

MATERIAL SAFETY DATA SHEET

S-OIL SEVEN BRAKE FLUID DOT 4

Date of the previous version: 2020-01-09

Revision Date: 2023-08-10

Version 2

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

1.1. Product identifier

Product name S-OIL SEVEN 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 of automobiles

1.3. Details of the supplier of the safety data sheet

Manufacturer KUKDONG JEYEN CO., LTD
286, Pyeongtaekhang-ro, Poseung-eup, Pyeongtaek-si, Gyeonggi-do, Korea
(Tel: +82-31-680-0505)

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

For further information, please contact:

Contact point HSSEQ
E-mail address dolyoo@stlc.co.kr

1.4. Emergency telephone number

Korea + 82 2 3772-5655

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS Classification

Acute toxicity (Inhalation: Dust/Mist) – Category 4
Serious eye damage/eye irritation – Category 2
Reproductive toxicity – Category 2
Specific target organ toxicity (repeated exposure) – Category 1

2.2. Label elements

GHS label elements, including precautionary statements

Symbol(s)



Signal Words Danger

2.3. GHS Hazard Statements

H319 Causes serious eye irritation
H332 Harmful if inhaled

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H361 Suspected of damaging fertility or the unborn child.
 H372 Causes damage to organs(central nervous system, respiratory tract, heart) through prolonged or repeated exposure

2.4. GHS Precautionary Statements

Prevention

P201 Obtain special instructions before use
 P202 Do not handle until all safety precautions have been read and understood
 P260 Do not breathe dust/fume/gas/mist/vapours/spray
 P261 Avoid breathing dust/fume/gas/mist/vapours/spray
 P264 Wash thoroughly after handling
 P270 Do not eat, drink or smoke when using this product
 P271 Use only outdoors or in a well-ventilated area
 P280 Wear protective gloves/protective clothing/eye protection/face protection

Response

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 P308+P313 IF exposed or concerned: Get medical advice/attention
 P312 Call a POISON CENTER or doctor/physician if you feel unwell
 P314 Get medical advice/attention if you feel unwell
 P337+P313 If eye irritation persists: Get medical advice/attention

Storage

P405 Store locked up

Disposal

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	Other Name	CAS-No	Weight %
Poly ethylene glycol mono methylether	Methoxy poly(ethylene glycol)	9004-74-4	8.0 ~ 18.0
Methoxy tri glycol	(2-(2-(2-Methoxy ethoxy)-ethanol	112-35-6	10.0 ~ 20.0
Tri ethylene glycol monobutyl ether	TRIGLYCOL MONOBUTYL ETHER	143-22-6	10.0 ~ 20.0
Diethylene glycol	2,2-Oxybisethanol	111-46-6	5.0 ~ 15.0
Boron ester compound	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	30989-05-0	40.0 ~ 50.0

Additional information No information available

4. FIRST AID MEASURES

4.1. Description of first-aid measures

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General advice	IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.
Eye contact	Move to fresh air. Flush thoroughly with water at least 15 minutes. Get medical assistance.
Skin contact	Wash contact areas with soap and water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical aid.
Ingestion	Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.

4.2. Most important symptoms and effects, both acute and delayed

Eye contact	Causes eye irritation.
Skin contact	Not classified. High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent.
Inhalation	Not classified. Inhalation of vapors in high concentration may cause irritation of respiratory system.
Ingestion	Not classified. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

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

Notes to physician	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	CO ₂ , dry chemical, dry sand, alcohol-resistant foam.
Unsuitable extinguishing media	No information available

5.2. Special hazards arising from the substance or mixture

Special Hazard	Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled in confined spaces or at high concentration.
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5.3. Advice for fire-fighters

Special protective equipment for fire-fighters	Wear self-contained breathing apparatus and protective suit.
Other information	Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

General Information

Do not touch or walk through spilled material. Contaminated surfaces will be extremely slippery.
Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

6.2. Environmental precautions

General Information

Do not allow material to contaminate ground water system. Try to prevent the material from entering drains or water courses.
Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and material for containment and cleaning up

Methods for containment

Dam up. Contain spillage, and then collect with non-combustible absorbent material, (e.g.sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

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

When using, do not eat, drink or smoke. For personal protection see section 8.
Use only in well-ventilated areas. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing.

Prevention of fire and explosion

Take precautionary measures against static discharges. Ground/bond containers, tanks and transfer/receiving equipment.

Hygiene measures

Ensure the application of strict rules of hygiene by the personnel exposed to the risk of contact with the product. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Do not use abrasives, solvents or fuels. Do not dry hands with rags that have been contaminated with product. Do not put product contaminated rags into workwear pockets.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

Keep away from food, drink and animal feeding stuffs. Keep in a bunded area. Keep container tightly closed. Keep preferably in the original container. Otherwise reproduce all indication of the regulation label on the new container. Do not remove the hazard labels of the containers (even if they are empty). Design the installations in order to avoid accidental emissions of product (due to seal breakage, for example) onto hot casings or electrical contacts. Protect from frost, heat and sunlight. Protect from moisture.

Materials to Avoid

Strong oxidizing agents.

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7.3. Specific end uses

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits Korea: No data available.

Legend See section 16.

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	If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.
Respiratory protection	Prevent inhalation of the solvents. If required to control exposure, use only suitable respirators and components tested and approved under appropriate government standards such as NIOSH
Eye Protection	Wear approved chemical safety glasses or goggles where eye exposure is reasonably probable. Eye wash fountain is recommend.
Skin and body protection	Wear suitable protective clothing. Protective shoes or boots. Long sleeved clothing.
Hand Protection	Hydrocarbon-proof gloves. Fluorinated rubber. Nitrile rubber. 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. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves.

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	Yellow
Physical State @20°C	liquid
Odor	Characteristic

<u>Property</u>	<u>Values</u>	<u>Remarks</u>	<u>Method</u>
pH	7.5 ~ 9.0		No information available
Boiling point/boiling range	> 255 °C		No information available
Flash point	> 135 °C		Cleveland Open Cup (COC)
	> 275 °F		Cleveland Open Cup (COC)
Evaporation rate		No information available	

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Flammability Limits in Air (Lower/Upper)	3.0%/15%		No information
Vapor Pressure	0.1 mmHg (20 °C)		No information available
Vapor density(Air=1)	4		No information available
Specific Gravity	1.05 ~ 1.07	@ 15 °C/4 °C	No information available
Water solubility	Soluble		
Solubility in other solvents		No information available	
logPow		No information available	
Autoignition temperature	> 200 °C		No information available
Viscosity, kinematic	< 1300 mm ² /s	@ - 40 °C	
Explosive properties	Not explosive		
Oxidizing Properties	Not applicable		
Possibility of hazardous reactions	Not applicable		

9.2. Other information

10. STABILITY AND REACTIVITY

10.1. Reactivity

General Information No information available.

10.2. Chemical stability

Stability. Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous Reactions None under normal processing.

10.4. Conditions to Avoid

Conditions to Avoid Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.

10.5. Incompatible Materials

Materials to Avoid Strong oxidizing agents.

10.6. Hazardous Decomposition Products

Hazardous Decomposition Product None under normal use.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity Local effects Product Information

Skin contact No information available.

Eye contact No information available.

Inhalation No information available.

Ingestion No information available.

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Acute toxicity - Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Poly ethylene glycol mono methylether	LD50 22000 mg/kg (Rat)	LD50 20000 mg/kg (Rabbit)	-
Methoxy tri glycol	LD50 3980 mg/kg (Rat)	LD50 7400 mg/kg (Rabbit)	-
Tri ethylene glycol mono buthylether	LD50 5300 mg/kg (Rat)	LD50 2000 mg/kg (Rabbit)	-
Diethylene glycol	LD50 12565 mg/kg (Rat)	LD50 11890 mg/kg (Rabbit)	-
Boron ester compound	LD50 5000 mg/kg (Rat, Directive 84/449/EEC GLP)	LD50 2000 mg/kg (Rat, No death at Rat 2000 mg/kg bw)	-

Skin contact

Chemical Name	Skin contact
Poly ethylene glycol mono methylether	Rabbit/Skin(500 mg): slight irritation (OPEN DRAIZE TEST)
Methoxy tri glycol	Human – Slight irritation
Tri ethylene glycol mono buthylether	Slight irritation (10 mg, 24hr, Rabbit), slight irritation (500 mg, 24hr, Rabbit)
Diethylene glycol	Mild (500 mg, Rabbit)
Boron ester compound	Rabbit skin non-irritation GLP

Eye contact or eye irritation

Chemical Name	Eye contact irritation
Poly ethylene glycol mono methylether	Irritation to eyes
Methoxy tri glycol	Rabbit – Slight irritation
Tri ethylene glycol mono buthylether	Normal irritation (20 mg, 24hr, Rabbit), Severe irritation (50 mg, Rabbit)
Diethylene glycol	Mild (50 mg, rabbit)
Boron ester compound	Rabbit eye slight irritation, GLP

Sensitization

Sensitization Not classified as a sensitizer.

Specific effects

Carcinogenicity This product is not classified carcinogenic.

Mutagenicity This product is not classified as mutagenic.

Reproductive toxicity

Chemical Name	Reproductive toxicity
Methoxy tri glycol	Rat / patrilineal / matrilineal influence

Repeated Dose Toxicity

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Subchronic toxicity No information available.

Target Organ Effects (STOT)

Target Organ Effects (STOT) – single exposure

Chemical Name	Target Organ Effects (STOT) – single exposure
Poly ethylene glycol mono methylether	Irritation in the airway when inhale

Other information

Other adverse effects Characteristic skin lesions (pimples) may develop following prolonged and repeated exposures (contact with contaminated clothing).

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Acute aquatic toxicity - Component Information

Chemical name	Toxicity algae	Toxicity to daphnia and other aquatic invertebrates	Toxicity to fish
Methoxy tri glycol	ErC50 min 500 mg/l (72hr, Scenedesmus subspicatus)	EC50 min 500 mg/l (48hr, Daphnia magna)	LC50 min 10000 mg/l (96hr, Leuciscus idus)
Diethylene glycol	-	-	LC50 32000 mg/l (96hr)
Boron ester compound	EC50 min 430 mg/l (96hr, Selenastrum capricornutum, GLP)	EC50 min 1000 mg/l (48hr, Daphnia magna)	LC50 590 mg/l (96hr, Salmo gairdneri, GLP)

Chronic aquatic toxicity - Component Information

No information available.

Effects on terrestrial organisms No information available.

12.2. Persistence and degradability

General Information No information available.

12.3. Bioaccumulative potential

Product Information No information available.

logKow

Chemical Name	logKow
Poly ethylene glycol mono methylether	2
Methoxy tri glycol	1.46
Diethylene glycol	1.47
Boron ester compound	0.5

12.4. Mobility in soil

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Soil	Given its physical and chemical characteristics, the product generally shows low soil mobility.
Air	Loss by evaporation is limited.
Water	Insoluble. The product spreads on the surface of the water.

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

Disposal method	Dispose in accordance with all applicable regulations.
Disposal instruction	No data available.
Other information	No data available.

14. TRANSPORT INFORMATION

<u>ADR/RID</u>	Not regulated
<u>IMDG/IMO</u>	Not regulated
<u>ICAO/IATA</u>	Not regulated
<u>ADN</u>	Not regulated

15. REGULATORY INFORMATION

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

International Inventories

TSCA
KECL

Legend

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

KECL - Korean Existing and Evaluated Chemical Substances

Further information

15.2. Chemical Safety Assessment

Chemical Safety Assessment No information available

16. OTHER INFORMATION

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Abbreviations, acronyms

Legend Section 8

+	Sensitizer	*	Skin designation
**	Hazard Designation	C:	Carcinogen
M:	Mutagen	R:	Toxic to reproduction

Revision Date: 2023-08-10**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.

End of the safety data sheet