



**Trade name: ZF-ECOFLUID XL**

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

**1.1 Product identifier**

Trade name: ZF-ECOFLUID XL

Product code: 0671.090.507  
0671.090.508  
0671.090.509

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

**1.4 Emergency telephone number**

**24/7h Emergency telephone number:**  
+49 (0)89 19240 Information in German and English

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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)**



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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.
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

**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.
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**Hazardous components**

Chemical name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
Amine phosphate	942-466-6	Eye Dam.1; H318	1 - 3
2-(2-Heptadec-8-enyl-2-imidazol-1-yl)ethanol	95-38-5 202-414-9	Acute Tox.4; H302 Skin Corr.1B; H314 STOT RE2; H373 Aquatic Acute1; H400 Aquatic Chronic1; H410	0,1 - 0,99

For explanation of abbreviations see section 16.

**4. First aid measures**

**4.1 Description of first aid measures**

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. Remove contact lenses, if present and easy to do. Continue rinsing.  
If persistent irritation occurs, obtain medical attention.

If swallowed:

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



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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.

### **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 clothing approved to relevant Standards (e.g. Europe: EN469).

Specific extinguishing methods:

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.

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## **7. Handling and storage**

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



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## 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:

Proper grounding and bonding procedures should be used during all bulk transfer operations to avoid static accumulation.

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 exposed to high temperatures because of possible risk of distortion.

## 7.3 Specific end use(s)

Specific use(s)

Not applicable



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## 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/m <sup>3</sup>	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

<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.



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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 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





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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 vapours [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



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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:	Clear, bright liquid.
Colour:	amber
Odour:	Slight hydrocarbon
Odour Threshold:	Data not available
pH:	Not applicable

Pour point	-54°F	
Initial boiling point and boiling range	> 280 °C	estimated value(s)
Flash point	224 °C	estimated value(s)
Evaporation rate	Data not available	
Flammability (solid, gas)	Data not available	
Upper explosion limit	Typical 10 %(V)	
Lower explosion limit	Typical 1 %(V)	
Vapour pressure	< 0,5 Pa (20 °C)	estimated value(s)
Relative vapour density	> 1	estimated value(s)



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Relative density	0,861 (15°C)	
Density	0,861 k/cm <sup>3</sup> (15°C)	
Solubility(ies)		
Water solubility	negligible	
Solubility in other solvents	Data not available	(based on information on similar products)
Partition coefficient: n-octanol/water	Pow: > 6	
Auto-ignition temperature	> 320°C	
Viscosity, dynamic	Data not available	
Viscosity, kinematic	12,3 mm <sup>2</sup> /s (100°C) 78,4 mm <sup>2</sup> /s (40°C)	ASTM D445
Explosive properties	Not classified	
Oxidizing properties	Data not available	

**9.2 Other information**

Conductivity:

This material is not expected to be a static accumulator.

**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.

**10.2 Chemical stability:**

Stable.  
No hazardous reaction is expected when



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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:** No decomposition if stored and applied as directed

## 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: Low toxicity:  
Based on available data, the classification criteria are not met.

Acute inhalation toxicity: Remarks: Based on available data, the classification criteria are not met.

Acute dermal toxicity: LD50 Rabbit: > 5.000 mg/kg  
Remarks: Low toxicity:  
Based on available data, the classification criteria are not met.

#### Skin corrosion/irritation

Product:

Remarks: Slightly irritating to skin. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil ac-



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|| ne/folliculitis. Based on available data, the classification criteria are not met.

|| **Serious eye damage/eye irritation**

Product:

Remarks: Slightly irritating to the eye. Based on available data, the classification criteria are not met.

|| **Respiratory or skin sensitisation**

Product:

Remarks: For respiratory and skin sensitisation: Not a sensitiser. Based on available data, the classification criteria are not met.

|| **Germ cell mutagenicity**

Product:

Remarks: Non mutagenic, Based on available data, the classification criteria are not met.

|| **Carcinogenicity**

Product:

Remarks: Not a carcinogen. Based on available data, the classification criteria are not met.

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

|| **Reproductive toxicity**

Product:

Remarks: Not a developmental toxicant. Does not impair fertility. Based on available data, the classification criteria are not met.

|| **STOT - single exposure**

Product:

Remarks: Based on available data, the classification criteria are not met.

|| **STOT - repeated exposure**

Product:

Remarks: Based on available data, the classification criteria are not met.

**Aspiration toxicity**

Product:

Not considered an aspiration hazard.

**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



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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: LL/EL/IL50 > 100 mg/l  
Practically non toxic:  
Based on available data, the classification criteria are not met.

Toxicity to crustacean (Acute toxicity)

Remarks: LL/EL/IL50 > 100 mg/l  
Practically non toxic:  
Based on available data, the classification criteria are not met.

Toxicity to algae/aquatic plants (Acute toxicity)

Remarks: LL/EL/IL50 > 100 mg/l  
Practically non toxic:  
Based on available data, the classification criteria are not met.



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Toxicity to fish (Chronic toxicity)      Remarks: Data not available

Toxicity to crustacean (Chronic toxicity)      Remarks: Data not available

Toxicity to microorganisms (Acute toxicity)      Remarks: Data not available

Components:  
2-(2-Heptadec-8-enyl-2-imidazolin-1-yl)ethanol

M-Factor (Short-term (acute) aquatic hazard):      10

M-Factor (Long-term (chronic) aquatic hazard):      1

**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      Remarks: Contains components with the potential to bioaccumulate.

Partition coefficient: n-octanol/water      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.

**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      Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential., Product is a mixture of non-volatile components, which will not be released to air in any significant quantities under normal conditions of use.



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Poorly soluble mixture., Causes physical fouling of aquatic organisms.

### 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 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

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 end user.

### 14 Transport information

#### 14.1 UN number

ADN  
ADR

Not regulated as a dangerous good  
Not regulated as a dangerous good





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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

**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**

Not applicable for product as supplied. 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 sub-**



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**stance 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 obviously hazardous to water  
Code Number: 436  
Remarks: Classification according to AwSV

Volatile organic compounds:

0 %

Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), annex XIV.  
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), annex XVII.

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III).

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work and its amendments.

Directive 1994/33/EC on the protection of young people at work and its amend-



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ments.  
Council Directive 92/85/EEC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding and its amendments.

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.

## 16. Other information

Full text of H-Statements

H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage  
H318 Causes serious eye damage  
H373 May cause damage to organs through prolonged or repeated exposure  
H400 Very toxic to aquatic life  
H410 Very toxic to aquatic life with long lasting effects.

### Full text of other abbreviations

Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Eye Dam.	Serious eye damage
Skin Corr.	Skin corrosion
STOT RE	Specific target organ toxicity - repeated exposure

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 Sub-



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stances

ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = 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 Concen-



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tration / No Observed Effect Level  
OE\_HPVS = Occupational Exposure - High  
Production Volume  
PBT = Persistent, Bioaccumulative and Toxic  
PICCS = Philippine Inventory of Chemicals  
and Chemical Substances  
PNEC = Predicted No Effect Concentration  
REACH = Registration Evaluation And Author-  
isation 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 Bioaccumula-  
tive

#### **Further information**

Training advice:

Provide adequate information, instruction and training for operators.



Other information:

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.