

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : CARADOL SC56-40

Product code : U312L

CAS-No. : 9082-00-2

Synonyms : Polyol

Manufacturer or supplier's details

Manufacturer/Supplier : **Shell Chemical LP**
PO Box 576
HOUSTON TX 77001
USA

Telephone : 1-800-240-6737 1-855-697-4355

Telefax :

Emergency telephone number : 1-800-424-9300 1-703-527-3887

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.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Not a dangerous substance according to GHS.

GHS Label element

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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration [%]
Polyalkylene glycol	9082-00-2		100

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 water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.
- In case of eye contact : Flush eye with copious quantities of water.
If persistent irritation occurs, obtain medical attention.
- If swallowed : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
- Most important symptoms and effects, both acute and delayed : Not expected to give rise to an acute hazard under normal conditions of use.
- 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 : Treat symptomatically. Following cases of gross over-exposure, investigation of liver, kidney and eye function may be advisable. Records of such incidents should be maintained for future reference.

SECTION 5. FIREFIGHTING 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 : Clear fire area of all non-emergency personnel.
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.
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).

SECTION 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.
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 Chapter 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 Material Safety Data Sheet.
For guidance on disposal of spilled material see Chapter 13 of this Material 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 Chapter 8 of this Material Safety Data Sheet.
For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. 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.

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.

Avoidance of contact : Avoid contact with isocyanates, copper and copper alloys, zinc, strong oxidizing agents, and water.

Advice on protection against fire and explosion : 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.

Storage

Storage period : 24 Months

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.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

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

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

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

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

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

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

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

L'Institut National de Recherche et de Sécurité, (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:
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Adequate ventilation to control airborne concentrations.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.
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

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. 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. 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.

- 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Odour : odourless
- Odour Threshold : no data available
- pH : ca. 6,5
- Melting / freezing point : Data not available
- Boiling point/boiling range : > 200 °C / > 392 °F
- Flash point : ca. 235 °C / 455 °F
Method: ASTM D-93 / PMCC
- Evaporation rate : Data not available
- Flammability (solid, gas) : No, product cannot ignite due to static electricity.
- Upper explosion limit : no data available
- Lower explosion limit : Data not available
- Vapour pressure : < 10 hPa
- Relative vapour density : no data available
- Relative density : 1,02
- Density : Typical 1.020 kg/m³ (20 °C / 68 °F)
- Solubility(ies)
- Water solubility : Slightly soluble.
- Partition coefficient: n-octanol/water : log Pow: 1,1 - 4,8

Auto-ignition temperature	: Data not available
Viscosity	
Viscosity, dynamic	: 575 mPa.s (25 °C / 77 °F)
Viscosity, kinematic	: 260 mm ² /s (40 °C / 104 °F)
Explosive properties	: Not applicable
Oxidizing properties	: Data not available
Surface tension	: Data not available
Conductivity	: > 10.000 pS/m
Molecular weight	: 3.000 g/mol

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: The product does not pose any further reactivity hazards in 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.
Incompatible materials	: Avoid contact with isocyanates, copper and copper alloys, zinc, strong oxidizing agents, and water.
Hazardous decomposition products	: Unknown toxic products may be formed.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment	: Information given is based on product testing, and/or similar products, and/or components.
Exposure routes	: Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

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Version 1.0

Revision Date 06.10.2014

Acute toxicity

Product:

Acute oral toxicity : LD 50 : > 5.000 mg/kg
Remarks: Low toxicity:

Acute inhalation toxicity : Remarks: Expected to be of low toxicity if inhaled.

Acute dermal toxicity : LD 50 : > 5.000 mg/kg
Remarks: Low toxicity:

Skin corrosion/irritation

Product:

Remarks: Not irritating to skin.

Serious eye damage/eye irritation

Product:

Remarks: Not irritating to eye.

Respiratory or skin sensitisation

Product:

Remarks: Not a skin sensitiser.

Germ cell mutagenicity

Product:

: Remarks: Not mutagenic.

Germ cell mutagenicity-
Assessment : This product does not meet the criteria for classification in
categories 1A/1B.

Carcinogenicity

Product:

Remarks: Not expected to be carcinogenic.

Carcinogenicity -
Assessment : This product does not meet the criteria for classification in
categories 1A/1B.

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

Reproductive toxicity

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Product:

: Remarks: Not expected to impair fertility., Not expected to be a developmental toxicant.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

STOT - single exposure

Product:

Remarks: Not expected to be a respiratory irritant.

STOT - repeated exposure

Product:

Remarks: Not expected to be a hazard.

Aspiration toxicity

Product:

Not considered an aspiration hazard.

Further information

Product:

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

SECTION 12. ECOLOGICAL INFORMATION

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.

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) : LC50 : > 100 mg/l
Remarks: Practically non toxic:

Toxicity to crustacean (Acute toxicity) : EC50 : > 100 mg/l
Remarks: Practically non toxic:

Toxicity to algae/aquatic plants (Acute toxicity) : EC50 : > 100 mg/l
Remarks: Practically non toxic:

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to crustacean (Chronic toxicity) : Remarks: Data not available

Toxicity to microorganisms : IC50 : > 100 mg/l

Remarks: Expected to be practically non toxic:

Persistence and degradability

Product:

Biodegradability : Remarks: Not readily biodegradable., Oxidises rapidly by photo-chemical reactions in air.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not have the potential to bioaccumulate significantly.

Partition coefficient: n-octanol/water : log Pow: 1,1 - 4,8

Mobility in soil

Product:

Mobility : Remarks: If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater.

Other adverse effects

Product:

Results of PBT and vPvB assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

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 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.

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
Remarks : 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.

SECTION 14. TRANSPORT INFORMATION

National Regulations

International Regulation

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	: 2
Product name	: Glycerol, propoxylated and ethoxylated
Special precautions	: This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry., Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Special precautions for user

Remarks	: This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.
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SECTION 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 components of this product are reported in the following inventories:

AICS	: Listed
DSL	: Listed
IECSC	: Listed
ENCS	: Listed
KECI	: Listed
NZIoC	: Listed
PICCS	: Listed
TSCA	: 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.

Further information

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.