SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

MACK Extended Life NF Premixed 50/50 Coolant

Version	Revision Date:	SDS Number:	Print Date: 07/17/2021
2.0	07/16/2021	800010039443	Date of last issue: 07/02/2020

SECTION 1. IDENTIFICATION

Product name : MACK Extended Life NF Premixed 50/50 Coolant

Product code : 001I4976

Manufacturer or supplier's details

Manufacturer/Supplier : **Shell Oil Products US**
PO Box 4427
Houston TX 77210-4427
USA

SDS Request : (+1) 877-276-7285

Customer Service :

Emergency telephone number

Spill Information : 877-504-9351

Health Information : 877-242-7400

Recommended use of the chemical and restrictions on use

Recommended use : Antifreeze and coolant.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity (Oral) : Category 4

Eye irritation : Category 2

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure : Category 2 (Kidney)

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : PHYSICAL HAZARDS:
Not classified as a physical hazard under GHS criteria.

HEALTH HAZARDS:
H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H361 Suspected of damaging fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.
ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

Precautionary statements :

Prevention:

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage:

P405 Store locked up.

Disposal:

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

Hazardous components which must be listed on the label:
Contains ethanediol.
Contains Potassium 2-ethylhexanoate
Contains triazole derivatives.
Contains bittering agent.

Other hazards which do not result in classification

Intentional abuse, misuse or other massive exposure may cause multiple organ damage and or death.
The classification of this material is based on OSHA HCS 2012 criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Mixture of ethylene glycol, water and additives.

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (% w/w)
Ethanediol	ethane-1,2-diol	107-21-1	40 - 60
Potassium 2-ethylhexanoate	potassium 2-ethylhexanoate	3164-85-0	1 - 2.9
Diethylene glycol	2,2'-	111-46-6	1 - 3

	oxydiethanol		
methyl-1H-benzotriazole	methyl-1H-benzotriazole	29385-43-1	0.1 - 0.9

SECTION 4. FIRST-AID MEASURES

General advice	:	Not expected to be a health hazard when used under normal conditions.
If inhaled	:	Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
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	:	Immediately flush eye(s) with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Transport to the nearest medical facility for additional treatment.
If swallowed	:	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Rinse mouth.
Most important symptoms and effects, both acute and delayed	:	Kidney toxicity may be recognized by blood in the urine or increased or decreased urine flow. Other signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhoea, lumbar pain shortly after ingestion, and possibly narcosis and death. Not considered to be an inhalation hazard under normal conditions of use. 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. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Ingestion may result in nausea, vomiting and/or diarrhoea. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
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.
Indication of any immediate	:	IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

medical attention and special treatment needed	Call a doctor or poison control center for guidance. Treat symptomatically. May cause significant renal, respiratory, and CNS toxicity. May cause significant acidosis. The preferred treatment is immediate transportation to a medical facility and use of appropriate treatment including possible administration of activated charcoal, gastric lavage and or gastric aspiration. If none of the above are immediately available and a delay of more than one hour is anticipated before such medical attention can be obtained, induction of vomiting may be appropriate using IPECAC syrup (Contraindicated if there are any signs of CNS depression). This should be considered on a case by case basis following specialist advice. Specific other treatments may include ethanol therapy, fomepizole, treatment of acidosis and haemodialysis. Seek specialist advice without delay.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	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	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
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	:	Avoid contact with skin and eyes.
Environmental precautions	:	Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for	:	For large liquid spills (> 1 drum), transfer by mechanical

containment and cleaning up		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. Local authorities should be advised if significant spillages cannot be contained. U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Section 15) to the National Response Center at (800) 424-8802.

SECTION 7. HANDLING AND STORAGE

Technical measures	:	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. 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	:	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.
Avoidance of contact	:	Strong oxidising agents.
Further information on storage stability	:	Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closable containers. Store at ambient temperature.

Packaging material	:	Suitable material: For containers or container linings, use mild steel or high density polyethylene. Unsuitable material: Zinc., Avoid contact with galvanized materials.
Container Advice	:	Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Ethanediol	107-21-1	TWA (Vapour)	25 ppm	ACGIH
Ethanediol		STEL (Vapour)	50 ppm	ACGIH
Ethanediol		STEL (Inhalable fraction, Aerosol only)	10 mg/m3	ACGIH

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	:	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:
Adequate ventilation to control airborne concentrations.

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

General Information:
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.
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.

Personal protective equipment

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.
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 suitable, select an appropriate combination of mask and filter.
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. PVC, neoprene or nitrile rubber gloves 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.
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.

Eye protection : If material is handled such that it could be splashed into eyes, protective eyewear is recommended.
Wear goggles for use against liquids and gas, combined with face shield with chin guard.

Skin and body protection : Skin protection is not ordinarily required beyond standard work clothes.
It is good practice to wear chemical resistant gloves.

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

Thermal hazards : Not applicable

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 at room temperature.

Colour : red

Odour : characteristic

Odour Threshold : Data not available

pH	:	Not applicable
Melting point/freezing point	:	-37 °C / -35 °F (100.0 hPa) Method: ASTM D1177
Initial boiling point and boiling range	:	> 100 °C / 212 °F estimated value(s)
Flash point	:	Method: Unspecified Not applicable
Evaporation rate	:	Data not available
Flammability (solid, gas)	:	Data not available
Upper explosion limit / upper flammability limit	:	Typical 15 %(V)
Lower explosion limit / Lower flammability limit	:	Typical 3 %(V)
Vapour pressure	:	Data not available
Relative vapour density	:	Data not available
Relative density	:	1.075 (15.6 °C / 60.1 °F)
Density	:	1,075 kg/m3 (15.6 °C / 60.1 °F) Method: Unspecified
Solubility(ies)		
Water solubility	:	completely soluble
Solubility in other solvents	:	Data not available
Partition coefficient: n-octanol/water	:	Data not available
Auto-ignition temperature	:	> 200 °C / 392 °F
Decomposition temperature	:	Data not available
Viscosity		
Viscosity, dynamic	:	Data not available
Viscosity, kinematic	:	Method: Unspecified Not applicable
Explosive properties	:	Not classified
Oxidizing properties	:	Data not available

Conductivity	:	This material is not expected to be a static accumulator.
Molecular weight	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable.
Possibility of hazardous reactions	:	Reacts with strong oxidising agents.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Strong oxidising agents.
Hazardous decomposition products	:	No decomposition if stored and applied as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on data on the components and the toxicology of similar products.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
Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (rat): > 500 - 2,000 mg/kg Remarks: Harmful if swallowed. Remarks: There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 milliliters (1/2 cup). This material has also been shown to be toxic and potentially lethal by ingestion to cats and dogs. Ingestion may cause drowsiness and dizziness.
Acute inhalation toxicity	:	LC 50 (Rat): > 5 mg/l Exposure time: 4 h Remarks: Low toxicity:
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg Remarks: Low toxicity:

Components:

Ethanediol:

Acute oral toxicity	:	LD 50 (Rat, male and female): > 2,000 mg/kg Method: Acceptable non-standard method. Remarks: Harmful if swallowed. There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 milliliters (1/2 cup). This material has also been shown to be toxic and potentially lethal by ingestion to cats and dogs.
Acute inhalation toxicity	:	LC 50 (Rat, male and female): > 2.5 mg/l Exposure time: 6 h Test atmosphere: Aerosol Method: Literature data Remarks: LC50 > 1.0 - <= 5.0 mg/l LC50 greater than near-saturated vapour concentration. Based on available data, the classification criteria are not met.
Acute dermal toxicity	:	LD 50 (Mouse, male and female): > 2,000 mg/kg Method: Literature data Remarks: Based on available data, the classification criteria are not met.

Diethylene glycol:

Acute oral toxicity	:	LD 50 (Rat, male and female): > 5,000 mg/kg Method: Literature data Remarks: Based on available data, the classification criteria are not met. There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 milliliters (1/2 cup). This material has also been shown to be toxic and potentially lethal by ingestion to cats and dogs.
Acute inhalation toxicity	:	LC 50 (Rat): > 1 -<= 5 mg/l Exposure time: 4 h Test atmosphere: Aerosol Method: Literature data Remarks: LC50 greater than near-saturated vapour concentration. Based on available data, the classification criteria are not met.
Acute dermal toxicity	:	LD 50 (Rabbit): > 2,000 mg/kg Method: Literature data Remarks: Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Product:

Remarks: Slightly irritating to skin., Based on available data, the classification criteria are not met.

Components:

Ethanediol:
Species: Rabbit
Method: Acceptable non-standard method.
Remarks: Slightly irritating to skin., Insufficient to classify.

Diethylene glycol:
Species: Rabbit
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Product:

Remarks: Causes eye irritation.

Components:

Ethanediol:
Species: Rabbit
Method: Acceptable non-standard method.
Remarks: Slightly irritating to the eye., Insufficient to classify.

Diethylene glycol:
Species: Rabbit
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:

Remarks: Not a skin sensitiser.
Based on available data, the classification criteria are not met.

Components:

Ethanediol:
Species: Guinea pig
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

Diethylene glycol:
Species: Guinea pig
Method: Tested according to Annex V of Directive 67/548/EEC.
Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:

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

Components:

Ethanediol:

: Method: OECD Test Guideline 471
Remarks: Based on data from similar materials

: Method: Acceptable non-standard method.
Remarks: Based on data from similar materials

: Method: Literature data
Remarks: Based on data from similar materials

: Test species: Rat
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

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

Diethylene glycol:

: Method: OECD Test Guideline 471
Remarks: Based on available data, the classification criteria are not met.

: Method: OECD Test Guideline 473
Remarks: Based on available data, the classification criteria are not met.

: Method: OECD Test Guideline 479
Remarks: Based on available data, the classification criteria are not met.

: Test species: Mouse
Method: OECD Test Guideline 474
Remarks: Based on available data, the classification criteria are not met.

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

Carcinogenicity

Product:

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

Components:

Ethanediol:
Species: Mouse, (male and female)
Application Route: Oral
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

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

Diethylene glycol:
Species: Rat, (male and female)
Application Route: Oral
Method: Literature data
Remarks: Based on available data, the classification criteria are not met., Tumours produced in animals are not considered relevant to humans.

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

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

:
Remarks: Causes foetotoxicity in animals at doses which are maternally toxic.

Components:

Ethanediol:

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

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

Effects on foetal development : Species: Rat, male and female
Application Route: Oral
Method: Literature data
Remarks: Based on available data, the classification criteria are not met., Causes foetotoxicity in animals; considered to be secondary to maternal toxicity.

Reproductive toxicity - Assessment	:	This product does not meet the criteria for classification in categories 1A/1B.
Diethylene glycol:	:	Species: Mouse Sex: male and female Application Route: Oral Method: Acceptable non-standard method. Remarks: Based on available data, the classification criteria are not met.
Effects on foetal development	:	Species: Rabbit, female Application Route: Oral Method: OECD Test Guideline 414 Remarks: Based on available data, the classification criteria are not met.
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:

Ethanediol:
Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system., Based on available data, the classification criteria are not met., Ingestion may cause drowsiness and dizziness.

Diethylene glycol:
Remarks: Based on available data, the classification criteria are not met., Inhalation of vapours or mists may cause irritation to the respiratory system., Ingestion may cause drowsiness and dizziness.

STOT - repeated exposure

Product:

Remarks: Kidney: can cause kidney damage.

Components:

Ethanediol:
Exposure routes: Oral
Target Organs: Kidney
Remarks: May cause damage to organs or organ systems through prolonged or repeated exposure.

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

Repeated dose toxicity

Components:

Ethanediol:
Species: Rat, male
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 408
Target Organs: Kidney

Diethylene glycol:
Species: Rat, male and female
Application Route: Oral
Method: Acceptable non-standard method.
Target Organs: No specific target organs noted

Species: Dog, male
Application Route: Dermal
Method: OECD Test Guideline 410
Target Organs: No specific target organs noted

Aspiration toxicity

Product:
Not an aspiration hazard.

Components:

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

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

Further information

Product:
Remarks: Slightly irritating to respiratory system.

Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system.

Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment : Ecotoxicological data have not been determined specifically for this product.
Information given is based 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) :
Remarks: LC/EC/IC50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) :
Remarks: LC/EC/IC50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to algae (Acute toxicity) :
Remarks: LC/EC/IC50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to fish (Chronic toxicity) : Remarks: Based on available data, the classification criteria are not met.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: Based on available data, the classification criteria are not met.

Toxicity to microorganisms (Acute toxicity) : Remarks: Based on available data, the classification criteria are not met.

Components:

Ethanediol:

Toxicity to fish (Acute toxicity) : LC50 (Pimephales promelas (fathead minnow)): 72,860 mg/l
Exposure time: 96 h
Method: Other guideline method.
Remarks: Practically non toxic:
LC/EC/IC50 > 100 mg/l

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Practically non toxic:
LC/EC/IC50 > 100 mg/l

Toxicity to algae (Acute toxicity)	:	EC50 (Pseudokirchneriella subcapitata (algae)): 6,500 - 13,000 mg/l Exposure time: 96 h Method: Other guideline method. Remarks: Practically non toxic: LC/EC/IC50 > 100 mg/l
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 15,380 mg/l Exposure time: 7 d Method: Other guideline method. Remarks: NOEC/NOEL > 100 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Chironomus sp. (midge)): 8,590 mg/l Exposure time: 7 d Method: Other guideline method. Remarks: NOEC/NOEL > 100 mg/l
Toxicity to microorganisms (Acute toxicity)	:	EC20 (Activated sludge, domestic waste): > 1,995 mg/l Exposure time: 0.5 h Method: Other guideline method. Remarks: Practically non toxic: LC/EC/IC50 > 100 mg/l

Diethylene glycol:

Toxicity to fish (Acute toxicity)	:	LC50 (Pimephales promelas (fathead minnow)): 75,200 mg/l Exposure time: 96 h Method: Literature data. Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l
Toxicity to daphnia and other aquatic invertebrates (Acute toxicity)	:	EC50 (Daphnia magna (Water flea)): > 10,000 mg/l Exposure time: 24 h Method: Other guideline method. Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l
Toxicity to algae (Acute toxicity)	:	EC50 (Scenedesmus quadricauda (Green algae)): 2,700 mg/l Exposure time: 192 h Method: Information given is based on data obtained from similar substances. Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 15,380 mg/l Exposure time: 7 d Method: Other guideline method. Remarks: NOEC/NOEL > 100 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Ceriodaphnia dubia (Water flea)): 8,590 mg/l Exposure time: 7 d Method: Other guideline method.

Remarks: NOEC/NOEL > 100 mg/l

Toxicity to microorganisms (Acute toxicity) : EC20 (Activated sludge, domestic waste): > 1,995 mg/l
Exposure time: 0.5 h
Method: Other guideline method.
Remarks: Practically non toxic:
LL/EL/IL50 > 100 mg/l

Persistence and degradability

Product:

Biodegradability : Remarks: Readily biodegradable.

Components:

Ethanediol:

Biodegradability : Biodegradation: 90 - 100 %
Exposure time: 10 d
Method: OECD Test Guideline 301A
Remarks: Readily biodegradable.
Not Persistent per IMO criteria.
International Oil Pollution Compensation (IOPC) Fund definition: “A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340ºC (645ºF) and (b) at least 95% of which, by volume, distils at a temperature of 370ºC (700ºF) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

Diethylene glycol:

Biodegradability : Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
Remarks: Readily biodegradable.
Oxidises rapidly by photo-chemical reactions in air.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Components:

Ethanediol:

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

Diethylene glycol:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Mobility in soil

Product:

Mobility : Remarks: Liquid under most environmental conditions.
If product enters soil, it will be highly mobile and may contaminate groundwater.
Dissolves in water.
Poses a significant risk of oxygen depletion in aquatic systems.

Components:

Ethanediol:

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

Diethylene glycol:

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

Other adverse effects

Product:

Additional ecological information : Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential.

Components:

Ethanediol:

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.

Additional ecological information : Does not have ozone depletion potential.

Diethylene glycol:

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.

Additional ecological information : Data not available

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 ground water, or be disposed of into the environment.
Waste, spills or used product is dangerous waste.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging : Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.
Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Local legislation

Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

UN/ID/NA number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Ethylene glycol)
Class	:	9
Packing group	:	III
Labels	:	9
Reportable quantity		Ethylene glycol (5,000 lb)

ERG Code : 171
Marine pollutant : no

International Regulations

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

Not applicable for product as supplied. MARPOL Annex 1 rules apply for bulk shipments by sea.

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.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Ethanediol	**107-21-1**	**5000**	*****
Potassium hydroxide	**1310-58-3**	**1000**	*****

*: Calculated RQ exceeds reasonably attainable upper limit.
Calculated RQ exceeds reasonably attainable upper limit., Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA., The components with RQs are given for information.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
Specific target organ toxicity (single or repeated exposure)
Reproductive toxicity
Serious eye damage or eye irritation

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Ethanediol	107-21-1	>= 30 - < 50 %
Diethylene glycol	111-46-6	>= 1 - < 5 %

2-(2-butoxyethoxy)ethanol	112-34-5	< 0.1 %

Clean Water Act

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Potassium hydroxide	1310-58-3	0.0743 %

US State Regulations

Pennsylvania Right To Know

Ethanediol	107-21-1
Diethylene glycol	111-46-6
Potassium hydroxide	1310-58-3

California Prop. 65

WARNING: This product can expose you to chemicals including Ethanediol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

Ethanediol	107-21-1

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:

REACH	:	Not all components listed.
TSCA	:	All components listed.
DSL	:	All components listed.

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reactivity)	2, 1, 0

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
Abbreviations and Acronyms	:	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 standard abbreviations and acronyms used in this docu-

ment 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
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
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

A vertical bar (|) in the left margin indicates an amendment from the previous version.

There has been an increase in the Health Hazard classification of this product in section 2. Ensure that the related sections (particularly sections 4, 8 & 11) are carefully studied.
Due to a change in detail in Section 15, this document has been released as a significant change.
There has been a significant change in compositional information in section 2 & 3.

Revision Date : 07/16/2021

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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