



Pakistan State Oil

MATERIAL SAFETY DATA SHEET

PSO HYDRAULIC BRAKE FLUID HD

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product name	PSO HYDRAULIC BRAKE FLUID DOT 3 & DOT 4
MSDS #	07-01
Product Use	Brake fluids For specific application advice see appropriate Technical Data Sheet or consult with PSO representative.
Supplier	Lubricants Technology Pakistan State Oil Co. Ltd. 7 th Floor, PSO House Khayaban-e-Iqbal, Clifton, Karachi, Pakistan. Tel. 92 21 99203866
EMERGENCY TELEPHONE NUMBER	+92 21 99206853
Revision No:	05
Revision Date:	March 28, 2023

2. COMPOSITION/INFORMATION ON INGREDIENTS

Polyethylene glycol performance additives.

Non-hazardous ingredients

No non-hazardous ingredients.

There are no additional ingredients present which within the current knowledge of the supplier and in the concentration applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

3. HAZARDS IDENTIFICATION

GHS Classification:

Acute toxicity, dermal (Category 5)

Acute toxicity, oral (Category 4)

Skin irritation (Category 3)

Serious eye damage (Category 1)

Reproductive toxicity (Category 2)

Signal Word: WARNING

Hazard Statements:

H30	Harmful if swallowed
H313	May be harmful in contact with skin
H316	Causes mild skin irritation
H318	Suspected of damaging fertility or the unborn child

Precautionary Statements:

P201	Obtain special instructions before use
P202	Do not handle until all safety instruction have been read and understood
P264	Wash Thoroughly after handling
P270	Do not eat, drinking or smoke when using this product
P280	Wear eye protection / face protection
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor / physician Immediately
P330	IF SWALLOWED: Rinse mouth.
P312	IF ON SKIN: Call a POISON CENTER or doctor / physician if you feel Unwell
P332+P313	IF skin irritation occurs: Get medical advice / attention



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P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.
Remove Contact lenses if present and easy to do. Continue Rinsing
P310 IF IN EYES: Immediately call a POISON CENTER or doctor / physician.
P308 + P313 If exposed or concerned: Get medical advice / attention.

20-80% of the mixture consists of ingredients of unknown acute toxicity

Notes TO PHYSICIANS OR FIRST AID PROVIDERS: Treatment should be directed at the control of symptoms and the clinical of the patient.

4. FIRST-AID MEASURES

Eyes

- Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.

Skin

- Wash skin thoroughly with soap and water as soon as reasonably practicable. Remove heavily contaminated clothing and wash underlying skin.

Ingestion

- If contamination of the mouth occurs, wash out thoroughly with water. Except as a deliberate act, the ingestion of large amounts of product is unlikely. If it should occur, do not induce vomiting; obtain medical advice

Inhalation

- If inhalation of mists, fumes or vapor causes irritation to the nose or throat, or coughing, remove to fresh air. If symptoms persist obtain medical advice.

Medical Advice

- Treatment should in general be symptomatic and directed to relieving any effects.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak, and disperse vapors.

SUITABLE EXTINGUISHING MEDIA: Direct water stream.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. Do not use direct water stream to extinguish fires. Do not release runoff fire control methods to sewers or waterways.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide and unidentified organic compounds.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS: Wear full protective clothing

6. ACCIDENTAL RELEASE MEASURES

- Contain and recover spilled material using sand or other suitable inert absorbent material.
- It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage, which may be reasonably anticipated.
- Spilled material may make surfaces slippery.
- Protect drains from potential spills to minimize contamination. Do not wash product into drainage system.
- In the case of large spills contact the appropriate authorities.
- In the case of spillage on water, prevent the spread of product by the use of suitable barrier equipment. Recover product from the surface. Protect environmentally sensitive areas and water supplies.

7. HANDLING AND STORAGE

Handling Precautions

- Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate.



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- Avoid frequent or prolonged skin contact with fresh or used product.
- Good working practices, high standards of personal hygiene and plant cleanliness must be maintained at all times.
- Wash hands thoroughly after contact.
- Use disposable cloths and discard when soiled. Do not put soiled cloths into pockets.

Fire Prevention

- Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Storage Conditions

- Store under cover away from heat and sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Controls should be such that adequate ventilation is provided.

VENTILATION: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work place by controlling it at its source.

RESPIRATORY PROTECTION: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA / NIOSH approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (e.g. cleaning spills, reactor vessels, or storage tanks), wear an SCBA. **Warning!** Air purging respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

EYE PROTECTION: Wear protective eyeglasses or chemical safety goggles, per OSHA eye-and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses.

SKIN PROTECTION: Wear chemically protective gloves, boots, aprons and gauntlets to prevent prolonged or repeated skin contact.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Make emergency eyewash stations, safety / quick drench showers and washing facilities available in work areas.

WORK HYGIENIC PRACTICES: Never eat, drink or smoke in work areas. Practice good personal hygiene after using this material especially before eating, drinking or smoking, using the toilet, or applying cosmetics. Separate contaminate work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Discard belts and shoes that cannot be cleaned.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical Values

	DOT 3	DOT 4
Test Method Units		
Physical state	Liquid	Liquid
Color	Yellow to amber	Yellow to Amber
Odor	Mild	Mild
Vapor Density (air = 1)	>1	>1
Flash Point ASTM D 92	>275°F (>135°C)	>284°F (> 140°C)
pH	7.5 – 10.5	7.5 – 10.5
Water Solubility	Soluble	Soluble
Kinematic viscosity @ 100°C ASTM D 445 mm ² /s	1.5 -2.0	2.0 – 2.5
Wet equilibrium Reflux Boiling Point(ERBP), C, min	140 Typical	160 Typical
Dry equilibrium Reflux Boiling Point (ERBP), C, min	205 Typical	234 Typical



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10. STABILITY AND REACTIVITY

REACTIVITY: none under normal handling.

STABILITY: stable at room temperature in closed containers under normal storage and handling conditions.

CONDITIONS TO AVOID (STABILITY): none known.

INCOMPATIBILITY (MATERIAL TO AVOID): none known.

HAZARDOUS DECOMPOSITION BY-PRODUCTS: Thermal oxidative decomposition can produce carbon monoxide, carbon dioxide and unknown organic compounds.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

CONDITIONS TO AVOID (POLYMERIZATION): Hazardous polymerization will not occur.

HAZARDOUS POLYMERICATION BY-PRODUCTS: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Swallowing larger amounts may cause nausea and vomiting, abdominal discomfort or diarrhea. May cause dizziness and drowsiness.

ACUTE EFFECTS:

EYE CONTACT: May cause slight eye irritation. May cause slight corneal injury.

SKIN CONTACT: Brief contact is essentially nonirritating to skin.

INHALATION: At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of the upper respiratory tract.

INGESTION: Toxic or fatal if ingested. For diethylene glycol, a component of this mixture, a lethal dose can be as little as two ounces. Symptoms of diethylene glycol poisoning include severe abdominal cramping, diarrhea, vomiting, sweating, confusion, cardiac abnormalities, neurological abnormalities, infrequent urination, and intoxication or CNS depression. If left untreated, product will metabolize to cause metabolic acidosis, renal failure, hyperkalemia, hypernatremia, paralysis, cardiac failure or death. Seek medical attention immediately for poisoning. If ingested, DO NOT wait for symptoms to develop before getting treatment.

TARGET ORGAN EFFECTS: Product is toxic to kidneys, liver, central nervous system and heart. Metabolic products of diethylene glycol produce acidosis and organ toxicity effects.

CHRONIC EFFECTS: May cause dryness or defatting of the skin, dermatitis, or may aggravate existing skin conditions.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Various skin conditions.

ACUTE TOXICITY VALUES

Triethylene Glycol Monomethyl Ether

ORAL LD50 (rat): 11,842 mg/kg

DERMAL LD50 (rabbit): 7,441 mg/kg

INHALATION LC50 (state animal): data unavailable

Triethylene Glycol Monoethyl Ether

ORAL LD50 (state animal): data unavailable

DERMAL LD50 (state animal): data unavailable

INHALATION LC50 (state animal): data unavailable

Tetraethylene Glycol Monobutyl Ether

ORAL LD50 (rat): 5,300 mg/kg

DERMAL LD50 (rabbit): 3,505 mg/kg

INHALATION LC50 (state animal): data unavailable

Polyethylene Glycol

ORAL LD50 (state animal): data unavailable

DERMAL LD50 (state animal): data unavailable

INHALATION LC50 (state animal): data unavailable

Diethylene Glycol Monobutyl Ether



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ORAL LD50 (rat): 5,660 mg/kg
DERMAL LD50 (rabbit): 2,700 mg/kg
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol

ORAL LD50 (rat): 12,565 mg/kg
DERMAL LD50 (rabbit): 11,890 mg/kg
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol Monomethyl Ether

ORAL LD50 (rat): >7,000 mg/kg
DERMAL LD50 (rabbit): >20,400 mg/kg
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol Monoethyl Ether

ORAL LD50 (rat): 10,502 mg/kg
DERMAL LD50 (rabbit): 9,143 mg/kg
INHALATION LC50 (state animal): data unavailable

Polyalkylene Glycol Monobutyl Ether

ORAL LD50 (rat): >2,000 mg/kg
DERMAL LD50 (rat): >2,000 mg/kg
INHALATION LC50 (state animal): data unavailable

Polyalkylene Glycol Monomethyl Ether

ORAL LD50 (state animal): data unavailable
DERMAL LD50 (state animal): data unavailable
INHALATION LC50 (state animal): data unavailable

Polyalkylene Glycols

ORAL LD50 (state animal): data unavailable
DERMAL LD50 (state animal): data unavailable
INHALATION LC50 (state animal): data unavailable

LISTED CARCINOGEN: NATIONAL TOXICOLOGY PROGRAM REPORT ON CARCINOGENS: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC LISTED AS POTENTIAL CARCINOGEN: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA LISTED AS POTENTIAL CARCINOGEN: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

12. ECOLOGICAL INFORMATION

Mobility

- Spillages may penetrate the soil causing ground water contamination.

Persistence and degradability

- This product is inherently biodegradable.

Bio-accumulative potential

- There is no evidence to suggest bioaccumulation will occur.

Aquatic toxicity

- Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. DISPOSAL CONSIDERATIONS

- Where possible, arrange for product to be recycled.
- Dispose of via an authorized person/ licensed waste disposal contractor in accordance with local regulations.
- Incineration may be carried out under controlled conditions provided that local regulations for emissions are met.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (49 CFR 172.101)

PROPER SHIPPING NAME: DOT 3 / DOT 4 Brake Fluid

DOT Non-Bulk: Not Regulated

DOT Bulk: Not Regulated



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IATA

Not Dangerous Goods

IMDG

Not Dangerous Goods

15. REGULATORY INFORMATION

- Not classified as hazardous for supply.

16. OTHER INFORMATION

Compiled by:

Lubricants Technical Services – L&C

Pakistan State Oil Co. Ltd.

7th Floor, Khayaban-e-Iqbal, Clifton,

Karachi

This data sheet and the health, safety and environmental information it contains are considered to be accurate as of the date specified below. We have reviewed any information contained herein, which we received from sources outside the PSO. However, no warranty or representation, express or implied is made as to the accuracy or completeness of the data and information contained in this data sheet.

Health and safety precautions and environmental advice noted in this data sheet may not be accurate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission, recommendation or authorization given or implied to practice any patented invention without a valid license. PSO shall not be responsible for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from any hazards