:**

This product may meet one or more of the criteria for the hazard categories defined in 40 CFR Part 370 as established by Sections 311 and 312 of SARA as indicated below:

NO	IMMEDIATE (ACUTE) HEALTH HAZARD	NO	SUDDEN RELEASE OF PRESSURE HAZARD
NO	DELAYED (CHRONIC) HEALTH HAZARD	NO	REACTIVE HAZARD
NO	FIRE HAZARD		

**SARA SECTION 302 - EXTREMELY HAZARDOUS WASTE:**

This product is not known to contain any components in concentrations greater than one percent that are listed as Extremely Hazardous Substances in 40 CFR Part 355 pursuant to the requirements of Section 302(a) of SARA.

**CLEAN WATER ACT (CWA):**

Under the CWA, discharges of crude oil and petroleum products to surface water without proper Federal and State permits must be reported immediately to the National Response Center at (800) 424-8802.

**CERCLA HAZARDOUS SUBSTANCES:**

As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance.

**U.S. TSCA INVENTORY**

All components of this material are on the U.S. TSCA Inventory or are not required to be listed on the U.S. TSCA Inventory

**16. OTHER INFORMATION**

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ENGINE ARMOUR BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.

<b>NFPA HAZARD RATING</b>	least - 0	slight - 1	moderate - 2	high - 3	extreme - 4
<b>HMIS HEALTH RATING</b>	least - 0	slight - 1	moderate - 2	high - 3	extreme - 4