According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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SECTION 1. IDENTIFICATION

Product name	:	Spirax S4 AX 80W-90
Product code Manufacturer or supplier's d	: eta	001F4155 ils
Manufacturer/Supplier	:	Shell Oil Products US PO Box 4427 Houston TX 77210-4427 USA
SDS Request Customer Service	:	(+1) 877-276-7285
Emergency telephone numbers Spill Information Health Information	:	877-504-9351 877-242-7400

Recommended use of the chemical and restrictions on use n oil.

Recommended use	: Transmission

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

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

GHS	label	elements
0110	lanci	ciciliciita

Hazard pictograms	: No Hazard Symbol required
Signal word	: No signal word
Hazard statements	 PHYSICAL HAZARDS: Not classified as a physical hazard under GHS criteria. HEALTH HAZARDS: Not classified as a health hazard under GHS criteria. ENVIRONMENTAL HAZARDS: Not classified as an environmental hazard under GHS criteria.
Precautionary statements	 Prevention: No precautionary phrases. Response: No precautionary phrases. Storage: No precautionary phrases. Disposal: No precautionary phrases.

Other hazards which do not result in classification

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.

The classification of this material is based on OSHA HCS 2012 criteria.

Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

: Highly refined mineral oils and additives. The highly refined mineral oil contains <3% (w/w) DMSOextract, according to IP346.

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (%)
Dialkylpolysulphide	Polysulfides, di-tert- Bu	68937-96-2	1 - 3
Amine phosphate	Amines, C12-14- alkyl, reaction prod- ucts with hexanol, phosphorus oxide (P2O5), phosphorus sulfide (P2S5) and propylene oxide	91745-46-9	1 - 2.4
Alkenyl imidazoline	2-(heptadecenyl)- 4,5-dihydro-1H- imidazole-1-ethanol	27136-73-8	0.1 - 0.24

SECTION 4. FIRST-AID MEASURES

General advice	: Not expected to be a health hazard when used under normal conditions.
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 wa- ter 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.
Most important symptoms and effects, both acute and	: Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.

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delayed	Ingestion may result in nausea, v	romiting and/or diarrhoea.
Protection of first-aiders	: When administering first aid, ens appropriate personal protective e incident, injury and surroundings.	quipment according to the
Immediate medical attention, special treatment	: Treat symptomatically.	

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Foam, water spray or fog. Dry chemical powder, carbon diox- ide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	:	Do not use water in a jet.
Specific hazards during fire- fighting	:	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.
Specific extinguishing meth- ods	:	Use extinguishing measures that are appropriate to local cir- cumstances and the surrounding environment.
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).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protec- tive equipment and emer- gency procedures	:	Avoid contact with skin and eyes.
Environmental precautions	:	Use appropriate containment to avoid environmental contami- nation. 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.
Methods and materials for containment and 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.

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Version 3.0 Revision Date: 09/14/2017 Print Date: 09/15/2017 Additional advice : 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. **SECTION 7. HANDLING AND STORAGE** Technical measures : 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. : Avoid prolonged or repeated contact with skin. Precautions for safe handling 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. Avoidance of contact : Strong oxidising agents. **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. Storage Other data : Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closable containers. Store at ambient temperature. 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.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
Oil mist, mineral	Not Assigned	TWA ((inhal-	5 mg/m3	US. ACGIH

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able frac- tion))		Threshold Limit Values
(Mist)	5 mg/m3	OSHA_TRA NS
TWA (Mist)	5 mg/m3	OSHA Z-1
TWA (Inhal- able fraction)	5 mg/m3	ACGIH

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

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

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Version 3.0 Revision Date: 09/14/2017 Print Date: 09/15/2017 protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Personal protective equipment 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 the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)]. Hand protection Where hand contact with the product may occur the use of Remarks 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. Eye protection : If material is handled such that it could be splashed into eyes, protective eyewear is recommended. Skin and body protection : Skin protection is not ordinarily required beyond standard work clothes. It is good practice to wear chemical resistant gloves. Thermal hazards : Not applicable

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Protective measures	: Personal protective equipment (P mended national standards. Check	
Environmental exposure c	ontrols	
General advice	: Take appropriate measures to ful vant environmental protection leg of the environment by following a necessary, prevent undissolved n charged to waste water. Waste w municipal or industrial waste wate discharge to surface water. Local guidelines on emission limit must be observed for the discharg vapour.	islation. Avoid contamination dvice given in Chapter 6. If naterial from being dis- vater should be treated in a er treatment plant before ts for volatile substances

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear, bright liquid.
Colour	:	clear
Odour	:	Slight hydrocarbon
Odour Threshold	:	Data not available
рН	:	Not applicable
pour point	:	-30 °C / -22 °FMethod: ASTM D5950
Initial boiling point and boiling range	:	> 280 °C / 536 °Festimated value(s)
Flash point	:	218 °C / 424 °F Method: 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 / 68 °F) estimated value(s)
Relative vapour density	:	> 1estimated value(s)
Relative density	:	0.887 (15 °C / 59 °F)
Density	:	887 kg/m3 (15.0 °C / 59.0 °F) Method: ASTM D1298

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Solubility(ies) Water solubility	: negligible	
Solubility in other solvents	: Data not available	
Partition coefficient: n- octanol/water	: Pow: > 6(based on information of	on similar products)
Auto-ignition temperature	: > 320 °C / 608 °F	
Viscosity		
Viscosity, dynamic	: Data not available	
Viscosity, kinematic	: 13.5 - 15.5 mm2/s (100 °C / 212 Method: ASTM D445	°F)
Explosive properties	: Not classified	
Oxidizing properties	: Data not available	
Conductivity	: This material is not expected to	be a static accumulator.
Decomposition temperature	: Data not available	

SECTION 10. STABILITY AND REACTIVITY

Reactivity	he product does not pose any further dition to those listed in the following	
Chemical stability	table.	
Possibility of hazardous reac- tions	eacts with strong oxidising agents.	
Conditions to avoid	xtremes of temperature and direct su	nlight.
Incompatible materials	trong oxidising agents.	
Hazardous decomposition products	lazardous decomposition products are uring normal storage.	ot expected to form

SECTION 11. TOXICOLOGICAL INFORMATION

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

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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.

Components:

Amine phosphate:

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

Respiratory or skin sensitisation

Product:

Remarks: Not expected to be a skin sensitiser.

Components:

Dialkylpolysulphide:

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.

Amine phosphate:

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.

Germ cell mutagenicity

Product:

: Remarks: Not considered a mutagenic hazard.

Carcinogenicity

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Product:

Remarks: Not expected to be carcinogenic.

Remarks: Product contains mineral oils of types shown to be non-carcinogenic in animal skinpainting studies., Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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.

2

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

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as far as possible.

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

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 representa- tive of the product as a whole, rather than for individual com- ponent(s).(LL/EL/IL50 expressed as the nominal amount of product required to prepare aqueous test extract).
Ecotoxicity	
Product: Toxicity to fish (Acute toxici- ty)	: Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/I
Toxicity to daphnia and other aquatic invertebrates (Acute toxicity)	: Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/I
Toxicity to algae (Acute tox- icity)	: Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/I
Toxicity to fish (Chronic tox- icity)	: Remarks: Data not available
Toxicity to daphnia and other aquatic invertebrates (Chron-ic toxicity)	: Remarks: Data not available
Toxicity to bacteria (Acute toxicity)	: Remarks: Data not available
Components:	

Components:

Alkenyl imidazoline:	
M-Factor (Acute aquatic tox- icity)	: 1

Persistence and degradability

Product:

Biodegradability	:	Remarks: Expected to be not readily biodegradable.
		Major constituents are expected to be inherently biodegrada-
		ble, but contains components that may persist in the environ-
		ment.

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Bioaccumulative potential		
Product:		
Bioaccumulation	: Remarks: Contains compone cumulate.	ents with the potential to bioac-
Mobility in soil		
Product:		
Mobility	: Remarks: Liquid under most If it enters soil, it will adsorb mobile.	environmental conditions. to soil particles and will not be
	Remarks: Floats on water.	
Other adverse effects		
no data available		
Product: Additional ecological infor- mation	expected to be released to a	volatile components, which are not ir in any significant quantities. depletion potential, photochemi- or global warming potential.
	Poorly soluble mixture. May cause physical fouling c	of aquatic organisms.
	Mineral oil is not expected to aquatic organisms at concer	e cause any chronic effects to trations less than 1 mg/l.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	
Waste from residues :	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 meth- ods 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

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Remarks	: Disposal should be in accordance national, and local laws and regu	
SECTION 14. TRANSPORT INF	ORMATION	
National Regulations		
nternational Regulations		
Transport in bulk according to	Annex II of MARPOL 73/78 and the I	BC Code
Pollution category Ship type Product name Special precautions	 Not applicable Not applicable Not applicable Not applicable Not applicable 	
Special precautions for user		
Remarks	: Special Precautions: Refer to C for special precautions which a u needs to comply with in connect	user needs to be aware of or
Additional Information	: MARPOL Annex 1 rules apply for	or bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : No OSHA Hazards

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ., Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	SARA Hazards	
SARA 302	chemicals in this material ar ements of SARA Title III, Se	e subject to the reporting re- ection 302.
SARA 313		any chemical components with ed the threshold (De Minimis) SARA Title III, Section 313.

Clean Water Act

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

Pennsylvania Right To Know

Distillates (petroleum), hydrotreated heavy 64742-54-7

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•	affinic sidual Oils (Petroleum) Solvent Dewaxed 6474	42-62-7	
California Prop 65	•	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.	
The components of this product are reported in the following inventories:			
EINECS	: All components listed or polymer	exempt.	
TSCA	: All components listed.		
DSL	: All components listed.		

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reac- 0, 1, 0 tivity)

indicates an amendment from the previous version. The standard abbreviations and acronyms used in this docu- ment 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 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

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	Labelling of Chemicals IARC = International Agency for IATA = International Air Transpi IC50 = Inhibitory Concentration IL50 = Inhibitory Level fifty IMDG = International Maritime I INV = Chinese Chemicals Inver IP346 = Institute of Petroleum determination of polycyclic aron KECI = Korea Existing Chemica LC50 = Lethal Concentration fif LD50 = Lethal Dose fifty per ce LL/EL/IL = Lethal Loading/Effect LL50 = Lethal Loading fifty MARPOL = International Conver Pollution From Ships NOEC/NOEL = No Observed E served Effect Level OE_HPV = Occupational Expose PBT = Persistent, Bioaccumula PICCS = Philippine Inventory of Substances PNEC = Predicted No Effect Co REACH = Registration Evaluati Chemicals RID = Regulations Relating to It gerous Goods by Rail SKIN_DES = Skin Designation STEL = Short term exposure lin TRA = Targeted Risk Assessment TSCA = US Toxic Substances O TWA = Time-Weighted Average vPvB = very Persistent and very	ort Association fifty Dangerous Goods ntory test method N° 346 for the natics DMSO-extractables als Inventory ity nt. ctive Loading/Inhibitory loading ention for the Prevention of ffect Concentration / No Ob- sure - High Production Volume tive and Toxic f Chemicals and Chemical oncentration fon And Authorisation Of nternational Carriage of Dan- nit ent Control Act e y Bioaccumulative
Sources of key data used to compile the Safety Data Sheet	: The quoted data are from, but r sources of information (e.g. toxi Health Services, material suppl IUCLID date base, EC 1272 reg	icological data from Shell iers' data, CONCAWE, EU
Revision Date	: 09/14/2017	

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.