

SAFETY DATA SHEET



Trade name: ZF EcoFluid HV

ZF Aftermarket

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: ZF EcoFluid HV

Product code: 0671.090.498

Substance/mixture: Mixture

1.2 Recommended use of the chemical and restrictions on use

Use of the Substance/Mixture: Transmission fluid.

Uses advised against: Do not use for any purpose other than the one for which it is intended.

1.3 Details of the supplier of the safety data sheet

ZF Friedrichshafen AG
ZF Aftermarket
Obere Weiden 12
97424 Schweinfurt
Germany
+49 9721 475 60
www.zf.com/contact

1.4 Emergency telephone number

24/7h Emergency telephone number:

+49 (0)89 19240 (Poison emergency call) Information in German and English

2. Hazards identification

2.1 Classification of the substance or mixture

The product is not classified as hazardous according to ABNT NBR 14725-2

2.2 Label elements

The product is not classified as hazardous according to ABNT NBR 14725-2

Hazard Statements: None

Signal word: None

Hazards not otherwise classified (HNOC)

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None known

2.3 Other information

Physical-Chemical Properties

Contaminated surfaces will be extremely slippery.

Environmental properties

The product may form an oil film on the water surface that may stop the oxygen exchange.

Should not be released into the environment.

3. Composition/information on ingredients

3.2 Mixture

Chemical nature

Mineral oil of petroleum origin.

Hazardous ingredients

Chemical name	EC-No	CAS-No	Weight %	Classification (Reg. 1272/2008)
Distillates (petroleum), hydrotreated heavy Paraffinic	265-157-1	64742-54-7	3-<5	Asp. Tox. 1 (H304)
bis(nonylphenyl)amine	253-249-4	36878-20-3	1<2.5	Aquatic Chronic 4 (H413)
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentaoxide, and salted by amines, C12-14- tert-alkyl	931-384-6	--	0.25-<1	Acute Tox. 4 (H302) Aquatic Chronic 2 (H411) Eye Dam. 1 (H318) Skin Sens. 1 (H317)

Additional information

Product containing mineral oil with less than 3% DMSO extract as measured by IP 346.

For the full text of the H-Statements mentioned in this Section, see Section 16.

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4. First aid measures

4.1 First aid measures for different exposure routes

General advice: IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.

Eye contact: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing.

Skin contact: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. High pressure jets may cause skin damage. Take victim immediately to hospital.

Inhalation: Remove casualty to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration.

Ingestion: Clean mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.

Protection of First-aiders First aider needs to protect himself. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

4.2 Most important symptoms/effects, acute and delayed

Skin contact: Not classified based on available data. May cause an allergic skin reaction. High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent.

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Eye contact:	Not classified based on available data.
Inhalation:	Not classified based on available data. Inhalation of vapors in high concentration may cause irritation of respiratory system.
Ingestion:	Not classified based on available data. 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. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:	Carbon dioxide (CO ₂). 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:	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. Combustion products include sulphur oxides (SO ₂ and SO ₃) and Hydrogen sulphide H ₂ S. Phosphorous oxides. Nitrogen oxides (NO _x). Mercaptans. Zinc oxides. Silicon dioxide.
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5.3 Advice for firefighters

Special protective equipment for fire-fighters:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
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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. Prevent entry into waterways, sewers, basements or confined areas. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up:

Dike to collect large liquid spills. If necessary dike the product with dry earth, sand or similar non-combustible materials.

Methods for cleaning up:

Dispose of contents/container in accordance with local regulation. In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling:

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.

Hygiene measures

Ensure the application of strict rules of hygiene by the personnel exposed to the risk

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of contact with the product. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Regular cleaning of equipment, work area and clothing is recommended. 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 feedingstuffs. 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. Store at room temperature. Protect from moisture.

Materials to Avoid:

Strong oxidizing agents.

7.3 Specific end uses

Specific use(s):

Please refer to Technical Data Sheet for further information.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits

Mineral oil mist:
USA: OSHA (PEL) TWA 5 mg/m³, NIOSH (REL) TWA 5 mg/m³, STEL 10 mg/m³, ACGIH (TLV) TWA 5 mg/m³ (highly refined).

Legend

See section 16



8.2 Exposure controls

Occupational Exposure Controls

Engineering Measures:

Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas. 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 (PPE) 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 vapour/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:

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

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

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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

Appearance:	limpid
Colour:	No information available
Odour:	Characteristic
Odor Threshold:	No information available
Physical State @20°C	liquid
pH:	Not applicable

		Method
Boiling point/boiling range	No information available	
Melting point/range	No information available	
Flash point	248 °C/479 °F	ASTM D92
Evaporation rate	No information available	
Flammability Limits in Air	No information available	
Upper explosion limit	No information available	
Lower explosion limit	No information available	
Vapour pressure	No information available	
Vapour density	No information available	

Relative density	0.857 15°C	ASTM D4052
Density	857 kg/m ³ 15°C	ASTM D4052

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Solubility(ies)		
Water solubility	Not applicable	
Solubility in other solvents	No information available	
logPow	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity, kinematic	102.1 mm ² /s 40°C	ASTM D445
Explosive properties	Not explosive	
Possibility of hazardous reactions	Not applicable	
Oxidizing properties	Not applicable	

9.2 Other information

Freezing Point:

No information available

10. Stability and reactivity

10.1 Reactivity

None under normal processing.

10.2 Chemical stability:

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions:

No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid:

Keep away from open flames, hot surfaces and sources of ignition. Keep away from heat and sparks.

10.5 Incompatible materials:

Strong oxidising agents.



- 10.6 Hazardous decomposition products:** Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. Phosphorous oxides. Nitrogen oxides (NO_x). Mercaptans. Combustion products include sulphur oxides (SO₂ and SO₃) and Hydrogen sulphide H₂S. Silicon dioxide.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity Local effects Product Information

Skin contact: Not classified based on available data. May cause an allergic skin reaction. High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent.

Eye contact: Not classified based on available data.

Inhalation: Not classified based on available data. Inhalation of vapors in high concentration may cause irritation of respiratory system.

Ingestion: Not classified based on available data. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Acute toxicity - Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Distillates (petroleum), hydrotreated heavy paraffinic	LD50 > 5000 mg/kg bw (rat - OECD 420)	LD50 > 5000 mg/kg bw (rabbit - OECD 402)	LC50 (4h) > 5 mg/l (aerosol) (rat - OECD 403)
bis(nonylphenyl)amine 36878-20-3	LD50 > 5000 mg/kg (Rat - OECD 401)	LD50 > 2000 mg/kg (Rat - OECD 402)	-
Reaction products	LD50 2000	--	--

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of 4-methyl-2-pentanol and di-phosphorus pentasulfide, propoxylated, esterified with di-phosphorus pentaoxide, and salted by amines, C12-14-tert-alkyl	mg/kg bw (Rat - OECD TG 401)		
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Skin corrosion/irritation:	Not classified based on available data.
Serious eye damage/eye irritation:	Not classified based on available data.
Sensitization:	Not classified based on available data. Contains sensitizer(s). May produce an allergic reaction. The supplier of one or more of the components contained within this formulation has indicated that he has data on the components and/or similar mixtures, which confirms that at the concentration used, classification is not required.

Specific effects

Carcinogenicity:	Not classified based on available data.
Germ Cell Mutagenicity:	Not classified based on available data.
Reproductive toxicity:	Not classified based on available data.

Repeated Dose Toxicity

Subchronic toxicity:	Not classified based on available data.
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Target Organ Effects (STOT)

Target Organ Effects (STOT):	None known.
Specific target organ systemic toxicity (single exposure):	Not classified based on available data.
Specific target organ systemic toxicity (repeated exposure):	Not classified based on available data.

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Aspiration toxicity:

Not classified based on available data.

12. Ecological information

12.1 Toxicity

Not classified based on available data.

Acute aquatic toxicity - Product Information: No information available.

Acute aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates	Toxicity to fish	Toxicity to microorganisms
Distillates (petroleum), hydrotreated heavy paraffinic 64742-54-7	EL50 (48h) > 100 mg/l (Pseudokirchnerella subcapitata - OECD 201)	EL50 (48h) > 10000 mg/l (Daphnia magna - OECD 202)	LL50 (96h) > 100 mg/l (Oncorhynchus mykiss - OECD 203)	--
bis(nonylphenyl)amine 36878-20-3	EC50 (72h) > 100 mg/l (Desmodesmus subspicatus - OECD 201)	EC50 (48h) > 100 mg/l (Daphnia magna - OECD 202)	LC50 (96h) > 100 mg/l (Brachydanio rerio - OECD 203)	--
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentaoxide, and salted by amines, C12-14- tert-alkyl	EL50 (96h) > 15 mg (Selenastrum capricornutum - OECD 201) EC50 (96h) 6.4 mg/l (Pseudokirchnerella subcapitata - OECD 201) EC50 (96h) 15 mg/l (Pseudokirchnerella subcapitata - OECD 201)	EL50 (48h) ca. 91.4 mg/l (Daphnia magna - OECD 202)	LL50 (96h) ca. 24 mg/l (Oncorhynchus mykiss - OECD 203)	--

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	EC50 (96h) 6.4 mg/L (Selenastrum capricornu- tum- OECD TG 201) (ECHA CHEM)			
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Chronic aquatic toxicity - Product In- No information available.
formation

Chronic aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates	Toxicity to fish	Toxicity to microorgan-isms
Distillates (pe- troleum), hydrotreated heavy paraffinic 64742-54-7	--	NOEL (21d) 10 mg/l (Daphnia ma- gna - QSAR Petrotox)	NOEL (14/28d) > 1000 mg/l (Oncorhyn- chus mykiss - QSAR Pe- trotox)	--
Reaction products of 4-methyl-2- pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentaoxide, and salted by amines, C12-14- tert- alkyl ^	NOEC (96h) 1.7 mg/l (Pseudokirch- nerella subcapitata - OECD 201) par NOEC (96h) 3.3 mg/l (Pseudokirch- nerella subcapitata - OECD 201)	EL50 (21d) 0.91 mg/l (Daphnia ma- gna - OECD 211) NOEL (21d) 0.12 mg/l (Daphnia ma- gna - OECD 211) EL50 (21d) 0.66 mg/l (Daphnia ma- gna - OECD 211)	--	EC50 (3h) ca. 2433 mg/L (Activated Sludge, do- mestic - OECD TG 209) (ECHA CHEM)

Effects on terrestrial organisms No information available.

12.2 Persistence and degradability

General Information No information available.

12.3 Bioaccumulative potential

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Product Information
logPow

No information available.
No information available.

Component Information

Chemical Name	log Pow
Distillates (petroleum), hydrotreated heavy paraffinic 64742-54-7	--
bis(nonylphenyl)amine 36878-20-3	7.7
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentaoxide, and salted by amines, C12-14- tert-alkyl - ^	< 0.30 to >7.10 (OECD TG 117) (ECHA CHEM)

12.4 Mobility

Soil

Given its physical and chemical characteristics, the product generally shows low soil mobility.

Air

Loss by evaporation is limited.

Water

The product is insoluble and floats on water.

12.5 Other adverse effects

General Information:

No information available.

Ozone-Depleting Substances:

This product does not contain substances that deplete the Ozone Layer; according to CONAMA Resolution No. 267/2000.

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 environmental laws and regulations. Where possible recycling is preferred to disposal or incineration.

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Contaminated packaging:

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

14 Transport information

DOT	Not regulated
TDG	Not regulated
MEX	Not regulated
ICAO/IATA	Not regulated
IMDG/IMO	Not regulated
ADR/RID	Not regulated
ADN	Not regulated

15. Regulatory information

Ordinance No. 229 of May 24, 2011/MTE - Safety Signs
Decree 2.657 of July 3rd, 1998 - Safe Use of Chemicals at Workplace
Law 9.605 of February 12, 1998 - Criminal and administrative sanctions derived from conduct and activities harmful to the environment, and other measures
Law 6.514 of December 22, 1977 on Workplace Safety and Health
Law No. 8.078 - Consumer Protection Code

16. Other information

Full text of H-Statements referred to under sections 3:

H413	May cause long lasting harmful effects to aquatic life
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H411	Toxic to aquatic life with long lasting effects

Abbreviations, acronyms

ACGIH = American Conference of Governmental Industrial Hygienists

bw = body weight

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bw/day = body weight/day
EC x = Effect Concentration associated with x% response
GLP = Good Laboratory Practice
IARC = International Agency for Research of Cancer
LC50 = 50% Lethal concentration - Concentration of a chemical in air or a chemical in water which causes the death of 50% (one half) of a group of test animals
LD50 = 50% Lethal Dose - Chemical amount, given at once, which causes the death of 50% (one half) of a group of test animals
LL = Lethal Loading
NIOSH = National Institute of Occupational Safety and Health
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration
NOEL = No Observed Effect Level
OECD = Organization for Economic Co-operation and Development
OSHA = Occupational Safety and Health Administration
UVCB = Substance of unknown or Variable composition, Complex reaction products or Biological material

Legend Section 8:

TWA: Time Weight Average
STEL: Short Time Exposure Limit
PEL: Permissible exposure limit
REL: Recommended exposure limit
TLV: Threshold Limit Values

* Skin designation

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.