



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 Recommended use of the chemical and restrictions on use

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 89 19 240 Information in German and English)

2. Hazards identification

2.1 Classification of the substance or mixture

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 1.6%

2.2 Label elements

Hazard Statements: No known significant effects or critical hazards.



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Signal word: No signal word.

Precautionary statements

Prevention: Not applicable.
Response: Not applicable.
Storage: Not applicable.
Disposal: Not applicable.

2.3 Other information

Prolonged or repeated contact may dry skin and cause irritation.

3. Composition/information on ingredients

Chemical name	CAS-No	%
Distillates (petroleum), hydrotreated heavy Paraffinic	64742-54-7	≥25 - ≤50

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Additional information Mineral oil of petroleum origin. Product containing mineral oil with less than 3% DMSO extract as measured by IP 346.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First aid measures

4.1 First aid measures for different exposure routes

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 irritation occurs.

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.



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Inhalation:	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.
Ingestion:	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.

4.2 Most important symptoms/effects, acute and delayed

Skin contact:	Defatting to the skin. May cause skin dryness and irritation. Adverse symptoms may include the following: irritation, dryness, 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.

4.3 Indication of 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



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

5.2 Specific hazards arising from the chemical

Specific hazards:	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
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.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary 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 infor-



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mation in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".

6.2 Environmental precautions

General Information

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, 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 water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

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 non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

7.1 Precautions for safe handling

Protective measures:

Put on appropriate personal protective



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	equipment (see Section 8).
Hygiene measures	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 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.
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8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Distillates (petroleum), hydrotreated heavy Paraffinic	ACGIH TLV (United States, 3/2019). TWA: 5 mg/m ³ 8 hours. Form: Inhalable fraction NIOSH REL (United States, 10/2016). TWA: 5 mg/m ³ 10 hours. Form: Mist STEL: 10 mg/m ³ 15 minutes.



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	Form: Mist OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours.
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Exposure limits

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

Exposure controls
 Appropriate engineering controls

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

Environmental exposure controls

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.

8.2 Individual protection measures, such as personal protective equipment

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 sideshields.

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



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	<p>the risks involved and should be approved by a specialist before handling this product.</p>
Hand protection:	<p>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 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 consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.</p>
Respiratory protection:	<p>Based on the hazard and potential for exposure, select a respirator that meets the 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</p>
Hygiene measures:	<p>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.</p>



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9. Physical and chemical properties

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 - 0.861 (15°C / 59°F)	ASTM D 4052
Density	855 - 861 kg/m ³ (15°C / 59°F)	
Solubility(ies)	Insoluble in the following materials: cold water and hot water.	
Water solubility	Insoluble	
Solubility in other solvents	No information available	
logPow	No information available	



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Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity, kinematic	0.5 to 0.55 cm ² /s (40°C / 104°F)	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 specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability:** The product is stable.
- 10.3 Possibility of hazardous reactions:** Under normal conditions of storage and use, hazardous reactions will not occur.
- 10.4 Conditions to avoid:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- 10.5 Incompatible materials:** Strong oxidising agents.
- 10.6 Hazardous decomposition products:** Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

11.1 Information on toxicological effects



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Acute toxicity

Product/ substance	Result	Species	Dose	Exposure	Test
Distillates (petroleum), hydrotreated heavy Paraffinic	LC50 Inhalation	Rat	5.1 mg/l	4 hours	OECD 403
	Dusts and mists				
	LD50 Dermal	Rabbit	>5000 mg/kg	-	OECD 402
	LD50 Oral	Rat	>5000 mg/kg	-	OECD 420

Conclusion/Summary: Based on available data, the classification criteria are not met.

Irritation/Corrosion

Conclusion/Summary: Based on available data, the classification criteria are not met.

Sensitization

Not available.

Conclusion/Summary: Based on available data, the classification criteria are not met.

Mutagenicity

Not available.

Conclusion/Summary: Based on available data, the classification criteria are not met.

Carcinogenicity

Not available.

Conclusion/Summary: Based on available data, the classification criteria are not met.

Reproductive toxicity

Not available.

Conclusion/Summary: Based on available data, the classification criteria are not met.

Teratogenicity

Not available.



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Conclusion/Summary: Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Name	Result
Distillates (petroleum), hydrotreated heavy paraffinic	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure: Not available.

Potential acute health effects

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

Symptoms related to the physical, chemical and toxicological characteristics

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

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

Not available.

**Numerical measures of toxicity
Acute toxicity estimates**



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Product/substance	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Distillates (petroleum), hydrotreated heavy paraffinic	N/A	N/A	N/A	N/A	5.1

12. Ecological information

12.1 Toxicity

Acute aquatic toxicity - Component Information

Product/substance	Result	Species	Exposure	Test
Distillates (petroleum), hydrotreated heavy paraffinic	Acute EC50 >100 mg/l	Algae - Pseudokirchnerella Subcapitata	48 hours	OECD 201
	Acute EC50 >10000 mg/l	Daphnia - Daphnia magna	48 hours	OECD 202
	Chronic NOEL 10 mg/l	Daphnia magna	21 days	-
	Chronic NOEL >1000 mg/l	Fish - Oncorhynchus mykiss	21 days	-

12.2 Persistence and degradability

General Information

No information available.

12.3 Bioaccumulative potential

Component Information

Product/ingredient name	LogKow	BCF	Potential
Distillates (petroleum), hydrotreated heavy paraffinic	>4	-	high

12.4 Mobility

Soil/water partition coefficient (KOC) Not available.

Soil Given its physical and chemical character-



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12.5 Other adverse effects

General Information

istics, the product generally shows low soil mobility. Loss by evaporation is limited.

No known significant effects or critical hazards.

13. Disposal considerations

13.1 Waste treatment methods

Waste Disposal Methods:

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 non-recyclable 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

DOT	Not regulated
ICAO/IATA	Not regulated
IMDG/IMO	Not regulated

Additional information

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons



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transporting the product know what to do
in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code: Not available.

15. Regulatory information

15.1 U.S. Federal Regulations

TSCA 8(a) PAIR: Siloxanes and Silicones, di-Me

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Water Act (CWA) 311: methyl methacrylate

Clean Air Act Section 112
(b) Hazardous Air Pollutants (HAPs) Listed

Clean Air Act Section 602
Class I Substances Not listed

Clean Air Act Section 602
Class II Substances Not listed

DEA List I Chemicals
(Precursor Chemicals) Not listed

DEA List II Chemicals
(Essential Chemicals) Not listed

SARA 302/304

Composition/information on ingredients: No products were found.

SARA 304 RQ:

Not applicable.

SARA 311/312

Classification: Not applicable.

Composition/information on ingredients:

Name	%	Classification
Distillates (petroleum), hydrotreated heavy paraffinic	≥25 - ≤50	ASPIRATION HAZARD - Category 1

15.2 State regulations



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Massachusetts:	The following components are listed: OIL MIST, MINERAL; OIL MIST, MINERAL; OIL MIST, MINERAL
New York:	None of the components are listed.
New Jersey:	None of the components are listed.
Pennsylvania:	None of the components are listed.

California Proposition 65

This product does not require a Safe Harbor warning under California Prop. 65.

15.3 International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals:	Not listed.
Montreal Protocol:	Not listed.
Stockholm Convention on Persistent Organic Pollutants:	Not listed.
Rotterdam Convention on Prior In- formed Consent (PIC):	Not listed.
UNECE Aarhus Protocol on POPs and Heavy Metals:	Not listed.

Inventory list

Australia:	All components are listed or exempted.
Canada:	All components are listed or exempted.
China:	All components are listed or exempted.
Europe:	All components are listed or exempted.
Japan:	Japan inventory (ENCS): All components are listed or exempted. Japan inventory (ISHL): Not determined.
Republic of Korea:	All components are listed or exempted.
New Zealand:	All components are listed or exempted.
Philippines:	All components are listed or exempted.
Taiwan:	All components are listed or exempted.
Turkey:	Not determined.
United States:	All components are listed or exempted.
Thailand:	Not determined.



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Viet Nam: Not determined.

16. Other information

NFPA	Health Hazard 1	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 representing minimal hazards or risks, and 4 representing significant hazards or risks.

Abbreviations, acronyms
Legend

ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973
as modified by the Protocol of 1978.
("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named 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.

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



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