SAFETY DATA SHEET

NEODOL 23-2

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NEODOL 23-2
Product code	:	V2597
Synonyms	:	Alcohols, C12-13, ethoxylated
CAS-No.	:	66455-14-9

Manufacturer or supplier's details

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 8269
Telefax	:	+65 6384 8454
Contact for Safety Data Sheet	:	
Emergency telephone number	:	+800 2537 8747 (ALERT SGS- toll Free) or +65 6542 9595 (ALERT SGS)

Recommended use of the chemical and restrictions on use

Recommended use	:	Use in detergent and intermediate manufacture
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	:	NEODOL is a trademark owned by Shell Trademark Management B.V. and Shell Brands Inc. and used by affiliates of Royal Dutch Shell plc.

2. HAZARDS IDENTIFICATION

GHS Classification

Short-term (acute) aquatic hazard	:	Category 1
Long-term (chronic) aquatic hazard	:	Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

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:
H400 Very toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:
P273 Avoid release to the environment.

Response:
P391 Collect spillage.

Storage:
No precautionary phrases.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

Repeated exposure may cause skin dryness or cracking.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Alcohols, C12-13, ethoxylated	66455-14-9	Aquatic Acute1; H400 Aquatic Chronic2; H411	<= 100

For explanation of abbreviations see section 16.

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. No specific hazards under normal use conditions. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. No specific hazards under normal use conditions. 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.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	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	:	Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Specific extinguishing methods	:	Standard procedure for chemical fires. Clear fire area of all non-emergency personnel. 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. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.
	:	Avoid contact with spilled or released material. Immediately remove all contaminated clothing. 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. Stay upwind and keep out of low areas. Be ready for fire or possible exposure.
Environmental precautions	:	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.

Additional advice	:	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.

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	:	Avoid contact with skin, eyes and clothing. Do not empty into drains. Sudden Release of Pressure Hazard
Avoidance of contact	:	Copper. Copper alloys. Strong oxidising agents. Aluminum
Product Transfer	:	Keep containers closed when not in use. Do not use compressed air for filling discharge or handling.

Storage

Conditions for safe storage	:	Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
Other data	:	Bulk storage tanks should be diked (bunded). Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Nitrogen blanket recommended for large tanks (capacity 100 m3 or higher). Insulation (lagging) will minimize heat loss in areas of low ambient temperature. Tanks should be fitted with heating coils in areas where ambient conditions can result in handling temperatures below the freezing point/pour point of the product.
Packaging material	:	Suitable material: Stainless steel., Epoxy resins, Polyester. Unsuitable material: Aluminum, Copper., Copper alloys.
Container Advice	:	Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

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

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 : Adequate ventilation to control airborne concentrations.
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
Eye washes and showers for emergency use.
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

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

Respiratory protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
If air-filtering respirators are suitable for conditions of use: Select a filter suitable for the combination of organic gases and vapours and particles [Type A/Type P boiling point >65°C (149°F)].

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. When prolonged or frequent repeated contact occurs. Nitrile rubber gloves. Incidental contact/Splash protection: PVC or neoprene 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 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.
Thermal hazards	:	Not applicable
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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear or slightly turbid liquid.
Colour	:	colourless
Odour	:	mild
Odour Threshold	:	Data not available
pH	:	6.8, 0.5% mass aqueous solution.
pour point	:	2 °C / 36 °F
Melting point/freezing point		no data available
Boiling point/boiling range	:	Data not available
Flash point	:	152 °C / 306 °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	:	0.1 Pa (20 °C / 68 °F)
Relative vapour density	:	Data not available
Relative density	:	0.892Method: ASTM D4052
Density	:	892 kg/m3 (40 °C / 104 °F) Method: ASTM D4052
Solubility(ies)		
Water solubility	:	5,000 mg/l (22 °C / 72 °F)
Partition coefficient: n-octanol/water	:	log Pow: 3
Auto-ignition temperature	:	Data not available
Decomposition temperature	:	Data not available
Viscosity		
Viscosity, dynamic	:	35 mPa.s (20 °C / 68 °F) Method: ASTM D445
Viscosity, dynamic		50 mPa.s (Not applicable /) Method: ASTM D445
Viscosity, kinematic	:	15 mm2/s (40 °C / 104 °F) Method: ASTM D445
Explosive properties	:	Not applicable
Oxidizing properties	:	Data not available
Surface tension	:	Data not available
Conductivity	:	Electrical 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 a static accumulator.
Particle size	:	Data not available
Molecular weight	:	Data not available

10. STABILITY AND REACTIVITY

Reactivity	:	Stable at normal ambient temperature and pressure., May

oxidise in the presence of air.

Chemical stability	:	The product is chemically stable. Stable under normal conditions.
Possibility of hazardous reactions	:	None known.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Copper. Copper alloys. Strong oxidising agents. Aluminum
Hazardous decomposition products	:	None expected under normal use conditions.

11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on product testing, and/or similar products, and/or components. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Information on likely routes of exposure	:	Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	:	LD 50 Rat, male and female: > 5,000 mg/kg Method: Test(s) equivalent or similar to OECD Test Guideline 401 Remarks: Based on available data, the classification criteria are not met. Low toxicity LD50 >5000 mg/kg
Acute inhalation toxicity	:	LC 50 Rat, male and female: > 1.6 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Test(s) equivalent or similar to OECD Test Guideline 403 Remarks: Based on available data, the classification criteria are not met. LC50 greater than near-saturated vapour concentration. Low toxicity LC50 > 1.0 - <= 5.0 mg/l
Acute dermal toxicity	:	LD 50 Rat, male and female: > 2,000 mg/kg Method: OECD Test Guideline 402

Remarks: Based on available data, the classification criteria are not met.
May be harmful in contact with skin.
LD50 >2000 - <=5000 mg/kg

Components:

Alcohols, C12-13, ethoxylated:

Acute oral toxicity : LD 50 Rat, male and female: > 5,000 mg/kg
Method: Test(s) equivalent or similar to OECD Test Guideline 401
Remarks: Based on available data, the classification criteria are not met.
Low toxicity
LD50 >5000 mg/kg

Acute inhalation toxicity : LC 50 Rat, male and female: > 1.6 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Test(s) equivalent or similar to OECD Test Guideline 403
Remarks: Based on available data, the classification criteria are not met.
LC50 greater than near-saturated vapour concentration.
Low toxicity
LC50 > 1.0 - <= 5.0 mg/l

Acute dermal toxicity : LD 50 Rat, male and female: > 2,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on available data, the classification criteria are not met.
May be harmful in contact with skin.
LD50 >2000 - <=5000 mg/kg

Skin corrosion/irritation

Product:

Species: Rabbit
Method: Test(s) equivalent or similar to OECD Test Guideline 404
Remarks: Slightly irritating., Insufficient to classify.

Components:

Alcohols, C12-13, ethoxylated:
Species: Rabbit
Method: Test(s) equivalent or similar to OECD Test Guideline 404
Remarks: Slightly irritating., Insufficient to classify.

Serious eye damage/eye irritation

Product:

Species: Rabbit

Method: Test(s) equivalent or similar to OECD Test Guideline 405
Remarks: Slightly irritating., Insufficient to classify.

Components:

Alcohols, C12-13, ethoxylated:
Species: Rabbit
Method: Test(s) equivalent or similar to OECD Test Guideline 405
Remarks: Slightly irritating., Insufficient to classify.

Respiratory or skin sensitisation

Product:

Species: Guinea pig
Method: Test(s) equivalent or similar to OECD Test Guideline 406
Remarks: Based on available data, the classification criteria are not met.
Not a sensitiser.

Components:

Alcohols, C12-13, ethoxylated:
Species: Guinea pig
Method: Test(s) equivalent or similar to OECD Test Guideline 406
Remarks: Based on available data, the classification criteria are not met.
Not a sensitiser.

Germ cell mutagenicity

Product:

Genotoxicity in vitro	:	Method: Test(s) equivalent or similar to OECD Test Guideline 473 Remarks: Based on available data, the classification criteria are not met., Non mutagenic
	:	Test species: MouseMethod: OECD Test Guideline 474 Remarks: Based on available data, the classification criteria are not met., Non mutagenic
Germ cell mutagenicity-Assessment	:	This product does not meet the criteria for classification in categories 1A/1B.

Components:

Alcohols, C12-13, ethoxylated:

Genotoxicity in vitro	:	Method: Test(s) equivalent or similar to OECD Test Guideline 473 Remarks: Based on available data, the classification criteria are not met., Non mutagenic
	:	Test species: MouseMethod: OECD Test Guideline 474 Remarks: Based on available data, the classification criteria are not met., Non mutagenic
Germ cell mutagenicity-Assessment	:	This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Product:

Method: Based on weight of evidence.
Remarks: Based on available data, the classification criteria are not met., Not a carcinogen.

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

Components:

Alcohols, C12-13, ethoxylated:

Method: Based on weight of evidence.
Remarks: Based on available data, the classification criteria are not met., Not a carcinogen.

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

Material	GHS/CLP Carcinogenicity Classification
Alcohols, C12-13, ethoxylated	No carcinogenicity classification.

Reproductive toxicity

Product:

: Species: Rat
Sex: male and female
Application Route: Dermal

Method: Equivalent or similar to OECD Test Guideline 416
Remarks: Based on available data, the classification criteria are not met., Does not impair fertility.

Effects on foetal development : Species: Rat, male and female
Application Route: Dermal
Method: Test(s) equivalent or similar to OECD Test Guideline 414
Remarks: Based on available data, the classification criteria are not met., Not a developmental toxicant.

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

Components:

Alcohols, C12-13, ethoxylated:

: Species: Rat
Sex: male and female
Application Route: Dermal

Method: Equivalent or similar to OECD Test Guideline 416
Remarks: Based on available data, the classification criteria are not met., Does not impair fertility.

Effects on foetal development : Species: Rat, male and female
Application Route: Dermal
Method: Test(s) equivalent or similar to OECD Test Guideline 414
Remarks: Based on available data, the classification criteria are not met., Not a developmental toxicant.

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

STOT - single exposure

Product:

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

Components:

Alcohols, C12-13, ethoxylated:
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.

Components:

Alcohols, C12-13, ethoxylated:
Remarks: Based on available data, the classification criteria are not met.

Repeated dose toxicity

Product:

Rat, male and female:
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 408
Target Organs: No specific target organs noted

Components:

Alcohols, C12-13, ethoxylated:

Rat, male and female:
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 408
Target Organs: No specific target organs noted

Aspiration toxicity

Product:

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

Components:
Alcohols, C12-13, ethoxylated:
Based on available data, the classification criteria are not met.

Further information

Product:

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

Components:
Alcohols, C12-13, ethoxylated:
Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

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. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity)	:	LC50 (Pimephales promelas (fathead minnow)): 1.19 mg/l Exposure time: 96 h Method: Test(s) equivalent or similar to OECD Guideline 203 Remarks: Very toxic. LC/EC/IC50 < 1 mg/l
Toxicity to crustacean (Acute toxicity)	:	(Daphnia magna (Water flea)): 0.238 mg/l Exposure time: 48 h Method: Test(s) equivalent or similar to OECD Guideline 202 Remarks: Very toxic. LC/EC/IC50 < 1 mg/l
Toxicity to algae/aquatic plants (Acute toxicity)	:	EC50 (Selenastrum capricornutum (green algae)): 0.179 mg/l Exposure time: 72 h

Method: OECD Test Guideline 201
Remarks: Very toxic.
LC/EC/IC50 < 1 mg/l

Toxicity to fish (Chronic toxicity) : NOEC: 0.328 mg/l
Species: Lepomis macrochirus (Bluegill sunfish)
Method: Based on quantitative structure-activity relationship (QSAR) modelling
Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

Toxicity to crustacean (Chronic toxicity) : NOEC: 0.012 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

Toxicity to microorganisms (Acute toxicity) : EC10 (Pseudomonas putida): > 10 g/l
Exposure time: 16.9 h
Method: Test(s) equivalent or similar to OECD Guideline 209
Remarks: Practically non toxic:
LC/EC/IC50 > 100 mg/l

Components:
Alcohols, C12-13, ethoxylated :

Toxicity to fish (Acute toxicity) : LC50 (Pimephales promelas (fathead minnow)): 0.96 mg/l
Exposure time: 96 h
Method: Test(s) equivalent or similar to OECD Guideline 203
Remarks: Very toxic.
LC/EC/IC50 < 1 mg/l

Toxicity to crustacean (Acute toxicity) : (Daphnia magna (Water flea)): 0.46 mg/l
Exposure time: 48 h
Method: Test(s) equivalent or similar to OECD Guideline 202
Remarks: Very toxic.
LC/EC/IC50 < 1 mg/l

Toxicity to algae/aquatic plants (Acute toxicity) : EC50 (Selenastrum capricornutum (green algae)): 0.069 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Very toxic.
LC/EC/IC50 < 1 mg/l

M-Factor (Short-term (acute) aquatic hazard) : 1

Toxicity to microorganisms (Acute toxicity) : EC10 (Pseudomonas putida): > 10 g/l
Exposure time: 16.9 h
Method: Test(s) equivalent or similar to OECD Guideline 209
Remarks: Practically non toxic:
LC/EC/IC50 > 100 mg/l

Toxicity to fish (Chronic toxicity) : NOEC: 0.16 mg/l
Exposure time: 10 d
Species: Lepomis macrochirus (Bluegill sunfish)

Method: Information given is based on data obtained from similar substances.
Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

Toxicity to crustacean(Chronic toxicity) : NOEC: 0.0123 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
Remarks: Toxic with long lasting effects:
NOEC/NOEL > 0.01 - <=0.1 mg/l

Persistence and degradability

Product:

Biodegradability : Biodegradation: 67 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Readily biodegradable.

Components:
Alcohols, C12-13, ethoxylated :

Biodegradability : Biodegradation: 95 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Biodegradation potential is based on data obtained from constituents or similar substances.

Partition coefficient: n-octanol/water : log Pow: 3

Components:
Alcohols, C12-13, ethoxylated :

Bioaccumulation : Species: Pimephales promelas (fathead minnow)
Exposure time: 24 d
Bioconcentration factor (BCF): 12.7
Test substance: C12EO8
Method: Information given is based on data obtained from similar substances.
Remarks: Bioaccumulation is unlikely to occur due to metabolism and excretion.

Species: Pimephales promelas (fathead minnow)
Exposure time: 24 d
Bioconcentration factor (BCF): 232.5
Test substance: C13EO4
Method: Information given is based on data obtained from similar substances.
Remarks: Bioaccumulation is unlikely to occur due to metabolism and excretion.

Mobility in soil

Product:

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

Components:
Alcohols, C12-13, ethoxylated :

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

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.

Components:
Alcohols, C12-13, ethoxylated :

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.

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.
Residues may cause an explosion hazard.
Do not puncture, cut, or weld uncleaned drums.
Send to drum recoverer or metal reclaimer.

14. TRANSPORT INFORMATION

International Regulations

ADR

UN number	:	3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ALCOHOL C12-C13 POLY (1-3)ETHOXYLATE)
Class	:	9
Packing group	:	III
Labels	:	9
Hazard Identification Number	:	90
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substances, liquid, n.o.s. (ALCOHOL C12-C13 POLY (1-3)ETHOXYLATE)
Class	:	9
Packing group	:	III
Labels	:	9

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ALCOHOL C12-C13 POLY (1-3)ETHOXYLATE)
Class	:	9
Packing group	:	III
Labels	:	9
Marine pollutant	:	yes

Maritime transport in bulk according to IMO instruments

Pollution category	:	Y
Ship type	:	2
Product name	:	ALCOHOL (C12-C16) POLY (1-6) ETHOXYLATES

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.
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. Transport in bulk according to Annex II of Marpol and the IBC Code

15. REGULATORY INFORMATION

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

Local Regulations

Workplace Safety and Health Act & Workplace Safety and Health (General Provision) Regulations	This product is subject to the SDS, Labelling, PEL and other requirements in the Act/ Regulations.

Fire Safety Act and Fire Safety (Petroleum & Flammable Materials) Regulations	This product is not subject to the requirements in the Act/Regulations.

Maritime and Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives) Regulations	This product is subject to the requirements of this regulation.

Environmental Protection and Management Act and Environmental Protection and Management (Hazardous Substances) Regulations	This product is not subject to the requirements in the Act/Regulations.

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

Other international regulations

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

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

16. OTHER INFORMATION

Full text of H-Statements

H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard

Abbreviations and Acronyms

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for

Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information

Training advice	:	Provide adequate information, instruction and training for operators.
Other information	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
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).

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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