



Trade name: ZF EcoFluid M

ZF Aftermarket

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

1.1 Product identifier

Trade name:	ZF EcoFluid M
Product code:	0671.090.384 0671.090.385 0671.090.386
Substance/mixture:	Mixture

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

Use of the Substance/Mixture: Transmission fluids.

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 19 240 Information in German and English

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

For the full text of the H-Statements mentioned in this Section, see Section 2.2.
The product is not classified as dangerous according to Regulation (EC) No. 1272/2008

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard Statements	No known significant effects or critical hazards.
Precautionary Statements	None
Supplemental Hazard Statements	EUH210 - Safety data sheet available on request

Contains Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide,



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propoxylated, esterified with diphosphorus pentoxide, and salted by amines, C12-14- tert-alkyl.

May produce an allergic reaction

2.3 Other hazards

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Other hazards which do not result in classification Prolonged or repeated contact may dry skin and cause irritation.

3. Composition/information on ingredients

3.1 Mixtures

Chemical nature

Synthetic base oil and additives.
Highly refined mineral oil.
The highly refined mineral oil contains <3% (w/w) DMSO extract, according to IP346.
The highly refined mineral oil is only present as additive diluent.

* contains one or more of the following CAS-numbers (REACH registration numbers): 64742-53-6 (01-2119480375-34), 64742-54-7 (01-2119484627-25), 64742-55-8 (01-2119487077-29), 64742-56-9 (01-2119480132-48), 64742-65-0 (01-2119471299-27), 68037-01-4 (01-2119486452-34), 72623-86-0 (01-2119474878-16), 72623-87-1 (01-2119474889-13), 8042-47-5 (01-2119487078-27), 848301-69-9 (01-0000020163-82).

Hazardous components

Chemical name	EC-No.	REACH registration No	CAS-No	Weight %	Classification (Reg. 1272/2008)
Distillates (petroleum), hydrotreated	265-157-1	01-2119484627-25	64742-54-7	≥25 - ≤50	Asp. Tox. 1 (H304)



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heavy paraffinic					
bis(nonylphe nyl)amine	253- 249-4	01- 2119488911-28	36878-20-3	≤3	Aquatic Chronic 4, H413

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.

4. First aid measures

4.1 Description of first aid measures

General advice:

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

If inhaled:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

In case of skin contact:

Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

In case of eye contact:

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

If swallowed:

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.



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4.2 Most important symptoms and effects, both acute and delayed

Eye contact	No specific data.
Skin contact	Adverse symptoms may include the following: irritation dryness cracking
Inhalation	No specific data.
Ingestion	No specific data.

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

Notes to physician	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
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5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:	Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable extinguishing media:	Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Special Hazard	In a fire or if heated, a pressure increase will occur and the container may burst. Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides
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5.3 Advice for firefighters

Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469
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Special protective actions
for fire-fighters:

will provide a basic level of protection for
chemical incidents.

Promptly isolate the scene by removing all
persons from the vicinity of the incident if
there is a fire. No action shall be taken in-
volving any personal risk or without
suitable training.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency
Personnel:

No action shall be taken involving any per-
sonal risk or without suitable training.
Evacuate surrounding areas. Keep unnec-
essary and unprotected personnel from
entering. Do not touch or walk through
spilled material. Put on appropriate
personal protective equipment.

For emergency responders:

If specialized clothing is required to deal
with the spillage, take note of any
information in Section 8 on suitable and
unsuitable materials. See also the
information in "For non-emergency per-
sonnel".

6.2 Environmental precautions

General Information

Avoid dispersal of spilled material and run-
off and contact with soil, waterways,
drains and sewers. Inform the relevant au-
thorities if the product has caused
environmental pollution (sewers, water-
ways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill:

Stop leak if without risk. Move containers
from spill area. Dilute with water and mop
up if water-soluble. Alternatively, or if wa-
ter-insoluble, absorb with an inert dry
material and place in an appropriate waste
disposal container. Dispose of via a
licensed waste disposal contractor.



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Large spill:

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with noncombustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

7. Handling and storage

7.1 Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be



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carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Specific use(s) No information available.

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);
Metalworking fluids:
USA: NIOSH (REL) TWA 0.5 mg/m³
See section 16

Legend
DNEL Worker (Industrial/Professional)

Chemical Name	Short term, systemic effects	Short term, local effects	Long term, systemic effects	Long term, local effects
Distillates (petroleum), hydrotreated heavy paraffinic			970 µg/kg (Dermal) 2.73 mg/m ³ (Inhalation)	5.58 mg/m ³ (aerosol - inhalation)
bis(nonylphenyl)amine			5 mg/kg bw/day (Dermal) 0.62 mg/kg bw/day (Dermal) 4.37 mg/m ³ (Inhalation)	

DNEL Consumer

Chemical Name	Short term, systemic	Short term, local effects	Long term, systemic	Long term, local effects



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	effects		effects	
Distillates (petroleum), hydrotreated heavy paraffinic			740 µg/kg (Oral)	1.19 mg/ m ³ (aerosol - inhalation)
bis(nonylphenyl)amine			0.25 mg/kg bw/day (Oral) 2.5 mg/kg bw/day (Dermal)	

Predicted No Effect Concentration (PNEC)

Chemical Name	Water	Sediment	Soil	Air	STP	Oral
bis(nonylphenyl)amine	0.1 mg/l 0.01 mg/l	132000 mg/kg dwt 13200 mg/kg dwt	263000 mg/kg dwt		1 mg/l	

8.2 Exposure controls

Occupational Exposure Controls
Engineering measures

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection:

Based on the hazard and potential for exposure, select a respirator that meets the



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appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator with combination filter for vapor/particulate 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 None under normal use conditions.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Hydrocarbon-proof gloves: Nitrile rubber, Fluorinated 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, and the contact time. 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 prot.



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Skin and body protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls

General advice:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	liquid
Colour:	brown
Odour:	Characteristic
Odor threshold:	Not available.
pH:	Not applicable

Boiling point/boiling range	No information available	
Melting point/range	No information available	
Flash point	> 200 °C > 392 °F	Cleveland Open Cup (COC)
Evaporation rate	No information available	
Flammability Limits in Air	No information available	



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Upper explosion limit	No information available	
Lower explosion limit	No information available	
Vapour pressure	No information available	
Vapour density	No information available	
Relative density	0.855 - 0.861 (15°C)	ASTM D 4052
Solubility(ies)		
Water solubility	Insoluble	
Solubility in other solvents	No information available	
Partition coefficient: n-octanol/ water	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity, kinematic	50 - 55 mm ² /s (40°C)	ISO 3104
Explosive properties	Not explosive	
Possibility of hazardous reactions	Not applicable	
Oxidizing properties	Not applicable	

9.2 Other information
No information available

10. Stability and reactivity



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- 10.1 Reactivity** No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability:** Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions:** None under normal processing.
- 10.4 Conditions to avoid:** No specific data.
- 10.5 Incompatible materials:** Strong oxidising agents.
- 10.6 Hazardous decomposition products:** None under normal use.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity Local effects Product Information

Skin contact	Defatting to the skin. May cause skin dryness, irritation and cracking.
Eye contact	No known significant effects or critical hazards.
Inhalation	No known significant effects or critical hazards.
Ingestion	No known significant effects or critical hazards.

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) > 5.1 mg/l (aerosol) (rat OECD 403)
bis(nonylphenyl)amine	LD50 > 5000 mg/kg bw (rat - OECD 401)	LD50 > 2000 mg/kg bw (rat - OECD 402)	LC50 (4h) > 5.1 mg/l (aerosol) (rat)

Specific effects

Carcinogenicity Based on available data, the classification criteria are not met.



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Mutagenicity Based on available data, the classification criteria are not met.
Reproductive toxicity Based on available data, the classification criteria are not met.

Repeated Dose Toxicity

Subchronic toxicity No information available.

Target Organ Effects (STOT)

Target Organ Effects (STOT) No information available.

12. Ecological information

12.1 Toxicity

Acute and chronic 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	EC50 (48h) > 100 mg/l (Pseudokirchnerella subcapitata - OECD 201)	EC50 (48h) > 10000 mg/l (Daphnia magna - OECD 202) NOEL (21 days) > 10 mg/l (Daphnia magna)	NOEL (21 days) > 1000 mg/l (Oncorhynchus mykiss)	
bis(nonylphenyl)amine	EC50 (72h) 600 mg/l (Pseudokirchnerella subcapitata)	EC50 (48h) > 100 mg/l (Daphnia magna - OECD 202)		EC50 (0,1 days) > 1000 mg/l (Micro-organism)

Chronic aquatic toxicity - Product 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.



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logPow

No information available

Component Information

Chemical Name	LogKow	BCF	Potential
Distillates (petroleum), hydrotreated heavy paraffinic*** - 64742-54-7	>4		high
bis(nonylphenyl)amine	7.7	1584.89	high

12.4 Mobility in soil

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

Waste from Residues / Unused Products

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Contaminated packaging:

This material and its container must be disposed of in a safe way. Empty contain-



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ers
or liners may retain some product residues.
Avoid dispersal of spilled material and
runoff and contact with soil, waterways,
drains and sewers.

EWC Waste Disposal No.

The following Waste Codes are only suggestions. 13 02 05. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

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

European Union

Further information

No information available

15.2 Chemical safety assessment

Chemical Safety Assessment

This product contains substances for which Chemical Safety Assessments are still required.

16. Other information

Full text of abbreviated H statements

H304 May be fatal if swallowed and enters airways.
H413 May cause long lasting harmful effects to aquatic life.



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Full text of classifications [CLP/GHS]

Aquatic Chronic 4, AQUATIC HAZARD (LONG-TERM) - Category 4
H413
Asp. Tox. 1, H304 ASPIRATION HAZARD - Category 1

Abbreviations, acronyms

ATE	Acute Toxicity Estimate
CLP	Classification, Labelling and Packaging Regulation [Regulation (EC) No.1272/2008]
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EUH state- ment	CLP-specific Hazard statement
N/A	Not available
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
RRN	REACH Registration Number
vPvB	Very Persistent and Very Bioaccumulative

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

To the best of our knowledge, the information contained herein is accurate. However, neither the abovenamed supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

End of the safety data sheet