ZF Aftermarket

Trade name: ZF-LIFEGUARDFLUID 8

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

1.1 Product identifier

Trade name:	ZF-LIFEGUARDFLUID 8
Product code:	S671.090.310 S671.090.311 S671.090.312 S671.090.313

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 (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)

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:	
Prevention:	No precautionary phrases.
Response:	No precautionary phrases.
Storage:	No precautionary phrases.
Disposal:	No precautionary phrases.
Sensitising components:	Contains alkyl acetamide. Contains calcium sulphonate. 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.

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.

* 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 (01-2119486452-34),
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	471-920-1 01-0000019770-68	Skin Sens.1; H317	1 - 3
Calcium sulphonate	01-2120040541-70	Skin Sens.1B; 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. 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 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 fire-fighters:	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.

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. 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.

7.2 Conditions for safe storage, including any incompatibilities

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. The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.
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

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 Securité, (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

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 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 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 at room temperatur
Colour:	green
Odour:	Slight hydrocarbon
Odour Threshold:	Data not available
pH:	Not applicable

Pour point	<= -42 °C	ASTM D97
Initial boiling point and boiling range	> 280 °C	estimated value(s)
Flash point	>= 206 °C	ASTM D92 (COC)
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)
Relative density	0,846 (15°C)	
Density	846 kg/m³ (15°C)	ISO 12185
Solubility(ies)		
Water solubility	negligible	
Solubility in other solvents Partition coefficient: n-octanol/water	Data not available Pow: > 6	(based on information on similar products)
Auto-ignition temperature	> 320°C	
Viscosity, dynamic	Data not available	
Viscosity, kinematic	26 mm²/s (40°C) 5,6 mm²/s (100°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.

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.

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.

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 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.

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.

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
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	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. 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.

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	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

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.

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.

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.
Volatile organic compounds:	0 %
Other regulations:	Environmental Protection Act 1990 (as amended). Health and Safety at Work etc. Act 1974. Consumers Protection Act 1987. Pollution Prevention and Control Act 1999. Environment Act 1995. Factories Act 1961. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011. Chemicals (Hazard Information and Packaging for Supply) Regulations 2009. Control of Substances Hazardous to Health Regulations 2002 (as amended). Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended). Personal Protective Equipment Regulations 2002. Personal Protective Equipment at Work Regulations 1992. Hazardous Waste (England and Wales) Regulations 2005(as amended). Control of Major Accident Hazards Regulations 1999 (as

amended). Renewable Transport Fuel Obligations Order 2007 (as amended). Energy Act 2011. Environmental Permitting (England and Wales) Regulations 2010 (as amended). Waste (England and Wales) Regulations 2011 (as amended). Planning (Hazardous Substances) Act 1990 and associated regulations. The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011.

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

H304 May be fatal if swallowed and enters airways.
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 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 fur 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_HPV = 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 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.