



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 oil.
Uses advised against:	This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

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	None
Precautionary Statements	None
Supplemental Hazard Statements	EUH210 - Safety data sheet available on



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request

Contains Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentoxide, and salted by amines, C12-14- tert-alkyl.

May produce an allergic reaction

2.3 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

3.2 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),	265-157-1	01-2119484627-25	64742-54-7	<30	Asp. Tox. 1 (H304)



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hydrotreated heavy paraffinic					
Distillates (petroleum), solvent-dewaxed heavy paraffinic	265-169-7	01-2119471299-27	64742-65-0	<5	Asp. Tox. 1 (H304)
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentoxide, and salted by amines, C12-14-tert-alkyl	931-384-6	01-2119493620-38	^	<1	Acute Tox. 4 (H302) Aquatic Chronic 2 (H411) Eye Dam. 1 (H318) Flam. Liq. 3 (H226) 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.

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:

Move to fresh air.

In case of skin contact:

Remove contaminated clothing and shoes. Wash off with soap and water. Wash contaminated clothing before reuse.

In case of eye contact:

Rinse thoroughly with plenty of water, also under the eyelids.



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If swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.

4.2 Most important symptoms and effects, both acute and delayed

Eye contact	Not classified.
Skin contact	Not classified. May produce an allergic reaction.
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 any 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.
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5.3 Advice for firefighters

Special protective equipment for firefighters:	Wear self-contained breathing apparatus and protective suit.
Other information	Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishers should be treated as hazardous waste.



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guishing water must be disposed of in accordance with local regulations.

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 can not be contained. See Section 12 for additional Ecological Information.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up:

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

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.



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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 work-wear 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. Protect from frost, heat and sunlight. Protect from moisture.

Materials to Avoid

Strong oxidizing agents.

7.3 Specific end use(s)

Specific use(s)

No information available.

8. Exposure controls/personal protection

8.1 Control parameters



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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*** 64742-54-7				5.4 mg/m ³ /8h (aerosol - inhalation)
Distillates (petroleum), solvent-dewaxed heavy paraffinic*** 64742-65-0				5.4 mg/m ³ /8h (aerosol - inhalation)
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentaoxide, and salted by amines, C12-14-tert-alkyl*** ^			12.5 mg/kg/8 h (dermal) 8.56 mg/m ³ /8 h (inhalation) (ECHA CHEM)	

DNEL Consumer

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



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Distillates (petroleum), hydrotreated heavy paraffinic*** 64742-54-7				1.2 mg/m ³ /24h (aerosol - inhalation)
Distillates (petroleum), solvent-dewaxed heavy paraffinic*** 64742-65-0				1.2 mg/m ³ /24h (aerosol - inhalation)
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentoxide, and salted by amines, C12-14-tert-alkyl*** ^			6.25 mg/kg/24h (dermal) 2.2 mg/m ³ /24h (inhalation) 0.25 mg/kg/24h (oral) (ECHA CHEM)	

Predicted No Effect Concentration (PNEC)

Chemical Name	Water	Sediment	Soil	Air	STP	Oral
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus	0.0012 mg/l fw 0.00012 mg/l mw 0.064 mg/or	3.13 mg/kg fw 0.313 mg/kg mw	2.54 mg/kg soil dw		24.33 mg/l	10 mg/kg food



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pentaoxide, and salted by amines, C12-14- tert- alkyl*** ^						
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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

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. 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.

Hand protection:

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 con-



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tact time. 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.

Skin and body protection:

Wear suitable protective clothing. Protective shoes or boots. Long sleeved clothing.

Environmental exposure controls

General advice:

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:	liquid
Colour:	brown
Odour:	Characteristic
Physical State @20°C	liquid
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	
Upper explosion limit	No information available	
Lower explosion limit	No information available	
Vapour pressure	No information available	



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Vapour density	No information available	
Relative density	0.855 (15°C)	
Density	855 - 861 kg/m ³ (15°C)	
Solubility(ies)		
Water solubility	Insoluble	
Solubility in other solvents	No information available	
logPow	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity, kinematic	9 - 9.7 mm ² /s (100°C) 50 - 55 mm ² /s (40°C)	ISO 3104 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

10.1 Reactivity No information available

10.2 Chemical stability: Stable under recommended storage conditions.



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- 10.3 Possibility of hazardous reactions:** None under normal processing.
- 10.4 Conditions to avoid:** Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.
- 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	Not classified. May produce an allergic reaction.
Eye contact	Not classified.
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.

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)
Distillates (petroleum), solvent-dewaxed 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)
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus	LD50 2000 mg/kg bw (Rat - OECD TG 401)		



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pentaoxide, and salted by amines, C12-14-tert-alkyl			
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Sensitization

Not classified as a sensitizer. Contains sensitizer(s). May produce an allergic reaction.

Specific effects

Carcinogenicity

This product is not classified carcinogenic.

Chemical Name	European Union
Distillates (petroleum), hydrotreated heavy paraffinic 64742-54-7	--
Distillates (petroleum), solvent-dewaxed heavy paraffinic 64742-65-0	--

Mutagenicity
Reproductive toxicity

This product is not classified as mutagenic. This product does not present any known or suspected reproductive hazards.

Repeated Dose Toxicity

Subchronic toxicity

No information available.

Target Organ Effects (STOT)

Target Organ Effects (STOT)

No information available.

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

Not classified.

Acute aquatic toxicity - Product Information

No information available.



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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)	
Distillates (petroleum), solvent-dewaxed heavy paraffinic*** 64742-65-0	EL50 (72h) > 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)	
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 (Senastrum capricornutum - OECD 201) EC50 (96h) 6.4 mg/l (Pseudokirchnerella subcapitata - OECD 201) EC50 (96h) 15 mg/l (Pseudokirchnerella subcapitata - OECD 201) EC50 (96h) 6.4 mg/L (Senastrum capricornutum- OECD TG 201) (ECHA CHEM)	EL50 (48h) ca. 91.4 mg/l (Daphnia magna - OECD 202)	LL50 (96h) ca. 24 mg/l (Oncorhynchus mykiss - OECD 203)	

Chronic aquatic toxicity - Product Information No information available.



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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		NOEL (21d) 10 mg/l (Daphnia magna - QSAR Petrotox)	NOEL (14/28d) > 1000 mg/l (Oncorhynchus mykiss - QSAR Petrotox)	
Distillates (petroleum), solvent-dewaxed heavy paraffinic*** 64742-65-0		NOEL (21d) 10 mg/l (Daphnia magna - OECD 211)	NOEL (14/28d) > 1000 mg/l (Oncorhynchus mykiss - QSAR PETROTOX)	
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 (Pseudokirchnerella subcapitata - OECD 201) par NOEC (96h) 3.3 mg/l (Pseudokirchnerella subcapitata - OECD 201)	EL50 (21d) 0.91 mg/l (Daphnia magna - OECD 211) NOEL (21d) 0.12 mg/l (Daphnia magna - OECD 211) EL50 (21d) 0.66 mg/l (Daphnia magna - OECD 211)		EC50 (3h) ca. 2433 mg/L (Activated Sludge, domestic - 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

Product Information
logPow

No information available.
No information available



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Component Information

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

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

Should not be released into the environment. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.
Where possible recycling is preferred to disposal or incineration. After use, this oil must be sent to a licensed waste oil facility. Incorrect disposal of used oil poses a risk to the environment. Mixture with other waste types such as solvents, brake- and cooling liquids is forbidden.

Contaminated packaging:

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

EWC Waste Disposal No.

The following Waste Codes are only sug-



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gestions. 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 No information available

16. Other information

Full text of H-Statements referred to under sections 2 and 3

H302 Harmful if swallowed
H411 Toxic to aquatic life with long lasting effects
H318 Causes serious eye damage
H226 Flammable liquid and vapor
H317 May cause an allergic skin reaction

Abbreviations, acronyms

Legend Section 8

TWA Time Weight Average
STEL Short Time Exposure Limit
+ Sensitizer



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**	Hazard Designation
M	Mutagen
*	Skin designation
C	Carcinogen
R	Toxic to reproduction
***	Indicates updated section

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

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