



**Trade name: ZF-LIFEGUARDFLUID 9**

ZF Aftermarket

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

**1.1 Product identifier**

Trade name: ZF-LIFEGURARDFLUID 9  
Product code: AA01.500.001

**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 30 3068 6790 (Giftnotruf Berlin)

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**2. Hazards identification**

**2.1 Classification of the substance or mixture**  
**Classification (REGULATION (EC) No 1272/2008)**

Based on available data this substance / mixture does not meet the classification criteria.

**2.2 Label elements**

**Labelling (REGULATION (EC) No 1272/2008)**

Hazard pictograms: No Hazard Symbol required  
Signal word: No signal word  
Hazard statements  
PHYSICAL HAZARDS: Not classified as a physical hazard according to CLP criteria.  
HEALTH HAZARDS: Not classified as a health hazard under CLP criteria.



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ENVIRONMENTAL HAZARDS:	Not classified as environmental hazard according to CLP criteria.
Precautionary statements:	
<b>Prevention:</b>	No precautionary phrases.
<b>Response:</b>	No precautionary phrases.
<b>Storage:</b>	No precautionary phrases.
<b>Disposal:</b>	No precautionary phrases.
Safety data sheet available on request.	
Sensitising components:	Contains alkyl acetamide. Contains calcium sulphonate. Contains thiadiazole derivative. May produce an allergic reaction.

**2.3 Other hazards**

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.  
Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.  
Used oil may contain harmful impurities.  
Not classified as flammable but will burn.

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**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-
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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	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
Alkyl acetamid	866259-61-2	Skin Irrit.2; H315 Skin Sens.1; H317	1 - 3
Calcium sulphona- te	--	Skin Sens.1B; H317	0,1 - 0,9
Substituted thiadiazole	91648-65-6 293-927-7	Skin Sens.1; H317	0,1 - 0,9
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *	--	Asp. Tox.1; H304	0 - 90

For explanation of abbreviations see section 16.

## 4. First aid measures

### 4.1 Description of first aid measures

General advice:

Not expected to be a health hazard when used under normal conditions.

Protection of first-aiders:

When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

If inhaled:

No treatment necessary under normal conditions of use.  
If symptoms persist, obtain medical advice.

In case of skin contact:

Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.  
If persistent irritation occurs, obtain medical attention.

In case of eye contact:

Flush eye with copious quantities of water.



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If swallowed: If persistent irritation occurs, obtain medical attention.  
In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

**4.2 Most important symptoms and effects, both acute and delayed**

Symptoms: Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.

**4.3 Indication of any immediate medical attention and special treatment needed**

Treatment: Notes to doctor/physician:  
Treat symptomatically.

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**5. Firefighting measures**

**5.1 Extinguishing media**

Suitable extinguishing media: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.  
Unsuitable extinguishing media: Do not use water in a jet.

**5.2 Special hazards arising from the substance or mixture**

Specific hazards during firefighting: Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.

**5.3 Advice for firefighters**

Special protective equipment for firefighters: Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's



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Specific extinguishing methods: clothing approved to relevant Standards (e.g. Europe: EN469).  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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## **6. Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Personal precautions: For non emergency personnel:  
Avoid contact with skin and eyes.  
Emergency responders: For emergency responders:  
Avoid contact with skin and eyes.

### **6.2 Environmental precautions**

Environmental precautions: Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.  
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: Slippery when spilt. Avoid accidents, clean up immediately.  
Prevent from spreading by making a barrier with sand, earth or other containment material.  
Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly

### **6.4 Reference to other sections**

For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.  
For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

## **7. Handling and storage**

General Precautions: Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.



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Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

## **7.1 Precautions for safe handling**

Advice on safe handling:

Avoid prolonged or repeated contact with skin.  
Avoid inhaling vapour and/or mists.  
When handling product in drums, safety footwear should be worn and proper handling equipment should be used.  
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Product Transfer:

This material has the potential to be a static accumulator.  
Proper grounding and bonding procedures should be used during all bulk transfer operations.

Fire-fighting class:

Fires involving liquids or liquid containing substances. Also includes substances which become liquid at elevated temperatures.

## **7.2 Conditions for safe storage, including any incompatibilities**

Storage class (TRGS 510):

10, Combustible liquids

Other data:

Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closable containers.  
Store at ambient temperature.  
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Packaging material:

Suitable material: For containers or container linings, use mild steel or high density polyethylene.  
Unsuitable material: PVC.

Container Advice:

Polyethylene containers should not be ex-



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posed to high temperatures because of possible risk of distortion.

**7.3 Specific end use(s)**

Specific use(s) Not applicable

**8. Exposure controls/personal protection**

**8.1 Control parameters**

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Oil mist, mineral	--	TWA	5 mg/m3	US. ACGIH Threshold Limit Values

**Biological occupational exposure limits**

No biological limit allocated.

**Monitoring Methods**

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls.

For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods

<http://www.cdc.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods

<http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances

<http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany

<http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France



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<http://www.inrs.fr/accueil>

## **8.2 Exposure controls**

### **Engineering measures**

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated

General Information:

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or subsequent recycle.

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping

### **Personal protective equipment**

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

#### **Eye protection:**

If material is handled such that it could be splashed into eyes, protective eyewear is recommended.

Approved to EU Standard EN166.

#### **Hand protection:**

Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated





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gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly.

Application of a non-perfumed moisturizer is recommended.

For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material.

Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

**Skin and body protection:**

Skin protection is not ordinarily required beyond standard work clothes.

It is good practice to wear chemical resistant gloves.

**Respiratory protection:**

No respiratory protection is ordinarily required under normal conditions of use.

In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers.

Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and va-



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pours [Type A/Type P boiling point > 65°C (149°F)] meeting EN14387 and EN143.

**Thermal hazards:**

Not applicable

**Environmental exposure controls**

General advice:

Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

**9. Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Appearance:	liquid
Colour:	blue
Odour:	Slight hydrocarbon
Odour Threshold:	Data not available
pH:	Not applicable

Pour point	<= -42 °C	DIN ISO 3016
Initial boiling point and boiling range	> 280 °C Cestimated value(s)	
Flash point	>= 185 °C	ISO 2592
Evaporation rate	Data not available	
Flammability (solid, gas)	Data not available	
Upper explosion limit	Typical 10 %(V)	
Lower explosion limit	Typical 1 %(V)	



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Vapour pressure	< 0,5 Pa (20 °C) estimated value(s)	
Relative vapour density	> 1 estimated value(s)	
Relative density	0,846 – 0,852 (15°C)	
Density	846 - 852 kg/m <sup>3</sup> (15°C)	ISO 12185
<b>Solubility(ies)</b>		
Water solubility	negligible	
Solubility in other solvents	Data not available	
Partition coefficient: n-octanol/water	Pow: > 6 (based on information on similar products)	
Auto-ignition temperature	> 320°C	
Viscosity, dynamic	Data not available	
Viscosity, kinematic	5,4 – 5,8 mm <sup>2</sup> /s (100°C)	DIN 51562-1
Explosive properties	Not classified	
Oxidizing properties	Data not available	

**9.2 Other information**

Conductivity:

This material is not expected to be a static accumulator.

Decomposition temperature:

Data not available

**10. Stability and reactivity**

**10.1 Reactivity**

The product does not pose any further reactivity hazards in addition to those listed in the following subparagraph.



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- 10.2 Chemical stability:** Stable.  
No hazardous reaction is expected when handled and stored according to provisions
- 10.3 Possibility of hazardous reactions:** Reacts with strong oxidising agents.
- 10.4 Conditions to avoid:** Extremes of temperature and direct sunlight
- 10.5 Incompatible materials:** Strong oxidising agents.
- 10.6 Hazardous decomposition products:** Hazardous decomposition products are not expected to form during normal storage.

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## **11. Toxicological information**

### **11.1 Information on toxicological effects**

Basis for assessment: Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Information on likely routes of exposure: Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

#### **Acute toxicity**

Product:

Acute oral toxicity: LD50 rat: > 5.000 mg/kg  
Remarks: Expected to be of low toxicity

Acute inhalation toxicity: Remarks: Not considered to be an inhalation hazard under normal conditions of use.

Acute dermal toxicity: LD50 Rabbit: > 5.000 mg/kg  
Remarks: Expected to be of low toxicity

#### **Skin corrosion/irritation**

Product:

Remarks: Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such



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as oil acne/folliculitis.

**Serious eye damage/eye irritation**

Product:

Remarks: Expected to be slightly irritating.

**Respiratory or skin sensitisation**

Product:

Remarks: For respiratory and skin sensitisation, Not expected to be a sensitiser.

**Components:**

**Alkyl acetamide:**

Remarks: Experimental data has shown that the concentration of potentially sensitising components present in this product does not induce skin sensitisation. May cause an allergic skin reaction in sensitive individuals.

**Calcium sulphonate:**

Remarks: May cause an allergic skin reaction in sensitive individuals.

**Germ cell mutagenicity**

Product:

Remarks: Not considered a mutagenic hazard.

**Carcinogenicity**

Product:

Remarks: Not expected to be carcinogenic.

Material	GHS/CLP Carcinogenicity Classification
Highly refined mineral oil	No carcinogenicity classification

**Reproductive toxicity**

Product:

Remarks: Not expected to impair fertility.

Not expected to be a developmental toxicant.

**STOT - single exposure**

Product:

Remarks: Not expected to be a hazard.

**STOT - repeated exposure**

Product:

Remarks: Not expected to be a hazard.

**Aspiration toxicity**

Product:

Not considered an aspiration hazard.



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**Further information**

Product:

Remarks: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

Remarks: Slightly irritating to respiratory system.

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

**Summary on evaluation of the CMR properties**

Germ cell mutagenicity – Assessment: This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity – Assessment: This product does not meet the criteria for classification in categories 1A/1B.

Reproductive toxicity – Assessment: This product does not meet the criteria for classification in categories 1A/1B.

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**12. Ecological information**

**12.1 Toxicity**

Basis for assessment:

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s). (LL/EL/IL50 expressed as the nominal amount of product required to prepare aqueous test extract).

Product:

Toxicity to fish (Acute toxicity):

Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to crustacean (Acute toxicity)

Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to algae/aquatic plants (Acute toxicity)

Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic toxicity)

Remarks: Data not available



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Toxicity to crustacean (Chronic toxicity)

Remarks: Data not available

Toxicity to microorganisms (Acute toxicity)

Remarks: Data not available

**12.2 Persistence and degradability**

Product:  
Biodegradability

Remarks: Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but contains components that may persist in the environment.

**12.3 Bioaccumulative potential**

Product:  
Bioakkumulation  
Partition coefficient: n-octanol/water

Remarks: Contains components with the potential to bioaccumulate.  
Pow: > 6  
Remarks: (based on information on similar products)

**12.4 Mobility in soil**

Product:  
Mobility

Remarks: Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile.  
Remarks: Floats on water.

**12.5 Results of PBT and vPvB assessment**

Product:  
Assessment

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

**12.6 Other adverse effects**

Product:  
Additional ecological information

Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential. Poorly soluble mixture. May cause physical fouling of aquatic organisms.

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**13. Disposal considerations**

**13.1 Waste treatment methods**

Product:

Recover or recycle if possible.  
It is the responsibility of the waste generator to determine the toxicity and physical



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properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.  
Do not dispose into the environment, in drains or in water courses.  
Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.  
Waste, spills or used product is dangerous waste.

Contaminated packaging:

Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Local legislation  
Waste catalogue

to apply to

EU Waste Disposal Code (EWC):

13 02 06\*

Remarks:

Disposal should be in accordance with applicable regional, national, and local laws and regulations.  
Classification of waste is always the responsibility of the enduser.

## 14 Transport information

### 14.1 UN number

ADN	Not regulated as a dangerous good
ADR	Not regulated as a dangerous good
RID	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good

### 14.2 Proper shipping name

ADN	Not regulated as a dangerous good
ADR	Not regulated as a dangerous good
RID	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good





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**14.3 Transport hazard class**

ADN	Not regulated as a dangerous good
ADR	Not regulated as a dangerous good
RID	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good

**14.4 Packing group**

ADN	Not regulated as a dangerous good
CDNI Inland Water Waste Agreement	NST 3411 Mineral Lubricating Oils
ADR	Not regulated as a dangerous good
RID	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good

**14.5 Environmental hazards**

ADN	Not regulated as a dangerous good
ADR	Not regulated as a dangerous good
RID	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good

**14.6 Special precautions for user**

Remarks:	Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
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**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Pollution category:	Not applicable
Ship type:	Not applicable
Product name:	Not applicable
Special precautions:	Not applicable
Additional Information:	MARPOL Annex 1 rules apply for bulk shipments by sea.

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**15. Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

REACH - List of substances subject to authorization (Annex XIV)	Product is not subject to Authorisation under REACH.
Water contaminating class (Germany):	WGK 2 water endangering Remarks: Classification according VwVwS, Annex 2.



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Volatile organic compounds:	0 %
Other regulations:	Technische Anleitung Luft: Product not listed by name. Observe section 5.2.5 in connection with section 5.4.9 Product is subject to Vorgaben der Betriebs-Sicherheitsverordnung (BetrSichV). Youth Employment Law Not Applicable. Maternity Protection Act Not Applicable

The components of this product are reported in the following inventories:  
EINECS: All components listed or polymer exempt.  
TSCA: All components listed.

**15.2 Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

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**16. Other information**

Full text of H-Statements

- H304 May be fatal if swallowed and enters airways.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.

**Full text of other abbreviations**

- Asp. Tox. Aspiration hazard
- Skin Irrit. Skin irritation
- Skin Sens. Skin sensitisation

Abbreviations and Acronyms: The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

- ACGIH = American Conference of Governmental Industrial Hygienists
- ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
- AICS = Australian Inventory of Chemical Substances
- ASTM = American Society for Testing and



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Materials

BEL = Biological exposure limits  
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes  
CAS = Chemical Abstracts Service  
CEPIC = European Chemical Industry Council  
CLP = Classification Packaging and Labelling  
COC = Cleveland Open-Cup  
DIN = Deutsches Institut für Normung  
DMEL = Derived Minimal Effect Level  
DNEL = Derived No Effect Level  
DSL = Canada Domestic Substance List  
EC = European Commission  
EC50 = Effective Concentration fifty  
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals  
ECHA = European Chemicals Agency  
EINECS = The European Inventory of Existing Commercial Chemical Substances  
EL50 = Effective Loading fifty  
ENCS = Japanese Existing and New Chemical Substances Inventory  
EWC = European Waste Code  
GHS = Globally Harmonised System of Classification and Labelling of Chemicals  
IARC = International Agency for Research on Cancer  
IATA = International Air Transport Association  
IC50 = Inhibitory Concentration fifty  
IL50 = Inhibitory Level fifty  
IMDG = International Maritime Dangerous Goods  
INV = Chinese Chemicals Inventory  
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables  
KECI = Korea Existing Chemicals Inventory  
LC50 = Lethal Concentration fifty  
LD50 = Lethal Dose fifty per cent.  
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading  
LL50 = Lethal Loading fifty  
MARPOL = International Convention for the Prevention of Pollution From Ships  
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level  
OE\_HP V = Occupational Exposure - High



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Production Volume  
PBT = Persistent, Bioaccumulative and Toxic  
PICCS = Philippine Inventory of Chemicals and Chemical Substances  
PNEC = Predicted No Effect Concentration  
REACH = Registration Evaluation And Authorisation Of Chemicals  
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail  
SKIN\_DES = Skin Designation  
STEL = Short term exposure limit  
TRA = Targeted Risk Assessment  
TSCA = US Toxic Substances Control Act  
TWA = Time-Weighted Average  
vPvB = very Persistent and very Bioaccumulative

**Further information**

Training advice:

Provide adequate information, instruction and training for operators.

Other information:

No Exposure Scenario annex is attached to this safety data sheet. It is a non-classified mixture containing hazardous substances as detailed in Section 3; relevant information from Exposure Scenarios for the hazardous substances contained have been integrated into the core sections 1-16 of this SDS. A vertical bar (|) in the left margin indicates an amendment from the previous version.

Sources of key data used to compile the Safety Data Sheet

The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

**Health: 1 Flammability: 1 Reactivity: 1 PP: B**