

MANNOL[®] MATERIAL SAFETY DATA SHEET

Prepared according to Annex II of EC Regulation 1907/2006

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Brake Fluid DOT-4

Product Use: lubricants

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Company Information: Sudheimer Car Technik Vertriebs GmbH

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2. Hazards identification

Classification of preparation is based in rules of Directive 1999/45/EC

Preparation is classified as harmful.

Human health	Irritating effect.
Respiratory system	Lightly irritant to upper respiratory passages. Does not cause acute intoxication when inhaled.
Digestive system	Irritant to digestive system.
Contact with eyes	Lightly irritant to mucus membrane.
Contact with skin	Lightly irritant to skin.

3. Composition/information on ingredients

Preparation is manufactured on polyglycol basis.

Hazardous ingredients

Chemical name (IUPAC)	Number EC	REACH (number pre-registration)	Number CAS	Weight, %	Classification according to	
					Regulation (EC) №1272/2008/ EC	Directive 67/548/ EC
Diethylene glycol	203-872-2	05-2114135927-41- 0000	111-46-6	< 41	Acute Tox. 4*, H302	Xn, R22
2-(2-ethoxyethoxy)- ethanol	203-919-7	05-2114142291-61- 0000	111-90-0	< 22	–	Xi, R36, S2, S24/25, S46
2-(2-(2-ethoxyethoxy)- ethoxy)ethanol	203-978-9	05-2114142305-60- 0000	112-50-5	< 41	–	Xi, R36, S2, S24/25, S46

Number registrations REACH for diethylene glycol: 01-2119457857-21-0020

Number registration REACH for 2-(2-ethoxyethoxy)ethanol: 01-2119475105-42-0003

4. First aid measures	
Inhalation	In case accidental by inhalation, remove casualty to fresh air, ensure victim breathe and seek medical advice immediately.
Contact with skin	In case contacts with skin wash off with plenty of water and soap. Take off contaminated clothing. In case of irritant effect seek medical advice.
Contact with eyes	In case of contact with eyes rinse out for at list 20 minutes with the eyelid held wide open. Immediately seek ophthalmologist advice.
Swallowing	Immediately rinse mouths. Rinse stomach with warm water or 2% solution of baking soda, washed intestine. Take victim activated charcoal and purgative.

5. Fire-fighting measures	
Flammable liquid. In fire formed hazardous flammable gases: carbon monoxide and other.	
Extinguishing media	Water, water vapor, inert gases, foam, carbon dioxide, powder, carbonic acid and powder fire extinguishers, sand.
Unsuitable extinguishing media	Missing.
Special protective equipment of fire-fighters	Respirator, special clothing.
Specificity of suppression	Cool containers with spray water from a safe distance.

6. Accidental release measures	
Personal precautions	Use personal protective equipment, protective clothed. Avoid direct contact with eyes and skin. Don't breathe vapor. Don't smoke.
Environmental precautions	Avoid contamination of soil and water. In case of the product getting into the environment and water inform immediately local SEC and emergency service what was happened.
Method of cleaning and collection	Localize fluid leak and utilize it appropriately. Absorb it with the help of sorbents (sand, earth, universal adhesive solution). In case of minor leakage of spilled fluid transfer it by mechanical means into the hermetic container with an appropriate label for further regeneration or utilization. In case of considerable leakage prevent product spreading by making barriers of sand, earth, universal adhesive solution. Clean spill area with a lot of water.
Additional information	Actions in case of package (cover) damage. Eliminate leaking, if it is not dangerous pump the content over into an intact container following preventive measures. Call fire service to the place of accident. In case of sewage pollution inform SEC.

7. Handling and storage	
Handling	Keep the basic principles of industrial hygiene. Use in accordance with branch practice of honest management. Ensure good ventilation.
Storage	Keep in producer's packing. Keep containers hermetically closed in a dry and well ventilated area. Keep away from moisture. Storing temperature should not exceed 40 °C.
Expiration date	36 mounts.

8. Exposure control/personal protection	
Highest permissible concentration in the working area	2-(2-ethoxyethoxy)ethanol – 5 mg/m ³ , diethylene glycol – 10 mg/m ³ , 2-(2-(2-ethoxyethoxy)ethoxy)ethanol – 10 mg/m ³ .
Highest permissible concentration in drinking water reservoirs and public water facilities	2-(2-ethoxyethoxy)ethanol – 0.3 mg/dm ³ , diethylene glycol – 1.0 mg/dm ³ , 2-(2-(2-ethoxyethoxy)ethoxy)ethanol – 0.08 mg/dm ³ .
Highest permissible concentration in fish industry water facilities	diethylene glycol – 0.05 mg/dm ³ , 2-(2-ethoxyethoxy)ethanol – not set, 2-(2-(2-ethoxyethoxy)ethoxy)ethanol – not set

Limit the impact to staff	
Local ventilation	Recommended.
General ventilation	Recommended.
Respiratory protection	Not required in standard condition. In case of risk of inhalation use gas mask with specific absorber.
Hand protection	Rubber gloves.
Eye protection	Protective glasses.
Skin protection	Suitable protective clothing.
Environmental exposure controls	Prevent from soil and water.

9. Physical and chemical properties	
General information	
Appearance	Liquid
Color	In accordance with specification
Odor	Characteristic
Important health, safety and environmental information	
Boiling point, °C	205 – 220
Flash point, °C	120 – 130
Flammability, °C	134 – 137
Decomposition temperature, °C	Not determined.
Explosion	Not determined.
Vapor pressure (20°C)	Unknown
Density of vapors	Not determined.
Density	Not determined.
Water solubility (20°C)	Without limits
Kinematic viscosity, mm/s at minus (20±1) °C, no more at (100±0.5) °C, at least	1800 1.5
pH	7.0 – 11.5
log P (o/w)	Can not be used.

10. Stability and reactivity	
Stable in standard condition.	
Possibility of hazardous reaction	Avoid strong oxidizing agents.
Condition which should be avoid	Sparks, fire, humidity, temperature above 40°C.

Incompatible substances and materials	Strong oxidizing agents.
Hazard decomposition products	Carbon monoxide.

11. Toxicological information

Health effects from exposure to the preparation

Skin	Long standing contact may cause light irritation effect.
Eyes	Irritation
Inhalation	Light irritation symptoms.
Swallowing	Harmful if swallowed.
Mutagenicity	On the information available, no.
Carcinogenicity	Low.

Toxicity in experimental:

Acute toxicity	Data
diethylene glycol	
DL ₅₀ (oral), human mg/kg	1000
DL ₅₀ (oral), rat mg/kg	12565
DL ₅₀ (oral), rabbit mg/kg	4400
DL ₅₀ (dermal), rabbit mg/kg	11890
DL ₅₀ (dermal), rat mg/kg	18800
CL ₅₀ (inhaling) mg/m ³ 2 hours	130
2-(2-ethoxyethoxy)ethanol	
DL ₅₀ (oral), rat mg/kg	4000
DL ₅₀ (oral), rabbit mg/kg	3620
DL ₅₀ (oral), mouse mg/kg	2300
DL ₅₀ (oral), guinea pig mg/kg	3700
DL ₅₀ (dermal), rabbit mg/kg	8500
DL ₅₀ (dermal), rat mg/kg	6000
DL ₅₀ (dermal), guinea pig mg/kg	32000
CL ₅₀ (inhaling) mg/m ³ ¾ hours	5240
2-(2-(2-ethoxyethoxy)ethoxy)ethanol	
DL ₅₀ (oral), rat mg/kg	10000
DL ₅₀ (dermal), rabbit mg/kg	8200
CL ₅₀ (inhaling) mg/m ³ 2 hours	130

12. Ecological information

Ecotoxicity

Data for	ethylene glycol	2-(2-ethoxyethoxy)ethanol	2-(2-(2-ethoxyethoxy)ethoxy)-ethanol
Fish (LC ₅₀)	> 10000 mg/dm ³	> 26500 mg/dm ³	> 10000 mg/dm ³
Daphnia magna (EC ₅₀)	> 10000 mg/dm ³	> 3940-4670 mg/dm ³	> 10000 mg/dm ³

Mobility	Product dissolves in water.
Biodegradation	On known data, no.
Toxicity to bacteria	On known data, no.
Bioaccumulation	On known data, no.

13. Disposal considerations

Material disposal	Prevent the product from getting into soil, water reservoirs, and general sewer system. If possible it has to be recycled and utilized. According to the instructions of local authorities send it to a special garbage-processing plant.
Container disposal	Empty container to the maximum and dry it. Recycling or utilization of the contaminated container has to be accomplished according to current legislation

14. Transport information

Brake fluid class DOT-3 is transported by the railway automobile and air transport. Freight is not classified as dangerous according to the international transportation rules.

15. Regulatory information

State standard 12.1.004–91 SSBT. Fire safety. General provisions.

State standard 12.1.005–88. General requests for working area air.

State standard 12.1.007–76 SSBT. Harmful substances. Classification and general safety requirements.

TC U 24.6–14215951.002–2002. Brake fluids.

Regulation CLP 1272/2008.

Directive 1999/45/EC

Directive 67/548/EEC

Grushko Y.M. Harmful organic compounds in industrial emissions into the atmosphere. L.: Chemistry, 1986. – 216 p. (p. 88)

16. Other information

Hazard symbol and their full text:

Xn – Harmful.

Xi – Irritant.

R phrases:

R22 – Harmful if swallowed.

R36 – Irritating to eyes.

S phrases:

S2 – Keep out of the reach of children.

S24/25 – Avoid contact with skin and eyes.

S46 – If swallowed, seek medical advice immediately and show container or label.

H phrases:

H302 – Harmful if swallowed.

Advices for learning how to use the mixture: Read Safety Data Sheet and instruction on the packing before using it.

Recommended application restrictions: Subject to the regulation on the use, storing and transportation brake fluid does not negative impact on the environmental and human health. The

information that the safety data sheet contains concerns this particular product. It can be not valid in case of using this mixture in combination with any other substances or mixtures.

This information is based on our knowledge at this moment. The information offered here should not be regarded as the product properties description. The conclusions about the product quality or availability for a particular usage should not be based on the safety sheet data.