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

Product name : CARADOL ET28-03

Product code : U1742

CAS-No. : 9082-00-2

Synonyms : Polyol Manufacturer or supplier's details

Manufacturer/Supplier : SHELL EASTERN CHEMICALS (S)

A REGISTERED BUSINESS OF SHELL EASTERN

TRADING (PTE) LTD (UEN:198902087C) 9 North Buona Vista Drive, #07-01

The Metropolis Tower 1

Singapore 138588 Singapore

Telephone : +65 6384 8737 Telefax : +65 6384 8454

Emergency telephone

number

: +65 6542 9595 (Alert-SGS)

#### Recommended use of the chemical and restrictions on use

Recommended use : Use for the manufacture of polyurethane products.

Restrictions on use : This product must not be used in applications other than the

above without first seeking the advice of the supplier.

Other information : CARADOL is a trademark owned by Shell Trademark

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

of Royal Dutch Shell plc.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

## **Hazardous components**

Chemical name	CAS-No. EC-No. Registration	Classification (67/548/EEC)	Classification (REGULATION (EC) No	Concentration [%]
	number		1272/2008)	
Polyalkylene glycol	9082-00-2			<= 100

#### 3. HAZARDS IDENTIFICATION

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

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Label elements

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.

#### Other hazards

None known.

#### 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

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.

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

delayed

: 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.

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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.

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.

Notes to physician : 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.

#### 5. FIRE-FIGHTING MEASURES

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.

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.

Specific extinguishing

methods

Standard procedure for chemical fires.

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.

Special protective equipment

for firefighters

Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if

large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to

relevant Standards (e.g. Europe: EN469).

#### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Observe all relevant local and international regulations.

: Avoid contact with skin, eyes and clothing.

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Avoid inhaling vapour and/or mists.

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

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.

Methods and materials for containment and 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 status of this material (refer to Section 13), potential contamination from subsequent use and spillage, and regulations governing disposal in the local area.

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.

#### 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.

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.

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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.

Avoidance of contact : Avoid contact with isocyanates, copper and copper alloys,

zinc, strong oxidizing agents, and water.

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

transfer. Keep containers closed when not in use.

**Storage** 

Conditions for safe storage : Refer to section 15 for any additional specific legislation

covering the packaging and storage of this product.

Storage period : 24 month(s)

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 Temperature:

Ambient.

Storage should be handled at temperatures such that viscosities are less than 500 cSt; typically at 25-50 °C. Tanks should be fitted with heating coils in areas where the ambient temperatures are below the recommended product handling temperatures. Heating coil skin temperatures should

not exceed 100 °C.

Packaging material : Suitable material: Stainless steel., For container paints, use

epoxy paint, zinc silicate paint.

Unsuitable material: Copper., Copper alloys.

Specific use(s) : Not applicable

Ensure that all local regulations regarding handling and

storage facilities are followed.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

#### Components with workplace control parameters

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#### Biological occupational exposure limits

No biological limit allocated.

#### **Monitoring Methods**

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany http://www.dguv.de/inhalt/index.jsp

L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

#### **Engineering measures**

: Where 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

#### Protective measures

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Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

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.

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 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.

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.

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.

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#### 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid.

Colour : Clear colourless

Odour : odourless

Odour Threshold : Data not available

pH : ca. 6.5

Melting / freezing point : Data not available Boiling point/boiling range :  $> 200 \, ^{\circ}\text{C} / > 392 \, ^{\circ}\text{F}$  Flash point :  $> 180 \, ^{\circ}\text{C} / > 356 \, ^{\circ}\text{F}$ 

Method: ASTM D93 (PMCC)

Evaporation rate : Data not available Flammability (solid, gas) : Not applicable

Upper explosion limit : Data not available
Lower explosion limit : Data not available
Vapour pressure : Data not available
Relative vapour density : Data not available
Relative density : Data not available

Density : Typical 1,018 kg/m3 (20 °C / 68 °F)

Method: ASTM D4052

Solubility(ies)

Water solubility
Partition coefficient: n-

octanol/water

Data not availableData not available

Auto-ignition temperature : Data not available

Decomposition temperature : Data not available

Viscosity

Viscosity, dynamic : Typical 1,130 mPa.s (20 °C / 68 °F)

Method: ASTM D 445

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

Surface tension : Data not available

Conductivity: > 10,000 pS/m

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> 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

a static accumulator.

Molecular weight : Data not available

#### 10. STABILITY AND REACTIVITY

: The product does not pose any further reactivity hazards in Reactivity

addition to those listed in the following sub-paragraph.

Chemical stability : No hazardous reaction is expected when handled and stored

according to provisions Hygroscopic.

Possibility of 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.

Conditions to avoid : Heat, flames, and sparks.

Product cannot ignite due to static electricity.

: Avoid contact with isocyanates, copper and copper alloys, Incompatible materials

zinc, strong oxidizing agents, and water.

Hazardous decomposition

products

: Unknown toxic products may be formed.

## 11. TOXICOLOGICAL INFORMATION

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

substances.

exposure

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

skin or eye contact, and accidental ingestion.

#### **Acute toxicity**

**Product:** 

: LD 50 Rat, male and female: > 5,000 mg/kg Acute oral toxicity

Method: OECD Test Guideline 401

Remarks: Based on available data, the classification criteria

are not met.

Acute inhalation toxicity : LD50 Rat, male and female: > 20 mg/l

Exposure time: 4 h

Test atmosphere: vapour

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Method: OECD Test Guideline 403

Remarks: Based on available data, the classification criteria

are not met.

#### Skin corrosion/irritation

#### **Product:**

Species: Rabbit

Method: Test(s) equivalent or similar to OECD Test Guideline 404

Remarks: Slightly irritating to skin., Insufficient to classify.

#### Serious eye damage/eye irritation

#### **Product:**

Species: Rabbit

Method: OECD Test Guideline 405

Remarks: Slightly irritating., Insufficient to classify.

#### Respiratory or skin sensitisation

#### **Product:**

Species: Guinea pig

Method: OECD Test Guideline 406

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

#### Germ cell mutagenicity

## **Product:**

Method: Test(s) equivalent or similar to OECD Guideline 471 Remarks: Based on available data, the classification criteria are not met.

Method: Directive 67/548/EEC, Annex V, B.10.

Remarks: Based on available data, the classification criteria

are not met.

Test species: RatMethod: Directive 67/548/EEC, Annex V,

B.12.

Remarks: Based on available data, the classification criteria

are not met.

#### Carcinogenicity

no data available

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

## Reproductive toxicity

#### **Product:**

Species: Rat

Sex: male and female

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Application Route: Inhalation

Method: Equivalent or similar to OECD Test Guideline 416 Remarks: Based on available data, the classification criteria

are not met.

Effects on foetal : Species: Rat, female development : Application Route: Oral

Method: OECD Test Guideline 414

Remarks: Based on available data, the classification criteria

are not met.

#### STOT - single exposure

#### **Product:**

Exposure routes: Inhalation

Target Organs: Central nervous system Remarks: May cause drowsiness or dizziness.

#### STOT - repeated exposure

#### **Product:**

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

## Repeated dose toxicity

#### **Product:**

Rat, male and female: Application Route: Inhalation Test atmosphere: Gas

Method: OECD Test Guideline 413

Target Organs: No specific target organs noted

## **Aspiration toxicity**

## **Product:**

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

#### **Further information**

#### **Product:**

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

## 12. ECOLOGICAL INFORMATION

Basis for assessment : Information given is based on product testing.

#### **Ecotoxicity**

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**Product:** 

Toxicity to fish (Acute

toxicity)

: LC50 (Danio rerio (zebra fish)): > 100 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203 Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to crustacean (Acute

toxicity)

: EC50 (Daphnia magna (Water flea)): 105.8 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202 Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to algae/aquatic plants (Acute toxicity)

: EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201 Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic

toxicity)

Toxicity to crustacean (Chronic toxicity)

: Remarks: Data not available

: NOEC: >= 10 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
Remarks: NOEC/NOEL > 10 - <=100 mg/l

Toxicity to microorganisms

(Acute toxicity)

: EC50 (Activated sludge, domestic waste): > 1,000 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209 Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

#### Persistence and degradability

Product:

Biodegradability : Biodegradation: 86.6 %

Exposure time: 28 d

Method: OECD Test Guideline 301F Remarks: Readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Partition coefficient: n-

octanol/water

: Remarks: Data not available

Mobility in soil

**Product:** 

Mobility : Remarks: If product enters soil, it will be highly mobile and

may contaminate groundwater., Dissolves in water.

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#### Other adverse effects

no data available

#### 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 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

water.

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.

#### 14. TRANSPORT INFORMATION

## **International Regulations**

ADR

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution category : Z Ship type : 3

Product name : Glycerol, propoxylated and ethoxylated

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

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needs to comply with in connection with transport.

**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.

#### 15. REGULATORY INFORMATION

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

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

The Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 (amended version issued 2000). The Factories Act, 1948, The Second Schedule: Permissible levels of certain chemical substances in work environment, as amended through 1987. India Central motor Vehicles (Amendment) Rules 1993.

## Other international regulations

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

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

#### **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.

SDS Regulation : Regulation 1907/2006/EC

**Further information** 

Training advice : Provide adequate information, instruction and training for

operators.

Other information : A vertical bar (I) in the left margin indicates an amendment

from the previous version.

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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.

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