ETHYLENE OXIDE

Reliance Industries Limited
Growth is Life

Section-1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the substance/preparation:

Commercial name: ETHYLENE OXIDE
Chemical name: ETHYLENE OXIDE C2H4O
Synonyms: Oxirane, Amprolene, Anprolene, Epoxyethane.

1.2 Use of the substance: As a chemical intermediate in the manufacture of textiles, detergents, polyurethane foam, Solvents, Medicine, Adhesives and ethylene glycol (Antifreeze) etc.

1.3 MANUFACTURER & SUPPLIER: Reliance Industries Limited

Emergency Coordination Centre contact details:

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SSM: Site Shift Manager

Section 2 – HAZARD IDENTIFICATION

2.1 **Classification of the substance/preparation: Hazard class and category code.**

GHS Category:

Health	Environmental	Physical
Carcinogenicity Category: 1B Mutagenicity category: 1B Acute Toxicity Inhalation category: 3 Eye Damage Category: 1 Specific Target Organ Toxicity SE 3 Skin Irritation Category: 2	Aquatic Toxicity – Category- NA	Flammable – Category 1

Data reference: https://pubchem.ncbi.nlm.nih.gov/compound/Ethylene-oxide#section=Hazard-Classes-and-Categories
NA = Not Available, SE = Single Exposure

GHS Label: GHS02: Flame, GHS06: Acute Toxicity, GHS08: Carcinogen

Pictogram(s)

Data reference site - https://pubchem.ncbi.nlm.nih.gov/compound/Ethylene-oxide#section=GHS Classification

Signal word: Danger

Details of statements:

Hazard Statements	H220 Extremely flammable gas. H340 May cause genetic defects H331 Toxic if inhaled. H318 Causes serious eye damage. H335 May cause respiratory irritation H-314 Causes severe skin burns and eye damage H-336 May cause drowsiness or dizziness. H301: Toxic if swallowed H317: May cause an allergic skin reaction H-301: Toxic if swallowed H340: May cause genetic defects H350: May cause cancer H360FD: May damage fertility or the unborn child H314: Causes severe skin burns and eye damage H372: Causes damage to organs through prolonged or repeated exposure H402: Harmful to aquatic life
Precautionary Statement Prevention	P102: Keep out of reach of children. P103: Read label before use. P-203: Obtain, read and follow all safety instructions before use. P210: Keep away from heat, hot surface, sparks, open flames and other ignition sources. - No smoking. P-222: Do not allow contact with air. P260: Do not breathe dust/fume/gas/mist/vapors/spray. P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P264: Wash ... thoroughly after handling. P270: Do not eat, drink or smoke when using this product. P271: Use only outdoors or in a well-ventilated area. P272: Contaminated work clothing should not be allowed out of the workplace. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection. P-264+P-265: Wash hands thoroughly after handling. Do not touch eyes.
Precautionary Statement Response	P302+P352: IF ON SKIN: wash with plenty of water. P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do P321: Specific treatment (see ... on this label). P330: Rinse mouth. P363: Wash contaminated clothing before reuse. P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381: In case of leakage, eliminate all ignition sources

	P-301+P-316: IF SWALLOWED: Get emergency medical help immediately. P-301+P-330+P-331: IF SWALLOWED: Rinse mouth. Do not induce vomiting. P-302+P-361+P-354: IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes. P-305+P-354+P-338: IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. P-316: Get emergency medical help immediately. P-317: Get emergency medical help. P-318: If exposed or concerned, get medical advice. P-319: Get medical help if you feel unwell. P-321: Specific treatment.
Precautionary Statement Storage	P403: Store in a well-ventilated place. P403+P233: Store in a well-ventilated place. Keep container tightly closed. P405: Store locked up. P410+P403: Protect from sunlight. Store in a well-ventilated place.
Precautionary Statement Disposal	P-501: Disposal of contents / container Follow local regulation

Hazard ratings:

NFPA HAZARD CODES	RATINGS SYSTEM
HEALTH: 3	0 = No Hazard
FLAMMABILITY: 4	1 = Slight Hazard
INSTABILITY: 3	2 = Moderate Hazard
	3 = Serious Hazard
	4 = Severe Hazard

Data Reference: https://pubchem.ncbi.nlm.nih.gov/compound/Ethylene Oxide #section=NFPA-Hazard-Classification

2.1 Information pertaining to particular dangers for human:

Toxic substance with mutagenic and carcinogenic effects. Acute intoxication leads to central nervous system attenuation and narcotic effects occur. After swallowing possibility of aspiration (Passage into the lung) and danger of chemical pneumonia (pulmonary edema). The product irritates eyes and skins. Prolonged inhalation may cause asthama. Liquid is absorbed through skin and may develop allergic eruption. Chronic effects may cause heritable genetic damage to human germ cells.

2.2 Information pertaining to particular dangers for the environment:

Possible adverse effects on aquatic organisms.

2.3 Other adverse effects:

Extremely flammable and easily ignitable substance. Danger of ignition at normal temperature. Readily evaporates and vapours form with air toxic and explosive mixtures heavier than air. Mixtures keep above ground and after ignition they spread fast into far distances. Ignition possible when exposed to hot surfaces, sparks, naked flames and by electrostatic discharges too. The substance is practically insoluble in water, floats on the water level and forms toxic and explosive mixtures above the water level. Risk of explosion if emptied into drains or released into wastewater. Attacks rubber and plastics.

Target Organs: Dermal (Skin), Developmental (Effects during periods when organs are developing, Neurological (Nervous system), Ocular (Eyes), Renal (Urinary systems or Kidneys)

Route of entry:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	Yes	Yes	Yes	Yes

Data Reference: https://pubchem.ncbi.nlm.nih.gov/compound/Ethylene-oxide#section=GHS Classification

Health hazards:

Source	NTP listed?	IARC cancer review	OSHA Regulated?
Carcinogenicity	The chemical is known to be human carcinogen	The chemical is carcinogenic to humans	The chemical appears at 29 CFR part 1910 subpart Z

DATA REFERENCE: Toxic release inventory (TRI) basis of Occupational Safety and Health Administration (OSHA) carcinogen, National Toxicological program (NTP), International Agency for Research on Cancer (IARC)

Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS

Ingredients / Hazardous	CAS No.	EINECS No.	Percentage
Ethylene Oxide / Yes	75-21-8	200-849-9	99.99 %
Water / NO	7732-18-5	231-791-2	0.01 %

Data reference site - https://pubchem.ncbi.nlm.nih.gov

Section 4 – FIRST AID MEASURES

4.1 General advice

IMMEDIATE MEDICAL ATTENTION IS REQUIRED AFTER INHALATION OR AFTER SWALLOWING.

In case of health troubles or doubts, seek medical advice immediately and show this (Material) Safety Data Sheet.

Ensure activity of vitally important functions until the arrival of the doctor (artificial respiration, inhalation of oxygen, heart massage). If patient is unconscious, or in case of danger of blackout, transport patient in a stabilized position. In case of first degree burns (painful redness), and second degree burns (painful blisters), cool the affected area with cold running water for a long time. In case of third degree burns (redness, cracking pale skin, usually without pain), do not cool affected skin, dress the area with sterile dry gauze only.

4.2 Inhalation

Remove patient to fresh air, keep him warm and in order to rest quietly. Avoid walking. Seek medical advice.

4.3 Skin contact

Immediately take off all contaminated clothing and footwear. Flush effected area with copious quantities of water. Seek medical advice.

4.4 Eye contact

Immediately flush eyes with clean lukewarm water and continue flushing for at least 15 minutes – keep the eyelids widely apart and flush thoroughly with mild water stream from the inner to the outer canthus. Seek medical advice.

4.5 Swallowing

Never give anything by mouth to an unconscious person, just put patient into a stabilized position. Seek medical advice immediately.

Section 5 – FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media: CO_2 , Dry Chemical Powder , Water in the form of spray or fog.

5.2 Extinguishing media to be avoided

Not applicable

5.3 Caution about specific danger in case of fire and fire-fighting procedures

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk. Danger of violent reaction or explosion. Vapors may travel considerable far distances and cause subsequent ignition. Vapors are heavier than air, may accumulate along the ground and in enclosed spaces – Danger of explosion. Do not empty into drains. When burning, it emits carbon monoxide, carbon dioxide and irritant fumes. Containers with the substance exposed to excessive heat or prolonged exposure to fire may explode. Use water spray to keep fire exposed containers cool. Move container away from fire if there is no risk.

5.4 Special protective equipment for fire-fighters

Wear full protective fire resistant clothing and self contained breathing apparatus.

Section 6 –ACCIDENTAL RELEASE MEASURES

6.1 Person-related safety precautions:-

Isolate hazard area. Evacuate all unauthorized personnel not participating in rescue operations from the area. Avoid entry into danger area. Remove all possible sources of ignition. Stop traffic and switch off the motors of the engines. Do not smoke and do not handle with naked flame. Use explosion-proof lamps and non- sparking tools. Avoid contact with the substance. Apply recommended full protective personal equipment. When escaping from the contaminated area, wear mask with cartridge against organic vapours. In case of general average, evacuate personnel from danger area. In places under the ground level and in enclosed spaces (including drains) risk of explosion and accumulation of toxic vapours. As an immediate precautionary measure, Isolate spill or leak area for atleast 100 meters in all direction; also consider initial evacuation for 1600 meters in all directions. If tank, railcar or tank truck is involved in a fire, isolate for 1600 meters in all directions. Following emergency facilities should be in place for protection against accidental release measures: Ethylene Oxide detectors must be installed to detect leaks, providing early warning so that potentially harmful exposure to on- and off-site personnel can be minimized. All alarm systems must be periodically tested to help ensure their readiness for service. An alarm system must be capable of immediately alerting all personnel on the site.

6.2 Precautions for protection of the environment

Prevent from further leaks of substance. Do not allow substance to enter soil, water and sewage system. In case of substance discharge to water courses or water containers, inform water consumers immediately, stop service and exploitation of water.

6.3 Recommended methods for cleaning and disposal

Pump of substance safely, soak up residues with compatible porous material and forward for disposal in closed containers. Dispose of under valid legal waste regulations. Evacuate and restrict persons not wearing restrictive equipment from area of spill or leak until clean is complete. In case liquids, for small spills, flush area with flooding amounts of water. For large spills, dike spill for later disposal. Absorb liquid in vermiculite, dry sand, earth, or a similar non-organic material and deposit in a sealed container. You can also cover liquid with weak reducing

agents, resulting sludge neutralized and flushed to sewer. Collect the powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area of spill and leak after clean up is complete. If employees are required to clean up spills, they must be properly trained and equipped.

Section 7 –HANDLING AND STORAGE

7.1 Information for safe handling:-

Observe all fire fighting measures (No smoking, do not handle with naked flame and remove all possible sources of ignition). Take precautionary measures against static discharges. Wear recommended personal protective equipment and observe instructions to prevent possible contact substance with skin and eyes and inhalation. Avoid leak to environment. Vapors are heavier than air. Protect containers against physical damage, check for leakage intermittently. Store in container protected from direct sunlight, lined with insulating material, equipped with an adequate water and refrigeration system.

7.2 Information for storage:-

Store rooms should meet requirements for the fire safety of constructions and electrical facilities should be in conformity with valid regulations. Store in cool, well ventilated place with effective exhaust, away from heat and all sources ignition. Store in tightly closed container. Do not store together with oxidizing agents. Take precautionary measures against static charges. Avoid leak to environment. If polymerization takes place inside a container, the container may rupture violently. Vapors may burn inside a container. EO storage vessel should provide passive fire and protection against impact. EO storage vessel s hould be protected from an exposure to a pool fire. Pool fire under EO storage vessel is very hazardous situation that can lead to an EO decomposition. Passive fire protection such as insulation can provide additional fire protection for those vessels located above grade are not mounded or buried. A fire water protection system takes into whether fire water supplies are located so as to be readily available and sufficient in volume so as to dilute any spill adequately. Storage vessel pressure relief system should be designed appropriately. Store EO in tightly closed cylinders or tanks in a cool, shaded, well ventilated, explosion proof area.

7.3 Information for specific use

Not applicable.

Section 8 –EXPOSURE CONTROL & PERSONAL PROTECTION

8.1 Occupational Exposure Limits:

Material	Source	Type	ppm	mg/m3	Notation
ETHYLENE OXIDE	ACGIH	TWA	1		**A2**
	ACGIH	STEL	-		
	ACGIH	SKIN_DES TWA	NA		
	NIOSH	IDLH	800		
	OSHA	TWA	1		
	OSHA	STEL	5		

NA: Data not available

Data reference site - https://pubchem.ncbi.nlm.nih.gov/compound/Ethylene-oxide#section=Immediately-Dangerous-to-Life-or-Health-(IDLH)

Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposure.

Recommended determination method in the work place atmosphere: gas chromatography, detector tube.

8.2 Occupational exposure controls

Collective protection measures: General and local ventilation, effective exhaust. Individual protection measures: Personal protective equipment (PPE) for the protection of eyes, hands and skin corresponding with the performed labour
has to be kept at disposition for the employees. In cases, where the workplace exposure control limits cannot be observed with the help of technical equipment or where it is not possible to ensure that the respiratory system exposure does not represent a health hazard for the personnel, adequate respiratory protection have to be kept at disposition. In the case of continuous use of this equipment during constant work, safety breaks have to be scheduled, if the PPE-character requires this. All PPE have to be kept in disposable state and the damaged or contaminated equipment has to be replaced immediately. Personal protective equipments for protection of eyes, hands and skin corresponding with performed labour
has to be kept at disposition for the employees. In cases, where the workplace exposure control limits cannot be observed with the help of technical equipment or where it is not possible to ensure that the respiratory system exposure does not represent a health hazard for the personnel, adequate respiratory protection have to be kept at disposition. In the case of continuous use of this equipment during constant work, safety breaks have to be scheduled, if the PPE-character requires this. All PPE have to be kept in disposable state.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT :

HANDS	EYES	BODY	RESPIRATORY
 		 	 

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-face piece respirator, airline hood, or full face piece self-contained breathing apparatus, protective mask with canister A (brown colored, protecting against organic vapours), self-contained breathing apparatus.

Eye protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Hand protection: Wear gloves of impervious material.

Body protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Protective coverall antistatic design recommended, impervious when handling big amounts (nitrile rubber), sealed leather footwear (free from synthetic adhesives)

Hygiene Measures: Wash hands, forearms and face thoroughly after handling. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8.3 Environmental exposure controls

Proceed in accordance with valid air and water legislative regulations.

Engineering measures: Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 9 –PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Gas at ordinary room temperature and pressure; liquid below 12 degree C
Odor	Sweet ether like odour
Solubility in water	Completely soluble in water above 11.4 °C
Relative Density (H2O=1) @ 0°C	0.882 at 10 degree C.
Boiling Point °C	10.4 °C
Melting Point °C	-111.7 °C
Relative Vapour Density (Air=1)	1.49
Flash point °C	-18 °C Open cup
Auto ignition degree C	429 degree C
Vapor pressure (mmHg) @ 25 degree C	1310 mm Hg at 25 degree C
Molecular weight	44.05
Explosive limits in air % by volume	LEL 3.0 % UEL 100 %
PH	NA
Viscosity mPa.s @ 10 degree C	0.254
Pour Point	NA

NA: NOT AVAILABLE
DATA : https://pubchem.ncbi.nlm.nih.gov

Section 10 –CHEMICAL STABILITY AND REACTIVITY INFORMATION

10.1 Conditions to avoid

Concentrations within the explosion limits, sources of ignition, high temperature, sun radiations.

10.2 Material To Avoid

AIR AND WATER REACTIONS:

Highly flammable. Flammable over a wide vapor-air concentration range. Must be diluted on the order of 24 to 1 with water to lose flammability. Soluble in water. Highly flammable, severe explosion hazard when exposed to flame. The auto ignition temperature may be as low as 140° C in presence of rust. Rapid compression of the vapor with air causes explosion. Ethylene oxide vapor may be initiated into explosive decomposition in absence of air [Hess, L. G., et al., Ind. Eng. Chem., 1950, 42, p. 1251]. Metal fittings containing magnesium, copper or silver should be avoided, since traces of acetylene in ethylene oxide may produce metal acetyl ides capable of detonating the vapor [MCA SD-38, 1971]. Violent polymerization occurs on contact with strong bases (alkali hydroxides, ammonia) or acids, amines, metallic potassium, oxides (aluminum oxide, iron oxide, rust), covalent halides (aluminum chloride, ferric chloride, tin(IV) chloride) [Gupta, A. K., J. Soc. Chem. Ind., 1949, 68, p. 179]. Violent reaction with m-nitro aniline, magnesium perchlorate, mercaptans, thiols, tri ethylamine [Bretherick, 5th ed., 1995, p. 316]. Ethylene oxide and SO2 can react violently in pyridine solution with pressurization if ethylene oxide is in excess (Nolan, 1983, Case History 51).

REACTIVE GROUPS: Epoxides

Hazardous decomposition products: Pure EO decomposes explosively if detonated, ignited or heated to about 560 °C, even in absence of air.
Polymerization: Very susceptible to polymerization initiated at ambient temperature by acids, bases or catalysts such as anhydrous Chlorides or Iron, Aluminum, Tin, and metal oxides. Iron rust must be removed from any equipment containing Ethylene oxide. The polymerization is

exothermic. Thermal initiation starts at around 100 C and once started will be promoted by Iron. If the temperature is not controlled the polymerization will self accelerate causing vaporization of unreacted ethylene oxide and possibly explosive decomposition of the vapour. Slow polymerization can also occur, producing solid polymer, which is thermally stable.

EO reactivity:- EO has a highly strained ring and it can be opened easily, EO is highly reactive.

Decomposition

Pure EO vapor or EO vapor mixed with air or an insufficient amount of inert gases can decompose explosively.

EO can also ignite and decompose explosively below atmospheric pressures

Reactions with Water, Acids, and Bases

The reaction of EO with water (i.e., hydrolysis) to produce high molecular weight glycols is widely practiced in chemical process industries where EO absorbed by water is reacted to glycols. Reactions of this type are exothermic and require appropriately sized heat removal equipment. Adding or mixing water to EO inventories in storage vessels or transportation containers has potentially severe consequences.

Section 11 – TOXICOLOGICAL INFORMATION

11.1 Acute effects

Toxic substance with carcinogenic and mutagenic effects. Acute intoxication leads to central nervous system attenuation and narcotic effects occur. After swallowing possibility of aspiration (passage into the lung) and danger of chemical pneumonia (pulmonaryedema). Product irritates eyes and skin. High vapour concentrations irritate respiratory system and eyes and may lead to fast coma and death. Liquid is absorbed through skin and may develop allergic eruption.

Acute toxicity data:

Parameter	Route	Species	Values	Exposure period
LD50	Oral	Rat	72 mg/Kg	Not applicable
LC50	Inhalation	Rat	800 ppm	4 hours
LC50	subcutaneous	Rat	187mg/kg	Not applicable

Data reference site – https://pubchem.ncbi.nlm.nih.gov/compound/Ethylene-oxide #section=Acute-Effects

11.2 Repeated dose toxicity

Repeated or prolonged inhalation may cause asthama. The substance may have effects on the nervous system

11.3 Sensitisation

May cause skin allergy.

11.4 CMR effects (carcinogenetic, mutagenicity, toxicity for reproduction)

The substance is carcinogenic to humans. May cause heritable genetic damage to human Germ cells.

11.5 Toxicokinetics, metabolism, distribution: NA.

Data reference site - https://www.ilo.org/dyn/icsc/showcard.display?p_version=2&p_card_id=0155

Section 12 –ECOLOGICAL INFORMATION

12.1 Eco toxicity data:

Parameter	Route	Species	Values	Exposure period
LC50	Inhalation	Gold fish	90000 ug/L	24 hours
LC50	Inhalation	Daphnia magna	260000 ug/l	24 hours

https://pubchem.ncbi.nlm.nih.gov/source/hsdb/Ethylene -oxide#section=Ecotoxicity-Values-(Complete)

12.2 Mobility: Very high mobility in soil.

Data: https://pubchem.ncbi.nlm.nih.gov

Persistence and degradability: Ethylene oxide hydrolyzes to ethylene glycol. Biodegradation is expected in a wastewater treatment plant.

12.2 Bio accumulative potential: The potential for bio concentration in aquatic organisms is low.

Data: https://pubchem.ncbi.nlm.nih.gov

12.3 Results of PBT assessment Persistence and Degradation: Photo-degrade in air.

12.4 Other adverse effects: Environmental Fate: A high adsorptive in soil is expected.

Section 13– DISPOSAL CONSIDERATION

Local Legislation: Disposal should be in accordance with applicable regional, national, and local laws and regulations. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways. Generators of waste (Equal to or greater than 100 kg/mol), containing this contaminant, EPA hazard waste number U-115, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

13.1 Recommended disposal methods for the substance / preparation

Product reuse or disposal in accordance with valid waste legislative regulations.

Recommended disposal methods for contaminated packaging

Product is transported in tank-vehicles.

13.2 Waste management measures that control exposure of humans and environment

Proceed in accordance with valid health, air and water legislative regulations.

13.4 W**aste regulation:** Follow local regulation

Section 14– TRANSPORT INFORMATION

International Transport Regulation:
ADR/RID (Road/Rail), IMDG (Sea) and ICAO/IATA (Air)

14.1

Proper Shipping Name: Ethylene Oxide
Hazard Class: Class 2.3 Toxic; Subsidiary Risk 2.1 Flammable
UN Number: 1040
Emergency Action Code: 2PE
Packing Instructions: P200
Portable Tank Instructions: T50/TP20

14.2 Special transport precautionary measures: Refer to UN Transport of Dangerous Goods/IMDG Code.

Section 15– REGULATORY INFORMATION

(M)SDS format on a 16 Section based on guidance provided in:

Indian Regulation:
Manufacture, Storage and Import of Hazardous Chemicals Rule, 1989.
The Factories Act 1948
International Regulations:
European SDS Directive
ANSI MSDS Standard
ISO 11014-1 1994
WHMIS Requirements
United States
Hazard Communication Standard
Canada
Hazardous Products Act and Controlled Products Regulations
Europe
Dangerous Substance and Preparations Directives

Australia
National Model Regulations for the Control of Workplace Hazardous Substances

The Globally Harmonized System of Classification and Labeling of Chemicals endorsed by The UN Economic and Social Council

*RISK PHRASES: R 12 Extremely Flammable, R 23 Toxic by inhalation, R 45 May cause cancer, R 46 may cause heritable genetic damage, R 36/37/38 Irritating to eyes ,respiratory system & skin

*SAFETY PHRASES: S45 In case of accident or if you feel unwell, seek medical advice immediately, S53 Avoid exposure – obtain special instruction before use. May cause cancer, flammable, Toxic: danger of serious damage to health by prolonged exposure

*These standard risk and safety phrases for use when interpreting (Material) Safety data Sheets are derived from the European Union Regulation, CHIP Regulations - Chemicals (Hazard Information and Packaging for Supply). They are required to be used in (Materials) Safety Data Sheets to identify potential hazards and offer safe handling advice.

Section 16 – OTHER INFORMATION

Training instructions
Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid principles.
Tremcard details/Reference: Refer Section 14
Local bodies involved (Applicable only with in India): Local District Authority and Local Crisis Group

(M)SDS Revision Status:

Date of Revision	Revised Sections	Supercedes
Sep. 01, 2009	Format revised	Feb. 01, 2008
Sep. 01, 2011	Section 4 (4.3)	Sep. 01, 2009
Aug. 01, 2013	Section 2 NFPA Hazard statement	Sep. 01, 2011
July 27,2016	Section 2,8,11,12 & 14	Aug. 01, 2013
Sept 28, 2022	Section 1,2,3,5,6,7,8,9,10,11,12	July 27, 2016

This (M) SDS is issued by Hazira, Vadodara, Dahej and Nagothane Manufacturing Divisions of Reliance Industries Limited.

Contact Details: For any enquiry/comment regarding this (Material) Safety Data Sheet, kindly contact the respective Site SSM Office (Contact details mentioned on Page No 1)

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