



# ZF-ECOFLUID

## A Life

Version 1.0

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Regulation 1907/2006/EG

### Safety Data Sheet

#### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

<b>Trade Name</b>	<b>ZF EcoFluid A Life</b>
<b>Uses</b>	Transmission oil.  This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.
<b>Product Code</b>	001F4380
<b>Manufacturer/Supplier</b>	<b>ZF Friedrichshafen AG</b> Ehlersstraße 50 D-88046 Friedrichshafen
<b>Telephone / Fax</b>	(+49) 7541-77-3200 / (+49) 7541-77-903200
<b>Email Contact for MSDS</b>	If you have any enquiries about the content of this MSDS please email <a href="mailto:eva.krause@zf.com">eva.krause@zf.com</a>
<b>Emergency Telephone Number</b>	+49 (0)30 3068 6790 (Giftnotruf Berlin)

#### 2. HAZARDS IDENTIFICATION

##### 2.1 Classification of the substance or mixture

**Classification (67/548/EEC, 1999/45/EC)** This substance is not classified as dangerous according to Directive 67/548/EE.

##### 2.2 Label Elements

<b>Hazard symbols</b>	No Hazard Symbol required.
<b>R-phrases(s)</b>	Not classified.
<b>S-phrases(s)</b>	Not classified.
<b>Sensitising components:</b>	Contains alkyl phosphate. May produce an allergic reaction.

##### 2.3 Other Hazards

**Health 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.



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Used oil may contain harmful impurities.  
Not classified as flammable but will burn.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Mixtures:

##### Chemical nature

Synthetic base oil and additives.  
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.

##### Hazardous Components

Chemical Name	CAS No. EC-No. Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No. 1272/21008)	Concentration (%)
Long chain alkyl amine thiophosphate		R10-R36/38- R43-R62/53	H226 Skin Irrit.2; H315 Skin Sens.1, H317 Eye Irrit.2, H319 Aquatic Chronic3, H412	0,1 – 0,99
Distillates (Fischer – Tropsch), heavy, C18-50 – branched, cyclic and linear	848301-69-9 482-220-0		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 at ambient temperature.

##### 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. If persistent irritation occurs,



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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

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

Notes to doctor/physician:  
Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

### 5.1 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 substances 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).

## 6. ACCIDENTAL RELEASE MEASURES

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

#### Personal precautions

6.1.1 For non emergency personnel: Avoid contact with skin and eyes.

6.1.2 For emergency responders: Avoid contact with skin and eyes.

### 6.2 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.

### 6.3 Methods and Material for Containment and Cleaning Up



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### 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 Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

## 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.

### 7.1 Precautions for 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.

#### Packing 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) :

Not applicable

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION



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## 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



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

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 for 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.



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**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 :**

Wear safety glasses or full face shield if splashes are likely to occur. 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: EN 374, 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 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 recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be 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 not ordinarily required beyond standard issue work clothes.

**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 [boiling point >65 °C (149 °F)] meeting EN14387 and EN143.

**Thermal Hazards:**

Not applicable



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### Environmental Exposure Controls:

#### General advice

Take appropriate measures to fulfil 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

Appearance	Liquid at room temperature
Colour	Clear pale yellow
Odour	Slight hydrocarbon.
pH	Not applicable.
Pour point	Typical -51 °C Method: ISO 3016
Boiling point	Data not available
Flash point	240 °C Method: ISO 2592
Evaporation rate	Data not available
Flammability (solid, gas)	Data not available
Lower explosion limit	Typical 1 % (V)
Vapour pressure	Data not available
Density	843 g/cm <sup>3</sup> (15,0 °C) Method: ISO 12185
Solubility(ies)	
Water solubility	Negligible
Solubility in other solvents	Data not available
Auto-ignition temperature	>320 °C
Viscosity	
Viscosity, kinematic	10,2 mm <sup>2</sup> /s (100 °C) Method: ISO 3104 61,8 mm <sup>2</sup> /s (40 °C) Method: ISO 3104
Explosive properties	NOT CLASS: Not classified
Oxidizing properties	Data not available

#### 9.2 Other Information

Conductivity: This material is not expected to be a static accumulator.





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### 10. STABILITY AND REACTIVITY

<b>10.1 Reacitivity</b>	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
<b>10.2 Chemical stability:</b>	No hazardous reaction is expected when handled and stored according to provisions.
<b>10.3 Possibility of Hazardous Reactions</b>	Reacts with strong oxidising agents.
<b>10.4 Conditions to Avoid:</b>	Extremes of temperature and direct sunlight.
<b>10.5 Incompatible Materials:</b>	Strong oxidising agents.
<b>10.6 Hazardous Decomposition Products:</b>	Hazardous decomposition products are not expected to form during normal storage.

### 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information of Toxicological effects

<b>Basis for Assessment</b>	Information given is based on data on the components and the toxigology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
<b>Acute Oral Toxicity</b>	LD50 rat: > 5,000 mg/kg  Remarks: Expected to be of low toxicity.
<b>Acute inhalation toxicity</b>	Remarks: Not considered to be an inhalation hazard unter normal conditions of use.
<b>Acute dermal toxicity</b>	Rabbit: Remarks: Expected to be of low toxicity: LD50 > 5000 mg/kg
<b>Skin corrosion/irritation :</b>	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 as oil akne/folliculitis.
<b>Serious eye damage/irritation</b>	Product: Remarks: Expected to be slightly irritating.
<b>Respiratory or skin sensitisation</b>	Product: Remarks: For respiratory and skin sensitisation: Not expected to be a sensitiser.
<b>Germ cell mutagenisity</b>	Product:



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Remarks: Not considered a mutagenic hazard.

### Carcinogenicity

Product:  
Remarks: Not expected to be carcinogenic

Material	GHS/CLP Carcinogenicity Classification
Highly refined mineral oil (IP346 < 3%)	No carcinogenicity classification

### Reproductive toxicity:

Product:  
Remarks: Not expected to be a hazard.

### STOT – single exposure

No data available.

### STOT – repeated exposure

No data available.

### Repeated dose toxicity

Product:  
Remarks: Not expected to be a hazard.

### 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 at disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

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.

## 12. ECOLOGICAL INFORMATION

### Toxicity

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 for the product as a whole, rather than for individual component(s).



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**Product:**

**Toxicity to fish**

Remarks: Expected to be practically non toxic: LL7EL/IL50 > 100 mg/l

**Toxicity to crustacean**

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

**Toxicity to algae/aquatic plants**

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

**Toxicity to fish (chronic toxicity)**

Remarks: Data not available

**Toxicity to crustacean (chronic toxicity)**

Remarks: Data not available

**Toxicity to microorganisms**

Remarks: Contains components with the potential to bioaccumulate.

**12.3 Bioaccumulative Potential:**

Remarks: Contains components with the potential to bioaccumulate.

**12.4 Mobility in Soil:**

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

**12.5 Result of PBT and vPvB 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 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.

## 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.

**Contaminated packaging**

Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

**Local Legislation waste catalogue :**

EU Waste disposal Code (EWC)

Waste Code: 13 02 06\*



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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

<b>ADR</b>	Not regulated as a dangerous good.
<b>RID</b>	Not regulated as a dangerous good.
<b>CDNI Inland water waste agreement:</b>	NST 3411 Mineral lubricating Oils
<b>Sea transport (IMDG-Code)</b>	Not regulated as a dangerous good
<b>Air transport (IATA):</b>	Not regulated as a dangerous good

### 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 Precaution:	Not applicable.
<b>Additional Information:</b>	MARPOL Annex 1 rules apply for bulk shipments by sea.

### 15. REGULATORY INFORMATION

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

### 15.1 Safety, health and environmental regulations/legislation specific for the substances or mixture

<b>Volatile organic compounds</b>	0 %
<b>Other regulations</b>	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-Sicherheits-Verordnung (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.



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### 15.2 Chemical Safety Assessment

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

### 16. OTHER INFORMATION

Full text of R-phrase(s)

R10	Flammable
R36/38	Irritating to eyes and skin.
R43	May cause sensitization by skin contact
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### Full text of H-Statements

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H412	Harmful to aquatic life with long lasting effects.

### Full text of other abbreviations

Aquatic chronic	Chronic aquatic toxicity
Asp.Tox.	Aspiration hazard
Eye Irrit.	Eye irritation
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation

### Abbreviations and Acronyms

Acute Tox. = Acute toxicity  
Asp. Tox. = Aspiration hazard  
Aquatic Acute = Acute hazards to the aquatic environment  
Aquatic Chronic = Hazardous to the aquatic environment - Long-term Hazard  
Eye Dam. = Serious eye damage/eye irritation  
Flam. Liq. = Flammable liquids  
Skin Corr. = Skin corrosion/irritation  
Skin Sens. = Skin sensitizer  
STOT SE = Specific target organ toxicity - single exposure  
STOT RE = Specific target organ toxicity - repeated exposure

The standard abbreviations and acronyms used in this



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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 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 Concentration / No Observed Effect Level  
OE\_HP = Occupational Exposure - High Production Volume  
PBT = Persistent, Bioaccumulative and Toxic  
PICCS = Philippine Inventory of Chemicals and Chemical



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### 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

### **Disclaimer**

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.