



Trade name: ZF-ECOFLUID M

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 Recommended use of the chemical and restrictions on use

Use of the Substance/Mixture: Transmission oil.

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 89 19 240 (Information in German and English)

2. Hazards identification

2.1 Classification of the substance or mixture

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

2.2 Label elements

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazard Statements: None
Unknown Acute Toxicity: No information available
Hazards not otherwise classified: None known



Trade name: ZF-ECOFLUID M

(HNOC):

2.3 Other information

Contaminated surfaces will be extremely slippery.
Should not be released into the environment.

3. Composition/information on ingredients

Chemical name	CAS-No	Weight %
Distillates (petroleum), hydrotreated heavy Paraffinic	64742-54-7	>10
Distillates (petroleum), solvent-dewaxed heavy Paraffinic	64742-65-0	<5
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentaoxide, and salted by amines, C12-14- tert-alkyl	--	<1

Additional information

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

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:	Rinse thoroughly with plenty of water, also under the eyelids.
Skin contact:	Remove contaminated clothing and shoes. Wash off with soap and water. Wash contaminated clothing before reuse.
Inhalation:	Move to fresh air.
Ingestion:	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.



Trade name: ZF-ECOFLUID M

4.2 Most important symptoms/effects, acute and delayed

Skin contact:	Not classified.
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.
Symptoms:	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

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 Explosion Data

Sensitivity to Mechanical Impact:	None
Sensitivity to Static Discharge:	None

5.3 Advice for firefighters

Protective Equipment and Precautions for Firefighters:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate non-essential personnel.
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Trade name: ZF-ECOFLUID M

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.

Other information: See Section 12 for additional information.

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.

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.



Trade name: ZF-ECOFLUID M

ZF Aftermarket

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.

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).

Exposure controls
Engineering Measures

Apply technical measures to comply with the occupational exposure limits.

8.2 Individual protection measures, such as personal protective equipment



Trade name: ZF-ECOFLUID M

ZF Aftermarket

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.
Eye/Face Protection:	If splashes are likely to occur, wear: Safety glasses with side-shields.
Skin and body protection:	Wear suitable protective clothing. Protective shoes or boots.
Hand protection:	Hydrocarbon-proof gloves. Rubber gloves. 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, and the contact time.
Respiratory protection:	None required under normal usage. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
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.

9. Physical and chemical properties



Trade name: ZF-ECOFLUID M

9.1 Information on basic physical and chemical properties

Appearance:	liquid
Colour:	brown
Odour:	Characteristic
Physical State @20°C / 68°F	liquid
pH:	Not applicable

		Method
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	
Vapour density	No information available	

Relative density	0.855 (15°C / 59°F)	
Density	855 - 861 kg/m ³ (15°C / 59°F)	
Solubility(ies)		
Water solubility	Insoluble	
Solubility in other solvents	No information available	
logPow	No information available	
Autoignition temperature	No information available	



Trade name: ZF-ECOFLUID M

ZF Aftermarket

Decomposition temperature	No information available	
Viscosity, kinematic	9 - 9.7 mm ² /s (100°C / 212°F) 50 - 55 mm ² /s (40°C / 104°F)	ISO 3104 ISO 3104
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

No information available

10.2 Chemical stability:

Stable under recommended storage conditions.

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 Acute toxicity

Information on likely routes of exposure

Product Information

Skin contact: Not classified.

Eye contact. Not classified.

SAFETY DATA SHEET
According to the Hazard Communication Standard
29 CFR 1910.1200



Trade name: ZF-ECOFLUID M

ZF Aftermarket

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.

Numerical measures of toxicity - Product Information

ATEmix (oral): 18302 mg/kg
ATEmix (dermal): 18302 mg/kg
Inhalation
ATEmix (inhalation-dust/mist): 18.7 mg/l
ATEmix (inhalation-vapor): 513.4 mg/l

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Distillates (petroleum), hydrotreated heavy Paraffinic 64742-54-7	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 64742-65-0	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 pentoxide, and salted by amines, C12-14-tert-alkyl	LD50 2000 mg/kg bw (Rat - OECD TG 401)		

Information on toxicological effects

Symptoms:

Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Delayed and immediate effects as well as chronic effects from short and long-



Trade name: ZF-ECOFLUID M

ZF Aftermarket

term exposure

Sensitization

Not classified as a sensitizer. Contains sensitizer(s). The supplier of one of the components contained within this formulation has indicated that they have data, which confirms that at the concentration used, no sensitisation classification is required.

Carcinogenicity

This product is not classified carcinogenic.

Chemical Name	ACGIH	IARC	NTP	OSHA
Distillates (petroleum), hydrotreated heavy paraffinic 64742-54-7	--	--	--	--
Distillates (petroleum), solvent-dewaxed heavy paraffinic 64742-65-0	--	--	--	--

Mutagenicity

This product is not classified as mutagenic.

Reproductive toxicity

This product does not present any known or suspected reproductive hazards.

Aspiration Hazard

Not classified.

12. Ecological information

12.1 Ecotoxicity

Acute aquatic toxicity - Product Information No information available.

Acute aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates	Toxicity to microorganisms
Distillates (petroleum), hydrotreated heavy paraffinic	EL50 (48h) > 100 mg/l (Pseudokirchnerella subcapitata -	LL50 (96h) > 100 mg/l (Oncorhynchus mykiss - OECD 203)	EL50 (48h) > 10000 mg/l (Daphnia magna - OECD 202)	--



Trade name: ZF-ECOFLUID M

ZF Aftermarket

64742-54-7	OECD 201)			
Distillates (petroleum), solvent-dewaxed heavy paraffinic 64742-65-0	EL50 (72h) > 100 mg/l (Pseudokirchnerella subcapitata - OECD 201)	LL50 (96h) > 100 mg/l (Oncorhynchus mykiss - OECD 203)	EL50 (48h) > 10000 mg/l (Daphnia magna - OECD 202)	--
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentoxide, 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)	LL50 (96h) ca. 24 mg/l (Oncorhynchus mykiss - OECD 203)	EL50 (48h) ca. 91.4 mg/l (Daphnia magna - OECD 202)	--

Chronic aquatic toxicity - Product Information - No information available.

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		NOEL (21d) 10 mg/l (Daphnia magna - QSAR	NOEL (14/28d) > 1000 mg/l (Oncorhynchus mykiss -	--



Trade name: ZF-ECOFLUID M

ZF Aftermarket

64742-54-7		Petrotox)	QSAR Pe- trotox)	
Distillates (pe- troleum), solvent- dewaxed heavy paraffinic 64742-65-0		NOEL (21d) 10 mg/l (Daphnia magna - OECD 211)	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 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, 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

Product Information

No information available.

logPow

No information available.

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 pentaoxide, and salted by amines, C12-14- tert-alkyl - ^	< 0.30 to >7.10 (OECD TG 117) (ECHA CHEM)



Trade name: ZF-ECOFLUID M

12.4 Mobility

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 Other adverse effects

General Information

No information available.

13. Disposal considerations

13.1 Waste treatment methods

Waste Disposal Methods:

Dispose of in accordance with local regulations.

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

15.1 International Inventories

No information available

15.2 U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of



Trade name: ZF-ECOFLUID M

ZF Aftermarket

1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	no
Chronic Health Hazard	no
Fire Hazard	no
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

15.3 U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

No information available

16. Other information

NFPA	Health Hazard 0	Flammability 1	Instability 0	Physical and chemical hazards -
HMIS	Health Hazard 0	Flammability 1	Physical Hazard 0	Personal protection X

NFPA (National Fire Protection Association)
HMIS (Hazardous Material Information System)
Hazards are split into categories each with a 0 to 4 rating, 0 meaning no hazard

SAFETY DATA SHEET
According to the Hazard Communication Standard
29 CFR 1910.1200



ZF Aftermarket

Trade name: ZF-ECOFLUID M

and 4 meaning high hazard

Abbreviations, acronyms
Legend

Section 8

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH - National Institute for Occupational Safety and Health
TLV - Threshold Limit Values
PEL - Permissible Exposure Limits
IDLH - Immediately Dangerous to Life or Health concentrations
TWA - Time Weight Average
STEL - Short Term Exposure Limits
S* - Skin notation
TSCA - Toxic Substance Control Act

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.