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

1.1 Product identifier

Trade name : CARADOL SP27-25N

Product code : U318S

Synonyms Acrylonitrile-Styrene Copolymer Dispersion in Polyether 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.

This product must not be used in applications other than the

above 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 : +971 4 405 4400 Telefax +971 4 329 3311

Contact for Safety Data

Sheet

1.4 Emergency telephone number

+ (65) 6542 9595 (Alert-SGS)

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

3.2 Mixtures

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Styrene-acrylonitrile polymer	57913-80-1		>= 20 - <= 30
Polyalkylene glycol	9082-00-2		>= 70 - <= 80

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

incident, injury and surroundings.

If inhaled : No treatment necessary under normal conditions of use.

If symptoms persist, obtain medical advice.

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In case of skin contact	: Remove contaminated clothing. Flush water and follow by washing with soap If persistent irritation occurs, obtain me	if available.
In case of eye contact	 Flush eye with copious quantities of ware Remove contact lenses, if present and rinsing. If persistent irritation occurs, obtain me 	easy to do. Continue
If swallowed	: In general no treatment is necessary un 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

media

: Do not use water in a jet.

5.2 Special hazards arising from the substance or mixture

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 Advice for firefighters

Special protective equipment : Proper protective equipment including chemical resistant

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for firefighters	gloves are to be worn; chemical resistal large contact with spilled product is experienced by Breathing Apparatus must be worn when a confined space. Select fire fighter's confined standards (e.g. Europe: EN4)	pected. Self-Contained en approaching a fire in clothing approved to
Specific extinguishing methods	: Standard procedure for chemical fires.	
Further information	 Clear fire area of all non-emergency per All storage areas should be provided we fighting facilities. Keep adjacent containers cool by spran 	vith adequate fire

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, eves 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

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 For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove

contaminated soil and dispose of safely.

Proper disposal should be evaluated based on regulatory

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	status of this material (refer to Secti contamination from subsequent use regulations governing disposal in th	e 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.,				

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.

For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

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 areas and containers

: Refer to section 15 for any additional specific legislation 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

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	of heat. Nitrogen blanket recommende (capacity 100 m3 or higher). Drums sh maximum of 3 high.	
Storage period	: 24 month(s)	
	Storage Temperature: Ambient.	
	Storage should be handled at tempera viscosities are less than 500 cSt; typica should be fitted with heating coils in an temperatures are below the recommer temperatures. Heating coil skin temperatures are below the recommer temperatures.	ally at 25-50 °C. Tanks eas where the ambient nded 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 regard	ling handling and

storage facilities are followed.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Biological occupational exposure limits

No biological limit allocated.

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

: No DNEL value has been established. Polyalkylene glycol

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/

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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 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

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	thickness is not a good predictor of glo chemical as it is dependent on the exarglove material. Glove thickness should than 0.35 mm depending on the glove Suitability and durability of a glove is de.g. frequency and duration of contact, glove material, dexterity. Always seek suppliers. Contaminated gloves should hygiene is a key element of effective he only be worn on clean hands. After using should be washed and dried thoroughly perfumed moisturizer is recommended.	ct composition of the lbe typically greater make and model. ependent on usage, chemical resistance of advice from glove lbe replaced. Personal and care. Gloves must ng gloves, hands y. Application of a non-
Skin and body protection	 Skin protection is not ordinarily require work clothes. It is good practice to wear chemical res 	•
Respiratory protection	 No respiratory protection is ordinarily reconditions of use. In accordance with good industrial hyg precautions should be taken to avoid be 	iene practices,
Hygiene measures	: Wash hands before eating, drinking, sr toilet. Launder contaminated clothing b	
Environmental exposure controls		
General advice	 Local guidelines on emission limits for must be observed for the discharge of vapour. Minimise release to the environment. A assessment must be made to ensure of environmental legislation. Information on accidental release measurements. 	exhaust air containing An environmental compliance with local

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : liquid

: No data available Colour

Odour : odourless

Odour Threshold : Data not available рΗ : Data not available Melting / freezing point : Data not available

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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 : Data not available (50 °C)

Relative vapour density : Data not available
Relative density : Data not available
Density : 1.038 kg/m3 (25 °C)

Method: ASTM D4052

Solubility(ies)

Water solubility : Data not available
Partition coefficient: n- : Data not available

octanol/water

Auto-ignition temperature : Data not available

Decomposition temperature : Data not available

Viscosity

Viscosity, dynamic : Typical 1.780 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

Conductivity: > 10,000 pS/m

A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid, This material is not expected to be

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a static accumulator.

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).

exposure

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

skin or eye contact, and accidental ingestion.

Acute toxicity

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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
Styrene-acrylonitrile polymer	No carcinogenicity classification.
Polyalkylene glycol	No carcinogenicity classification.

Reproductive toxicity

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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:

Toxicity to fish (Acute : LC50 : > 100 mg/l

toxicity)

Remarks: Based on available data, the classification criteria

are not met.

Practically non toxic:

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Toxicity to daphnia and other

aquatic invertebrates (Acute

toxicity)

: EC50 : > 100 mg/l

Remarks: Based on available data, the classification criteria

are not met.

Practically non toxic:

Toxicity to algae (Acute

toxicity)

: EC50: > 100 mg/l

Remarks: Practically non toxic:

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

Toxicity to fish (Chronic

toxicity)

: Remarks: Data not available

Toxicity to daphnia and other

aquatic invertebrates (Chronic toxicity)

Toxicity to bacteria (Acute

toxicity)

: Remarks: Data not available

: IC50 : > 100 mg/l

Remarks: Based on available data, the classification criteria

are not met.

Practically non toxic:

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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Product	: Recover or recycle if possible. It is the responsibility of the waste ger toxicity and physical properties of the determine the proper waste classifica methods in compliance with applicable	material generated to tion and disposal
	Do not dispose into the environment, courses. Waste product should not be allowed water.	
	Disposal should be in accordance with national, and local laws and regulation Local regulations may be more stringen national requirements and must be contained.	ns. ent than regional or
Contaminated packaging	 Drain container thoroughly. After draining, vent in a safe place aw Send to drum recoverer or metal reclaining Dispose in accordance with prevailing to a recognized collector or contractor the collector or contractor should be expending. 	aimer. regulations, preferably The competence of
Local legislation		

SECTION 14: Transport information

1	4.1	ιl	JN	nι	ım	ber

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

14.5 Environmental hazards

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

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage,

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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 : Y Ship type : 3

Product name : Acrylonitrile-Styrene Copolymer Dispersion in Polyether Polyol

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:

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

Hygienists

ADR = European Agreement concerning the International

Carriage of Dangerous Goods by Road

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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

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	TRA = Targeted Risk Assessment TSCA = US Toxic Substances Control Ac TWA = Time-Weighted Average vPvB = very Persistent and very Bioaccus	•
Further information		
Training advice	: Provide adequate information, instruction operators.	and training for
Other information	: A vertical bar () in the left margin indicate from the previous version.	es an amendment
Sources of key data used to compile the Safety Data Sheet	: The quoted data are from, but not limited sources of information (e.g. toxicological Health Services, material suppliers' data, IUCLID date base, EC 1272 regulation, e	data from Shell 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.