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DUALCO HYDRAULIC FLUID

Section 1 – Product Identification

Product Name: DUALCO Hydraulic Fluid

Product Type: Hydraulic Fluid

DUALCO urges each customer or recipient of this SDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and **fire** prevention, as necessary or appropriate to use and understand the data contained in this SDS.

To promote safe handling, each customer or recipient should: 1) Notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this SDS and any other information regarding hazards or safety; 2) Furnish this same information to each of its customers for the product; and 3) Request its customers to notify their employees, customers, and other users of the product of this information.

Section 2 – Chemical Product and Company Identification

Chemical Name: Not Application (mixture)
 Chemical Family: Polyalkylene Glycol
 Common Name: DUALCO Hydraulic Fluid
 Formula: Trade Secret
 Synonym: None

COMPANY IDENTIFICATION

DUALCO, Inc.
 8404 Braniff
 Houston, TX 77061
 Phone: 713-644-1164
 FAX: 713-644-7761

Section 3 – Composition Information

<u>Component</u>	<u>CAS#</u>	<u>Amount</u>
Polyalkylene Glycol	Trade Secret	> 95. %
N-phenyl-alpha-naphthylamine (PANA)	90-30-2	< 5. %

Section 4 – Hazards Identification

EMERGENCY OVERVIEW

Appearance: Transparent amber
 Physical State: Liquid
 Odor: Mild sweet

Hazards of product	WARNING!	CAUSES EYE AND SKIN IRRITATION. HIGH TEMPERATURE GENERATED VAPOR, AEROSOL OR MIST OF THE PRODUCT OR THERMAL DEGRADATION PRODUCTS CAN BE IRRITATING AND HARMFUL IF INHALED. ASPIRATION MAY CAUSE LUNG DAMAGE.
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POTENTIAL HEALTH EFFECTS

Effects of Single Acute Overexposure

Inhalation: Exposure to a dense atmosphere of aerosolized product, designed to evaluate intentional aerosolization, produced lung injury and delayed deaths in animals.

Eye Contact: May cause irritation, experienced as stinging with excess blinking and tear production. Excess redness of the conjunctiva may occur.

Skin Contact: Brief contact is not irritating. Prolonged contact may cause reddening, itchiness, a burning sensation, and possible drying and flaking of the skin.

Skin Absorption: No evidence of harmful effects from available information.

Chronic, Prolonged or Repeated Overexposure

Effects of Repeated Overexposure - No adverse effects anticipated from available information.

Other Effects of Overexposure - Overexposure to vapor, aerosol or mist generated at high temperature may result in eye and respiratory tract irritation, dizziness, nausea and the inhalation of harmful amounts of material.

Medical Conditions Aggravated by Exposure

Skin contact may aggravate an existing dermatitis. Exposure to this material may decrease the oxygen-carrying capacity of the blood. Individuals with cardiovascular disease or impairment of the respiratory function may be at increased risk.

POTENTIAL ENVIRONMENTAL EFFECTS

See Section 12 for Ecological Information.

<u>Component</u>	<u>CAS#</u>	<u>Amount</u>
Polyalkylene Glycol	Trade Secret	> 95. %
N-phenyl-alpha-naphtylamine (PANA)	90-30-2	< 5. %

Section 5 – First Aid Procedures

INHALATION: Remove to fresh air. If effects occur, consult physician.

EYE CONTACT: Immediately flush eyes with water and continue washing for several minutes. Remove contact lenses, if worn. Obtain medical attention, preferably an ophthalmologist.

SKIN CONTACT: Wash skin with soap and plenty of water.

SWALLOWING: Do not induce vomiting. If signs or symptoms of toxicity are present, obtain medical attention.

NOTES TO PHYSICIAN

Low toxicity by swallowing.

Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g., gastric lavage after endotracheal intubation).

Section 6 – Fire Fighting Measures

EXTINGUISHING MEDIA

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

FIRE FIGHTING PROCEDURES:

Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream - May spread fire. Move container from the fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus, and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Liquid mist of this product can burn. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.

HAZARDOUS COMBUSTION PRODUCTS

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide, carbon dioxide, combustion products may include trace amounts of: Nitrogen oxides. Carbon dioxide, Combustion products may include trace amounts of: Nitrogen oxides. in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract. Where this product is burned under conditions of relatively complete combustion, the major products are carbon dioxide and water vapor. See Section 3 - Other Effects of Overexposure. (on our copy) Changes from Dow

Section 7 – Accidental Release Measures

Steps to be taken if Material is Released or Spilled:

Small spills can be flushed with large amounts of water; larger spills should be collected for disposal.

Personal Precautions: Wear suitable protective equipment, especially eye protection. See Section 8.2 - Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Section 8 – Handling and storage**HANDLING****General Handling**

Avoid contact with eyes, skin, and clothing.

Avoid breathing vapor, aerosol and mist.

Do not swallow.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

Storage

Store in the following material(s): 316 stainless steel. Carbon steel, Glass-lined container, Polypropylene, Polypropylene-lined container, Stainless steel, Teflon. This material may soften and lift certain paints and surface coatings. Use product promptly after opening. Store in original unopened container. Unopened containers of material stored beyond the recommended shelf life should be retested against the sales specifications before use. Additional storage and handling information on this product may be obtained by calling your sales or technical representative.

(This Storage writeup from Dow)

Shelf Life Use: Use within 24 months.

FOR INDUSTRY USE ONLY.

Ventilation

General room ventilation is satisfactory for storage and handling at room temperature. Where exposures to elevated temperatures occur, or when mechanical agitation or other activity that creates airborne vapor, aerosol, or mist is employed, special ventilation is needed. See Section 3.2 - Other Effects of Overexposure. See Section 10 - Thermal Decomposition

Other Precautions

Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, may be formed.

Section 9 – Exposure Controls and Personal Protection

EXPOSURE LIMITS: None established by OSHA or ACGIH.

PERSONAL PROTECTION

Eye/Face Protection: Use Safety Glasses.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items that cannot be decontaminated, such as shoes, belts, and watchbands, should be removed and disposed of properly.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Neoprene, Natural rubber ("latex"), Viton, Polyvinyl chloride ("PVC" or "vinyl"), Nitrile/Butadiene, rubber ("nitrile" or "NBR"). **NOTICE:** The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors, such as, but not limited to: Other chemicals which may be handled, limited to, other chemicals that be handled, physical requirements (cut/puncture protection, dexterity thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where as indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

ENGINEERING CONTROLS

Ventilation: General room ventilation is satisfactory for storage and handling at room temperature. Where exposures to elevated temperatures occur, special, local ventilation is needed. See Section 3.2.

Other Effects of Overexposure. See Section 10 - Thermal Decomposition

Section 10 – Physical and Chemical Properties

Color: Brown

pH: *Not currently available.*

Solubility in Water (by weight): 20 °C 100 % Visual

Odor: Mild sweet

Flash Point - Closed Cup: *Pensky-Martens Closed Cup ASTM D 93* 218 °C 425 °F

Flash Point - Open Cup: *Cleveland Open Cup ASTM D 92* 302 °C 575 °F

Boiling Point (760 mmHg): Decomposes, None - nonvolatile liquid

Freezing Point: *Pourpoint* -48 C -55 °F **Specific Gravity (H2O = 1):** 1.038 20 °C / 20 °C

Vapor Pressure at 20 °C: < 0.001 kPa < 0.01 mmHg

Vapor Density (air = 1): > 1

Evaporation Rate (Butyl Acetate = 1): < 0.01

Melting Point: *Not applicable.*

Kinematic Viscosity 54.4 – 63.7 MM²/S @ 37.8 °C

Pour Point -48 °C (-54 °F) ASTM D97

Volatile Organic Compounds 0.00 g/1 EPA Method No.24

Decomposition Temperature: No test data available

Section 11 – Stability and Reactivity

Stability/Instability: Thermally stable at typical use temperatures

Conditions to Avoid: May exothermically decompose with evolution of volatiles at temperatures in excess of 550 °F (288 °C). **WARNING:** Do not mix this product with nitrites or other nitrosating agents because a nitrosamine may be formed. Nitrosamines may cause cancer.

Incompatible Materials: Normally unreactive; however, avoid strong bases at high temperatures, strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds.

Thermal Decomposition: Where this material is subjected to overheating (thermal degradation) but does not burn, the degradation products can be such things as organic acids (formic, acetic acids), aldehydes, esters, ketones, etc. These vapors or fumes can be highly irritating to the eyes, nose and throat. Special ventilation may be needed. In normal use, no respiratory protective equipment should be needed, but self-contained breathing apparatus should be available for use in emergencies.

Hazardous Polymerization - Will Not Occur.

Inhibitors/Stabilizers – Not applicable

Section 12 – Toxicological Information

Acute Toxicity Ingestion

Single dose oral LD50 has not been determined.

Skin Absorption:

The dermal LD50 has not been determined.

Based on information for component(s): Estimated LD50, Rabbit ≈ 2,000 mg/kg

Sensitization Skin:

A component in this mixture has caused allergic skin reactions in humans.

Repeated Dose Toxicity:

Mist may cause irritation of upper respiratory tract (nose and throat) and lungs.

Chronic Toxicity and Carcinogenicity:

Based on information for component(s): Did not cause cancer in laboratory animals.

Developmental Toxicity:

No relevant information found.

Reproductive Toxicity:

No relevant information found.

Genetic Toxicology:

For the minor component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases.

Section 13 – Ecological Information

Movement & Partitioning:

No bio-concentration is expected because of the relatively high water solubility.\

Persistence and Degradability:

Biodegradation under aerobic static laboratory conditions is moderate (BOD20 or BOD28/ThOD between 10 and 40%.

Biological oxygen demand (BOD):

BOD 5	BOD10	BOD 20	BOD 28
0%	8%	15%	

Chemical Oxygen Demand: 2.01 mg/mg

Ecotoxicity

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/l in the most sensitive species tested).

Fish Acute & Prolonged Toxicity:

LC50, fathead minnow (*Pimephales promelas*), 96 h: 55 mg/l

Aquatic Invertebrate Acute Toxicity:

LC50, water flea *Daphnia magna*, 48 h: 25 mg/l

Toxicity to Micro-organisms:

LC50; bacteria, 16 h: > 1,000 mg/l

Further Information:

Chemical Oxygen Demand (COD) calculated: 2.01 mg/mg

Section 14 – Disposal Consideration**Waste Disposal Method**

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.

Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: incinerator or other thermal destruction device.

Disposal Considerations

Disposal methods identified are for the product as sold. For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules, regulations and/or laws governing your location.

Section 15 – Transport Information**DOT Non Bulk**

NOT REGULATED

DOT BULK

NOT REGULATED

IMDG

NOT REGULATED

ICAO/ATA

NOT REGULATED

Proper Shipping Name: NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through your DUALCO sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations, and rules relating to the transportation of the material.

Section 16 – Regulatory Information

FEDERAL / NATIONAL

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, SECTION 103)

The following components of this product are specifically listed as hazardous substances in 40 CFR 302.4 (unlisted hazardous substances are not identified) and are present at levels which could require reporting:

None.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III, SECTIONS 302 AND 304

The following components of this product are listed as extremely hazardous substances in 40 CFR Part 355 and are present at levels which could require reporting and emergency planning:

Component	CAS #	Amount
Aniline	62-53-3	
Propylene oxide		
minonphthalene 75-21-8		thylene oxide

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III, SECTION 313

The following components of this product are listed as toxic chemicals in 40 CFR 372.65 and are present at levels which could require reporting and customer notification under Section 313 and 40 CFR Part 372:

This product does not contain toxic chemicals at levels that require reporting under the statute.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTIONS 311 AND 312

Delayed Hazard : Yes
Fire Hazard: No
Immediate Health Hazard : Yes
Reactive Hazard : No
Sudden Release of Pressure Hazard : No

TOXIC SUBSTANCES CONTROL ACT (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

STATE / LOCAL

PENNSYLVANIA (WORKER AND COMMUNITY RIGHT-TO-KNOW ACT)

This product is subject to the Worker and Community Right-to-Know Act. The following components of this product are at levels which could require identification in the MSDS:

None.

MASSACHUSETTS (HAZARDOUS SUBSTANCES DISCLOSURE BY EMPLOYERS)

The following components of this product appear on the Massachusetts Substance List and are present at levels that could require identification in the MSDS:

Component	CAS#	Amount
Aniline	62-53-3	<= 0.0050%
Propylene	75-56-9	<= 0.0050%
1-Naphthalamine	134-32-7	<= 0.0010%
2-Aminonaphthalene	91-59-8	<= 0.0001%
Ethylene oxide	75-21-8	<= 0.0001%

CALIFORNIA PROPOSITON 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986)

This product contains the following chemical(s) known to the State of California to cause cancer:

Component	CAS #	Amount
Aniline	62-53-3	<= 0.0050%
<i>Propylene oxide</i>	75-56-9	<= 0.0050%
1 -Naphthalamine	134-32-7	<= 0.0010%
2-Aminonaphthalene	91-59-8	<= 0.0001%

CALIFORNIA PROPOSITION 65 (SAFE DRINKING AND TOXIC ENFORCEMENT ACT OF 1986)

This product contains the following chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Component	CAS #	Amount
Ethylene oxide	75-21-8	<= 0.0001%
Aniline	62-53-3	<= 0.005 %
1-Naphthalamine	134-32-7	<= 0.001 %
2-Aminonaphthalene	91-59-8	<= 1.0 PPM

CALIFORNIA SCAQMD RULE 443.1 (SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 443.1, LABELING OF MATERIALS CONTAINING ORGANIC SOLVENTS)

VOC: Volatiles = Substances with a vapor pressure of > 0.5 mmHg @ 104 °C (219.2 °F)

20.72 g/1 VOC

20.72 g/1 of material less exempted compounds

This section provides selected regulatory information on this product including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations, and laws relating to the product being used.

Section 1 – Other Information**SPECIFIC HAZARD RATING SYSTEM**

	Health	Fire	Reactivity
NFPA - ratings for this product:	1		1 1

These ratings are part of specific hazard communications program(s) and should be disregarded where individuals are not trained in the use of these hazard-rating systems. You should be familiar with the hazard communication applicable to your workplace.

Recommended Uses and Restrictions

Selection of the appropriate polyglycol product for a specific application requires knowledge of the fluid requirements of the application, awareness of the most important of these requirements, and a match-up with the properties of the various polyglycol materials. Polyglycol products can be formulated for use in numerous industry applications such as hydraulic fluids, quenchants, compressor and refrigeration lubricants, heat transfer fluids, machinery lubricants, solder assist fluids, metalworking lubricants, textile finishing, etc. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical represent. **FOR INDUSTRY USE ONLY**

Revisions:

Identification Number: 1958 / 1001 / Issue Date 08-04-2008

10-2-2006

10-2-2011

DUALCO believes that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of DUALCO, it is the user's obligation to determine conditions of safe use of the product.

Additional DUALCO catalogs or information may be obtained by contacting DUALCO.