

# SAFETY DATA SHEET

According to Safe Work Australia Code of Practice on Preparation of Safety Data Sheets for Hazardous Chemicals



ZF Aftermarket

**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](http://www.zf.com/contact)**

### 1.4 Details of Australian Importer/Supplier

**ZF Services Pty Limited**  
**14 Lidco Street**  
**Arndell Park NSW 2159**  
**+61 2 9679 5555**

### 1.5 Emergency telephone number

**24/7h Emergency telephone number:**

Australia ZF 24/7:  
Tel (+1) 300 938 324

International GBK-EMETEL:  
Tel (+1) 352 323 3500

+49 89 19 240 Information in German and English

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## 2. Hazards identification

### 2.1 Classification of the substance or mixture

Not classified as hazardous according to Australia Model Work Health and Safety Regulations

### 2.2 GHS Label elements, including precautionary statements

Signal Word: None

#### Other hazards which do not result in classification

Physical-Chemical Properties Contaminated surfaces will be extremely slippery  
Environmental properties 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	20<30
Reaction products of 4-methyl-2-pentanol and diphosphorus pentasulfide, propoxylated, esterified with diphosphorus pentoxide, and salted by amines, C12-14- tert-alkyl	--	0.25<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.

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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.

### 4.2 Most important symptoms/effects, acute and delayed

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.

### 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 <sub>2</sub> ). 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 Specific hazards arising from the chemical

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 fire-fighters:

Wear self-contained breathing apparatus and protective suit.

Other information:

Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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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.

Other information:  
Personal Protective Equipment  
Waste treatment

See Section 12 for additional information.  
See Section 8 for more detail.  
See section 13.

### 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 cannot be contained.

### 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.

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## 7. Handling and storage

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### 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.
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.

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## 8. Exposure controls/personal protection

### 8.1 Control parameters

Exposure limits

Mineral oil mist:

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USA: OSHA (PEL) TWA 5 mg/m<sup>3</sup>, NIOSH (REL) TWA 5 mg/m<sup>3</sup>, STEL 10 mg/m<sup>3</sup>, ACGIH (TLV) TWA 5 mg/m<sup>3</sup> (highly refined).

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.

### 8.2 Individual protection measures, such as 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.

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. Long sleeved clothing.

Hand protection:

Hydrocarbon-proof gloves: Nitrile rubber, Fluorinated rubber. 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 protection is provided by the material of the glove, its technical characteristics, its resistance to the chemicals to be handled, the appropriateness of its use and its replacement frequency.

Respiratory protection:

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Respirator with combination filter for vapour/particulate (EN14387). Type A/P1. The use of breath-

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ing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.

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

### 9.1 Information on basic physical and chemical properties

Appearance:	limpid
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	

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Vapour density	No information available	
Relative density	0.855 – 0.861 (15°C / 59°F)	
Density	855 - 861 kg/m <sup>3</sup> (15°C / 59°F)	
<b>Solubility(ies)</b>		
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 <sup>2</sup> /s (100°C / 212°F) 50 - 55 mm <sup>2</sup> /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.



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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. Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot.

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## 11. Toxicological information

### 11.1 Acute toxicity

Information on likely routes of exposure

- 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.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available

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

Acute toxicity - Product Information

Component Information

- Oral Not classified.
- ATEmix (oral) 16,024.00 mg/kg
- 0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity

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Dermal Not classified.  
ATEmix (dermal) 16,024.00 mg/kg  
0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

Inhalation Not classified  
ATEmix (inhalation-gas) > 20,000.00 ppm  
31.2085 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

ATEmix (inhalation-vapor) 373.30 mg/l  
27.2935 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

ATEmix (inhalation-dust/mist) 16.30 mg/l  
0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

### Acute toxicity - 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)
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)	--	--

Skin corrosion/irritation Not classified

Serious eye damage/eye irritation Not classified

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

Carcinogenicity This product is not classified carcinogenic.

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Mutagenicity	This product is not classified as mutagenic. Contains no ingredient listed as a mutagen.
Germ Cell Mutagenicity	This product is not classified as mutagenic
Reproductive toxicity	Not Classified.
STOT - single exposure	Not Classified.
STOT - repeated exposure	Not Classified.
Aspiration Hazard	Not Classified.
Other adverse effects	Characteristic skin lesions (pimples) may develop following prolonged and repeated exposures (contact with contaminated clothing).

## 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 64742-54-7	EL50 (48h) > 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	EL50 (96h) > 15 mg (Selenastrum capricornutum - OECD 201) EC50 (96h) 6.4 mg/l (Pseudokirch-	LL50 (96h) ca. 24 mg/l (Oncorhynchus mykiss - OECD 203)	EL50 (48h) ca. 91.4 mg/l (Daphnia magna - OECD 202)	--

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diphosphorus pentaoxide, and salted by amines, C12-14- tert-alkyl ^	nerella 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)			
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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 64742-54-7	--	NOEL (21d) 10 mg/l (Daphnia magna - QSAR Petrotox)	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-	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)	--	EC50 (3h) ca. 2433 mg/L (Activated Sludge, domestic - OECD TG 209) (ECHA CHEM)

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alkyl ^		0.66 mg/l (Daphnia magna - OECD 211)		
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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 pentoxide, 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 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 / Unused Products: Should not be released into the environment. Dispose of in accordance with local regulations.

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Contaminated packaging:	Empty containers should be taken to an approved waste handling site for recycling or disposal.
Other information	Refer to section 8 for safety and protective measures for disposal personnel.

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### 14 Transport information

ADG (Australia)	Not regulated
ICAO/IATA	Not regulated
IMDG/IMO	Not regulated
ADR/RID	Not regulated
ADN	Not regulated

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### 15. Regulatory information

**15.1** International Inventories No information available

#### 15.2 National regulatory information

Not classified as hazardous according to Australia Model Work Health and Safety Regulations

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### 16. Other information

#### Abbreviations, acronyms

ACGIH = American Conference of Governmental Industrial Hygienists

bw = body weight

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

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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  
ADG = Australian Dangerous Goods

### Legend Section 8

ACGIH - American Conference of Governmental Industrial Hygienists  
TWA - Time Weight Average  
STEL - Short Term Exposure Limits  
S\* - Skin notation

Ceiling:	Maximum limit value	TWA:	Time weighted average
STEL:	Short term exposure limit	*	Skin designation
+	Sensitizer	**	Hazard Designation
C	Carcinogen		

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.