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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : CARADOL MD46-18

Product code : U312X : 9082-00-2 CAS-No.

Synonyms Polyol

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the : Use for the manufacture of polyurethane products.

Substance/Mixture

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

Manufacturer/Supplier : SHELL MARKETS (MIDDLE EAST) LIMITED

CHEMICALS PO Box 307 JEBEL ALI, DUBAI Unit.Arab Emir.

Telephone Telefax

Contact for Safety Data

Sheet

1.4 Emergency telephone number

Other information : CARADOL is a trademark owned by Shell Trademark

Management B.V. and Shell Brands Inc. and used by affiliates

of Shell plc.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification

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

2.2 Label elements

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GHS-Labelling

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.

2.3 Other hazards

SECTION 3: Composition/information on ingredients

3.1 Substances

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Polyalkylene glycol	9082-00-2	<=100

Further information

Contains:

Chemical name	Identification number	Concentration (% w/w)
Benzenamine, N- phenyl-, reaction products with 2,4,4- trimethylpentene	68411-46-1	0,1- 0,2

SECTION 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

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	incident, injury and surroundings.	
If inhaled	: No treatment necessary under normal If symptoms persist, obtain medical ac	
In case of skin contact	 Remove contaminated clothing. Flush water and follow by washing with soap If persistent irritation occurs, obtain me 	o if available.
In case of eye contact	 Flush eye with copious quantities of w Remove contact lenses, if present and rinsing. If persistent irritation occurs, obtain me 	d easy to do. Continue
If swallowed	: In general no treatment is necessary users are swallowed, however, get medical a	

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Not considered to be an inhalation hazard under normal

conditions of use.

Possible respiratory irritation signs and symptoms may include

a temporary burning sensation of the nose and throat,

coughing, and/or difficulty breathing.

No specific hazards under normal use conditions.

Skin irritation signs and symptoms may include a burning

sensation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.

Ingestion may result in nausea, vomiting and/or diarrhoea.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Call a doctor or poison control center for guidance.

Treat symptomatically. Following cases of gross overexposure, investigation of liver, kidney and eye function may

be advisable. Records of such incidents should be maintained

for future reference.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Large fires should only be fought by properly trained fire

fighters., Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used

for small fires only.

Unsuitable extinguishing : Do not use water in a jet.

media

5.2 Special hazards arising from the substance or mixture

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	Specific hazards during firefighting	 Will only burn if enveloped in a pre-existing fire. Hazardous combustion products may include: Carbon dioxide Unidentified organic and inorganic compounds. Toxic gases Carbon monoxide. 	
5.3 Adv	ice 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	: Standard procedure for chemical fires.	
	Further information	 Clear fire area of all non-emergency personnel. All storage areas should be provided with adequate fire fighting facilities. Keep adjacent containers cool by spraying with water. 	

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Observe all relevant local and international regulations.

Avoid contact with skin, eyes and clothing.

Avoid inhaling vapour and/or mists.

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

6.2 Environmental precautions

Environmental precautions : Remove all possible sources of ignition in the surrounding

area.

Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Use appropriate containment to avoid environmental

contamination.

Ventilate contaminated area thoroughly.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : For large liquid spills (> 1 drum), transfer by mechanical

means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely

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	For small liquid spills (< 1 drum), transmeans to a labeled, sealable contain safe disposal. Allow residues to evapappropriate absorbent material and contaminated soil and dispose of safe Proper disposal should be evaluated status of this material (refer to Sectio contamination from subsequent use a regulations governing disposal in the	er for product recovery or corate or soak up with an dispose of safely. Remove ely. based on regulatory in 13), potential and spillage, and

6.4 Reference to other sections

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

SECTION 7: Handling and storage

General Precautions : Avoid breathing of or direct contact with material. Only use in

well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see

Section 8 of this Safety Data Sheet.

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.

Ensure that all local regulations regarding handling and

storage facilities are followed.

7.1 Precautions for safe handling

Advice on safe handling : In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.

Use local exhaust extraction over processing area.

Avoid unintentional contact with isocyanates to prevent

uncontrolled polymerisation.

Avoid contact with skin, eyes and clothing.

Air-dry contaminated clothing in a well-ventilated area before

laundering.

Do not empty into drains. Handling Temperature:

Ambient.

When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

Product Transfer : Lines should be purged with nitrogen before and after product

transfer. Keep containers closed when not in use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage : Refer to section 15 for any additional specific legislation

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areas and containers	covering the packaging and storage of this product.	
Other data	: Prevent all contact with water and with moist atmosphere. Tanks must be clean, dry and rust-free. Prevent ingress of water. Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Nitrogen blanket recommended for large tanks (capacity 100 m3 or higher). Drums should be stacked to a maximum of 3 high.	
Storage period	: 24 month(s) Storage Temperature: Ambient.	
	Storage should be handled at temperativiscosities are less than 500 cSt; typical should be fitted with heating coils in are temperatures are below the recommen temperatures. Heating coil skin temperatures are below the recommental temperatures.	ally at 25-50 °C. Tanks eas where the ambient ded product handling
Packaging material	: Suitable material: Stainless steel.For epoxy paint, zinc silicate paint. Unsuitable material: Copper.Copper	•
7.3 Specific end use(s)		
Specific use(s)	: Not applicable	
	Ensure that all local regulations regardi storage facilities are followed.	ing handling and

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Contains no substances with occupational exposure limit values.

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Polyalkylene glycol : No DNEL value has been established.

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.

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

Adequate ventilation to control airborne concentrations.

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:

General Information

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.

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.

Personal protective equipment

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.

Hand protection

Remarks : 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. Longer term protection: Nitrile rubber. Incidental contact/Splash protection: PVC, neoprene or nitrile rubber gloves 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. 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 nonperfumed moisturizer 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.

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.

Hygiene measures

: Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use.

Environmental exposure controls

General advice

: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing

vapour.

Minimise release to the environment. An environmental assessment must be made to ensure compliance with local

environmental legislation.

Information on accidental release measures are to be found in

section 6.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : Liquid.

Colour : Clear colourless

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Odour : odourless

Odour Threshold : Data not available
pH : Data not available
Melting / freezing point : Data not available
Boiling point/boiling range : Data not available

Flash point : Typical > 200 °C

Method: ASTM D93 (PMCC)

Evaporation rate : Data not available

Flammability

Flammability (solid, gas) : Not applicable

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit : Data not available

Lower explosion limit : Data not available

Vapour pressure : < 10 hPa

Relative vapour density : Data not available
Relative density : Data not available
Density : 1.019 kg/m3 (20 °C)

Method: ASTM D4052

Solubility(ies)

Water solubility : Slightly soluble.

Partition coefficient: n- : Data not available

octanol/water

Auto-ignition temperature : Data not available

Decomposition temperature : Data not available

Viscosity

Viscosity, dynamic : Typical 760 mPa.s (25 °C)

Method: ASTM D445

Viscosity, kinematic : Data not available Explosive properties : Not applicable Oxidizing properties : Data not available

9.2 Other information

Surface tension : Data not available

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Conductivity	: Electrical conductivity: > 10,000 pS/r A number of factors, for example liquid of contaminants, and anti-static addithe conductivity of a liquid, This material a static accumulator.	uid temperature, presence tives can greatly influence
Molecular weight	: Data not available	

SECTION 10: Stability and reactivity

10.1 Reactivity

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

10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions, Hygroscopic.

10.3 Possibility of hazardous reactions

Hazardous reactions : Polymerises exothermically with di-isocyanates at ambient

temperatures.

The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of reaction partners is good or is supported by stirring or by the presence

of solvents.

Reacts with strong oxidising agents.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames, and sparks.

Product cannot ignite due to static electricity.

10.5 Incompatible materials

Materials to avoid : Avoid contact with isocyanates, copper and copper alloys,

zinc, strong oxidizing agents, and water.

10.6 Hazardous decomposition products

Hazardous decomposition

products

: Unknown toxic products may be formed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Basis for assessment : Information given is based on data obtained from similar

substances.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for

individual component(s).

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exposure

Information on likely routes of : Exposure may occur via inhalation, ingestion, skin absorption,

skin or eye contact, and accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity : LD 50 : > 2.000 mg/kg

Remarks: Based on available data, the classification criteria

are not met.

Acute inhalation toxicity : Remarks: Based on available data, the classification criteria

are not met.

: LD 50 : > 2.000 mg/kg Acute dermal toxicity

Remarks: Low toxicity

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

Skin corrosion/irritation

Product:

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

Serious eye damage/eye irritation

Product:

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

Respiratory or skin sensitisation

Product:

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

Germ cell mutagenicity

Product:

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

Carcinogenicity

Product:

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

Material	GHS/CLP Carcinogenicity Classification
Polyalkylene glycol	No carcinogenicity classification.

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Reproductive toxicity

Product:

Remarks: 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 an aspiration hazard.

Further information

Product:

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

SECTION 12: Ecological information

12.1 Toxicity

Basis for assessment : Incomplete ecotoxicological data are available for this product.

The information given below is based partly 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).

Product:

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Toxicity to fish (Acute toxicity)	: LC50 : > 100 mg/l Remarks: Based on available data, the care not met. Practically non toxic:	classification criteria
Toxicity to daphnia and other aquatic invertebrates (Acute toxicity)	: EC50 : > 100 mg/l Remarks: Based on available data, the care not met. Practically non toxic:	classification criteria
Toxicity to algae (Acute toxicity)	: EC50 : > 100 mg/l Remarks: Practically non toxic: Based on available data, the classification	on criteria are not met.
Toxicity to fish (Chronic toxicity)	: Remarks: Data not available	
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: Remarks: Data not available	
Toxicity to bacteria (Acute toxicity)	: IC50 : > 100 mg/l Remarks: Based on available data, the of are not met. Practically non toxic:	classification criteria

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: Readily biodegradable.

No data available

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Partition coefficient: n-

octanol/water

: Remarks: Data not available

12.4 Mobility in soil

Product:

Mobility : Remarks: If the product enters soil, one or more constituents

will or may be mobile and may contaminate groundwater.

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

No data available

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SECTION 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

Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

Local regulations may be more stringent than regional or

national requirements and must be complied with.

Contaminated packaging Drain container thoroughly.

After draining, vent in a safe place away from sparks and fire.

Send to drum recoverer or metal reclaimer.

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

Local legislation

SECTION 14: Transport information

14.1 UN number

ADR : 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

ADR : 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

ADR : Not regulated as a dangerous good **IMDG** : Not regulated as a dangerous good **IATA** : Not regulated as a dangerous good

14.4 Packing group

ADR : Not regulated as a dangerous good **IMDG** Not regulated as a dangerous good IATA Not regulated as a dangerous good

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14.5 Environmental hazards

ADR : Not regulated as a dangerous good : Not regulated as a dangerous good

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 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 Maritime transport in bulk according to IMO instruments

Pollution category : Z Ship type : 3

Product name : Glycerol, propoxylated and ethoxylated

Additional Information: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a

confined space entry.

SECTION 15: Regulatory information

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

Other regulations : The regulatory information is not intended to be

comprehensive. Other regulations may apply to this material.

The components of this product are reported in the following inventories:

DSL : Listed **IECSC** Listed **ENCS** : Listed KECI : Listed **NZIoC** : Listed **PICCS** : Listed **TSCA** : Listed **TCSI** : Listed

SECTION 16: Other information

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

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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

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	Dangerous Goods by Rail SKIN_DES = Skin Designation STEL = Short term exposure limit TRA = Targeted Risk Assessment TSCA = US Toxic Substances Control TWA = Time-Weighted Average vPvB = very Persistent and very Bioacc	
Further information		
Training advice	: Provide adequate information, instruction operators.	on and training for
Other information	: A vertical bar () in the left margin indication from the previous version.	ates an amendment
Sources of key data used to compile the Safety Data Sheet	 The quoted data are from, but not limite sources of information (e.g. toxicologica Health Services, material suppliers' dat IUCLID date base, EC 1272 regulation, 	al data from Shell a, CONCAWE, EU

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.