

MATERIAL SAFETY DATA SHEET

S-OIL 7 BRAKE FLUID DOT-4

Date of the previous version: 2021-07-01(Ver. 2.1)

Revision Date: 2025-02-19

Version 3.0

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

1.1. Product identifier

Product name S-OIL 7 BRAKE FLUID DOT-4
Pure substance/mixture Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Brake fluid & Clutch Fluid, hydraulic fluid

1.3. Details of the supplier of the safety data sheet

Supplier S-OIL CORPORATION
192, Baekbeom-ro, Mapo-gu,
Seoul 04196, Korea

For further information, please contact:

Contact Point KD Finechem Co., Ltd.
E-mail Address yc0103@kdfinechem.com

1.4. Emergency telephone number

Korea Tel. +82-31-680-0505

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS Classification

Serious eye damage/eye irritation: Category 1 (H318)
Reproductive toxicity: Category 2 (H361)

2.2. Label elements

GHS label elements, including precautionary statements

Symbol(s) GHS05, GHS08

Signal Words Danger



2.3. GHS Hazard Statements

H318: Causes serious eye damage.
H361: Suspected of damaging fertility or the unborn child.

2.4. GHS Precautionary Statements

Prevention P203: Obtain, read and follow all safety instructions before use.
P264+P265: Wash hands thoroughly after handling. Do not touch eyes.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses if present and easy to do - continue rinsing.
P317: Get emergency medical help.
P318 if exposed or concerned, get medical advice.

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**Storage
Disposal**P405: Store locked up.
P501: Dispose of contents and container in accordance with applicable regulations.**2.5. Other hazards****Physical-Chemical Properties** Contaminated surfaces will be extremely slippery.**Environmental properties** Should not be released into the environment**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1. Mixture**

Chemical Name	CAS-No	EC-No	Weight %
1. Tris[2-[2-(2-methoxyethoxy) ethoxy] ethyl] orthoborate	30989-05-0	250-418-4	45 – 55
2. 2-(2-(2-methoxyethoxy) ethoxy) ethanol	112-35-6	203-962-1	5 – 15
3. 3,6,9,12-tetraoxotridecanol	23783-42-8	245-883-5	10 – 20
4. 2-(2-(2-butoxyethoxy) ethoxy) ethanol	143-22-6	205-592-6	10 – 20
5. Di Ethylene Glycol	111-46-6	203-872-2	5 – 15

Additional information

No data available.

4. FIRST AID MEASURES**4.1. Description of first-aid measures****General advice**Consult a physician.
Show this safety data sheet to the doctor in attendance.**Eye contact**

Flush eyes with water as a precaution.

Skin contactWash off with soap and plenty of water.
Consult a physician.**Inhalation**If breathed in, move person into fresh air.
If not breathing, give artificial respiration.**Ingestion**Never give anything by mouth to an unconscious person.
Rinse mouth with water.
Consult a physician.**Protection of First-aiders**

No data available.

4.2. Most important symptoms and effects, both acute and delayed**Eye contact**

Not classified.

Skin contact

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Inhalation Not classified.

Ingestion Not classified.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media co-ordinate firefighting measures to the fire surroundings water spray, alcohol resistant foam, dry extinguishing powder, Carbon dioxide (CO₂), ABC powder. Foam. Water spray or fog.

Unsuitable extinguishing media Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Special Hazard Combustible. Vapors are heavier than air, spread along floors and form explosive mixtures with air.

Hazardous combustion products In case of fire may be liberated: Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3. Advice for fire-fighters

Special protective equipment for fire-fighters In case of fire and/or explosion do not breathe fumes.
Fight fire with normal precautions from a reasonable distance.
Wear self-contained breathing apparatus.

Other information

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment, and emergency procedures

General Information For non-emergency personnel
Avoid contact with skin, eyes, and clothes.
Do not breathe vapors/spray.

6.2. Environmental precautions

General Information Keep away from drains, surface, and ground water.

6.3. Methods and material for containment and cleaning up

Methods for containment Covering of drains.

Methods for cleaning up Absorb with liquid-binding material
(sand, diatomaceous earth, acid- or universal binding agents).

6.4. Reference to other sections

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Personal Protective Equipment See Section 8 for more detail.

Waste treatment See section 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling Provision of sufficient ventilation.

Prevention of fire and explosion No data available

Hygiene measures Wash hands before breaks and after work.
Keep away from food, drink, and animal feeding stuffs.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions Keep container tightly closed. Store in a dry place. Hygroscopic.
Protect against external exposure, such as: humidity

Incompatible substances or mixtures Recommended storage temperature: 15 – 25 °C
Observe hints for combined storage.

Materials to Avoid Strong oxidizing agents.

7.3. Specific end uses

Recommendations Brake fluid & Clutch Fluid, hydraulic fluid

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits

No Data available

8.2. Exposure controls

Occupational Exposure Controls

Engineering Measures

Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Personal Protective Equipment

General Information

Protective engineering solutions should be implemented and in use before personal protective equipment is considered. The personal protective equipment (PPE2) recommendations apply to the product ITSELF. In case of mixtures or formulations, it is suggested that you contact the relevant PPE suppliers.

Respiratory protection

None under normal use conditions. When workers are facing concentrations above the exposure limit, they must use appropriate certified respirators. Respirator with combination filter for vapors/particulate (EN 14387): Type A/P1. Warning! filters have a limited use duration. The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.

Eye Protection

If splashes are likely to occur, wear: Safety glasses with side-shields. EN 166.

Skin and body protection

Long sleeved clothing. Wear suitable protective clothing. Protective shoes or boots. Type 4/6.

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Hand Protection

Hydrocarbon-proof gloves. Fluorinated rubber. Nitrile rubber. In case of prolonged contact with the product, it is recommended to wear gloves complying with EN 420 and EN 374 standards, protecting at least for 480 minutes and having a thickness of 0.38 mm at least. These values are indicative only. The level of protection is provided by the material of the glove, its technical characteristics, its resistance to the chemicals to be handled, the appropriateness of its use and its replacement frequency. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Environmental exposure controls**General Information**

The product should not be allowed to enter drains, water courses or the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Color		Amber (Yellow)	
Physical State @20°C		Liquid	
Odor		product specific	
<u>Property</u>	<u>Values</u>	<u>Remarks</u>	<u>Method</u>
pH	7.0 – 9.0		
Boiling point/boiling range	> 255°C		
Flash point	> 135 °C		Cleveland Open Cup (COC)
Evaporation rate		No information available	
Flammability Limits in Air		No information available	
Vapor Pressure		No information available	
Vapor density		No information available	
Density	1.050 ~ 1.080 g/cm ³	@ 20 °C	
Water solubility	Soluble		
Solubility in other solvents		No information available	
log Pow		No information available	
Autoignition temperature	> 200 °C	No information available	
Viscosity, kinematic	< 1300 cst	@ -40 °C	
Explosive properties	3.0 ~ 15%		
Oxidizing Properties	Not applicable		
Possibility of hazardous reactions	Not applicable		

9.2. Other information**10. STABILITY AND REACTIVITY****10.1. Reactivity****General Information**

No hazardous reactions if stored and handled as prescribed/indicated.
Corrosion to metals: No corrosive effect on metal.
Formation of flammable gases: Forms no flammable gases in the presence of water.

10.2. Chemical stability**Stability**

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions**Hazardous Reactions**

No hazardous reactions when stored and handled according to instructions.

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10.4. Conditions to Avoid

Conditions to Avoid Avoid open flames.

10.5. Incompatible Materials

Materials to Avoid Strong acids, Strong oxidizing agents, Strong bases, Aldehydes, Aluminum

10.6. Hazardous Decomposition Products

Hazardous Decomposition Product Hazardous combustion products: see section 5.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity Local effects Product Information

Skin contact Data are not available.
Eye contact Causes serious eye damage.
Inhalation Data are not available.
Ingestion Data are not available.

Acute toxicity - Component Information

Chemical Name	Oral	Dermal	Inhalation
1. Tris[2-[2-(2-methoxyethoxy) ethoxy] ethyl] orthoborate	LD50 > 2,000 mg/kg bw / Rat male, female	LD50 > 2,000 mg/kg bw / Rat male, female	-
2. 2-(2-(2-methoxyethoxy) ethoxy) ethanol	LD50 >3980 mg/kg bw / Rat	LD50 7400 mg/kg bw / Rabbit	-
3. 3,6,9,12-tetraoxotridecanol	LD50 2000 mg/kg bw / Rat	LD50 2000 mg/kg Rat	-
4. 2-(2-(2-butoxyethoxy) ethoxy) ethanol	LD50 5,300 mg/kg bw / Rat male, female	LD50 2,000 mg/kg bw / Rabbit male	-
5. Di Ethylene Glycol	LD50 12,565 mg/kg bw / Rat male, female	LD50 11,890 mg/kg bw / Rabbit	

Sensitization

Sensitization Shall not be classified as a respiratory or skin sensitizer.

Specific effects

Carcinogenicity This product is not classified carcinogenic.
Mutagenicity This product is not classified as mutagenic.
Reproductive toxicity Suspected of damaging fertility or the unborn child.

Repeated Dose Toxicity

Sub chronic toxicity Shall not be classified as a specific target organ toxicant (repeated exposure).

Target Organ Effects (STOT)

Target Organ Effects (STOT) Shall not be classified as a specific target organ toxicant (single exposure).

Other information

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Other adverse effects No data available.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

1) Acute toxicity

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates	Toxicity to fish
1. Tris[2-[2-(2-methoxyethoxy) ethoxy] ethyl] orthoborate	EC50 430 mg/L 96hr Selenastrum capricornutum	EC50 MIN 1000 mg/L 48hr Daphnia magna	LC50 590 mg/L 96hr Salmo gairdneri
2. 2-(2-(2-methoxyethoxy) ethoxy) ethanol	ErC50 MIN 500mg/L 72hr Scenedesmus subspicatus	EC50 MIN 500mg/L 48hr Daphnia magna	LC50 MIN 10000mg/L 96hr Leuciscus idus
3. 3,6,9,12-tetraoxotridecanol	-	-	LC50 > 10000 mg/L 96 hr Brachydanio rerio
4. 2-(2-(2-butoxyethoxy) ethoxy) ethanol	-	-	-
5. Di Ethylene Glycol	-	-	LC50 32000mg/L 96hr

2) Chronic Toxicity
No information available.

Effects on terrestrial organisms No information available.

12.2. Persistence and degradability

General Information No information available.

Component Information

- Tris[2-[2-(2-methoxyethoxy)ethoxy] ethyl] orthoborate: Persistence : 0.5 log Kow
- 2-(2-(2-methoxyethoxy)ethoxy)ethanol: Persistence : -1.46 log Kow
- 3,6,9,12-tetraoxotridecanol: Persistence : -0.6 log Kow
- 2-(2-(2-butoxyethoxy)ethoxy)ethanol: Degradability : BOD5/COD 0.16
- Di Ethylene Glycol: Persistence : -1.47 log Kow

12.3. Bio accumulative potential

Product Information No information available.

log Pow No information available.

Component Information

- Tris[2-[2-(2-methoxyethoxy)ethoxy] ethyl] orthoborate: Accumulation : No data available
- 2-(2-(2-methoxyethoxy)ethoxy)ethanol: Accumulation : 0.046
- 3,6,9,12-tetraoxotridecanol: Persistence : Accumulation : 3.16
- 2-(2-(2-butoxyethoxy)ethoxy)ethanol: Accumulation : 0.046
- Di Ethylene Glycol: Accumulation : 100 3 BSAF

12.4. Mobility in soil

Soil No information available.

Air Loss by evaporation is limited.

Water soluble.

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12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment No information available.

12.6. Other adverse effects

General Information No information available

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products Should not be released into the environment. Do not empty into drains. Dispose of in accordance with all applicable national environment laws and regulations. Where possible recycling is preferred to disposal or incineration

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

Other information Refer to section 8 for safety and protective measures for disposal personnel.

14. TRANSPORT INFORMATION

ADR/RID Not regulated

IMDG/IMO Not regulated

ICAO/IATA Not regulated

ADN Not regulated

15. REGULATORY INFORMATION

15.1. Safety, health, and environmental regulations/legislation specific for the substance or mixture

International Inventories

TSCA All ingredients are listed in the inventory.

KECL All ingredients are listed in the inventory.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

KECL - Korean Existing and Evaluated Chemical Substances

Further information

European Union (EU)

Restrictions according to REACH, Annex XVII (<https://echa.europa.eu/substances-restricted-under-reach>)

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate - Entry 3, Entry 75

2-(2-(2-butoxyethoxy) ethoxy) ethanol - Entry 3, Entry 75

Di Ethylene Glycol - Entry 3

List of substances subject to authorization (REACH, Annex XIV)/SVHC - candidate list

Not listed

Seveso Directive 2012/18/EU (Seveso III)

Not listed

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

Not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

Not listed

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Water Framework Directive (WFD)

Not listed

Regulation on the marketing and use of explosives precursors

Not listed

Regulation on drug precursors

Not listed

Regulation on substances that deplete the ozone layer (ODS)

Not listed

Regulation concerning the export and import of hazardous chemicals (PIC)

Not listed

Regulation on persistent organic pollutants (POP)

Not listed

Other information

Directive 94/33/EC on the protection of young people at work.

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

USA & CANADA

OSHA regulation (29 CFR1910.119): Not Listed

CERCLA 103 regulation (40 CFR 302.4): Not Listed

EPCRA 302 regulation (40 CFR355.30): Not Listed

EPCRA 304 regulation (40 CFR355.40): Not Listed

EPCRA 311 & 312 regulation (40 CFR370): Not Listed

EPCRA 313 regulation (40 CFR372.65): Not Listed

US. Toxic Substances Control Act: Listed

CWA (Clean Water Act): This product does not contain any substances regulated as pollutants pursuant to the

Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CALIFORNIA PROPOSITION 65: Not Listed

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
1. Tris[2-[2-(2-methoxyethoxy) ethoxy] ethyl] orthoborate	Not Listed	Not Listed	Not Listed
2. 2-(2-(2-methoxyethoxy) ethoxy) ethanol	Not Listed	Not Listed	Not Listed
3. 3,6,9,12-tetraoxotridecanol	Not Listed	Not Listed	Not Listed
4. 2-(2-(2-butoxyethoxy) ethoxy) ethanol	Not Listed	Not Listed	Not Listed
5. Di Ethylene Glycol	Not Listed	Not Listed	Listed

CEPA - Domestic Substances List (DSL): Listed

15.2. Chemical Safety Assessment

Chemical Safety Assessment

No information available

16. OTHER INFORMATION

Abbreviations, acronyms

Legend Section 8

Revision Date:

2025-02-19

Revision Note

*** Indicates updated section.

This safety data sheet serves to complete but not to replace the technical product sheets. The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above. It is understood by the user that any use of the product for purposes other than those for which it was designed entails potential risk. The information given herein in no way dispenses the user from knowing and applying all provisions regulating his activity. The user bears sole liability for the precautions required when using the product. The regulatory texts indicated herein are intended to aid the user to fulfil his obligations. This list is not to be considered complete and exhaustive. It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned.

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End of the safety data sheet