Poly(ethylene oxide) [MW 4,000,000]

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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SECTION 1: Identification

1.1. Identification

Product form : Mixture

Trade name : Poly(ethylene oxide) [MW 4,000,000]

Product code : 04030

Formula : (CH2CH2O)x

1.2. Recommended use and restrictions on use

Recommended use : Use as laboratory reagent, Manufacture of substances

1.3. Supplier

Supplier
Polysciences
400 Valley Road
Warrington, PA 18976 - United States
T +1 215 343 6484 - F +1 215 343 0214
info@polysciences.com - www.polysciences.com

1.4. Emergency telephone number

Emergency number : 24-hour emergency phone number ChemTel 1-800-255-3924

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Acute toxicity (inhalation) Category 4 — Harmful if inhaled
Serious eye damage/eye irritation Category 2A — Causes serious eye irritation

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Warning

Hazard statements (GHS US) : Causes serious eye irritation
Harmful if inhaled

Precautionary statements (GHS US) : Avoid breathing dust/fume/gas/mist/vapors/spray.
Wash hands, forearms and face thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Polyethylene glycol	(CAS-No.) 25322-68-3	91 – 100	STOT SE 3, H335

Name	Product identifier	%	GHS US classification
Ammonia	(CAS-No.) 7664-41-7	0 – 5	Flam. Gas 2, H221 Acute Tox. 3 (Inhalation), H331 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400
Ethylene oxide	(CAS-No.) 75-21-8	0 – 5	Flam. Gas 1, H220 Press. Gas (Liq.), H280 Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Inhalation), H331 Acute Tox. 3 (Inhalation:gas), H331 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H335 Aquatic Acute 3, H402
Ethylamine	(CAS-No.) 75-04-7	0 – 5	Acute Tox. 4 (Inhalation:gas), H332 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Acute 3, H402

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after eye contact : Eye irritation.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store at room temp. Store in a well-ventilated place. Keep cool.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Poly(ethylene oxide) [MW 4,000,000]	
No additional information available	

Ammonia (7664-41-7)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Ammonia
ACGIH TWA (ppm)	25 ppm
ACGIH STEL (ppm)	35 ppm
Remark (ACGIH)	TLV® Basis: Eye dam; URT irr
Regulatory reference	ACGIH 2020
USA - OSHA - Occupational Exposure Limits	
Local name	Ammonia
OSHA PEL (TWA) (mg/m³)	35 mg/m³
OSHA PEL (TWA) (ppm)	50 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
US IDLH (ppm)	300 ppm
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA) (mg/m³)	18 mg/m³
NIOSH REL TWA [ppm]	25 ppm
NIOSH REL (STEL) (mg/m³)	27 mg/m³
NIOSH REL STEL [ppm]	35 ppm

Ethylene oxide (75-21-8)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Ethylene oxide
ACGIH TWA (ppm)	1 ppm
Remark (ACGIH)	TLV® Basis: Cancer; CNS impair. Notations: A2 (Suspected Human Carcinogen)
ACGIH chemical category	Suspected Human Carcinogen
Regulatory reference	ACGIH 2020
USA - ACGIH - Biological Exposure Indices	
Local name	ETHYLENE OXIDE
Biological Exposure Indices (BEI)	5000 pmol/g Globin Parameter: N-(2-hydroxyethyl)valine (HEV) - Medium: hemoglobin adducts - Sampling time: Not critical - Notations: Ns 5 µg/g Kreatinin Parameter: S-(2-hydroxyethyl)mercapturic acid (HEMA) - Medium: urine - Sampling time: End of shift - Notations: Pop, Ns
ACGIH remark (BEI)	The value of HEV hemoglobin adducts applies to workers having representative Ethylene oxide exposure during the previous 120 days
Regulatory reference	ACGIH 2020

USA - OSHA - Occupational Exposure Limits	
OSHA PEL (TWA) (ppm)	1 ppm
OSHA PEL (STEL) (ppm)	5 ppm (see 29 CFR 1910.1047)
USA - IDLH - Occupational Exposure Limits	
US IDLH (ppm)	800 ppm
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA) (mg/m³)	0.18 mg/m³ (less than stated value)
NIOSH REL TWA [ppm]	0.1 ppm (less than stated value)
NIOSH REL (ceiling) (mg/m³)	9 mg/m³
NIOSH REL C [ppm]	5 ppm

Ethylamine (75-04-7)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Ethylamine
ACGIH TWA (ppm)	5 ppm
ACGIH STEL (ppm)	15 ppm
Remark (ACGIH)	TLV® Basis: URT irr. Notations: Skin
ACGIH chemical category	Skin - potential significant contribution to overall exposure by the cutaneous route
Regulatory reference	ACGIH 2020
USA - OSHA - Occupational Exposure Limits	
Local name	Ethylamine
OSHA PEL (TWA) (mg/m³)	18 mg/m³
OSHA PEL (TWA) (ppm)	10 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
US IDLH (ppm)	600 ppm
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA) (mg/m³)	18 mg/m³
NIOSH REL TWA [ppm]	10 ppm

Polyethylene glycol (25322-68-3)	
USA - AIHA - Occupational Exposure Limits	
WEEL TWA (mg/m³)	10 mg/m³ (MW>200-aerosol)

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Protective gloves

Eye protection:

Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. [In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Appearance	:	White powder.
Color	:	Mixture contains one or more component(s) which have the following colour(s): Colorless
Odor	:	There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour: sharp intensely irritating ammonia-like
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	no data
Freezing point	:	Not applicable
Boiling point	:	no data
Flash point	:	no data
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	no data
Relative vapor density at 20°C	:	no data
Relative density	:	No data available
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	Not applicable
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Harmful if inhaled.

Poly(ethylene oxide) [MW 4,000,000]	
LD50 oral rat	> ≥ 4 µg/kg g/Kg
ATE US (gases)	4500 ppmV/4h
ATE US (vapors)	11 mg/l/4h
ATE US (dust, mist)	1.5 mg/l/4h

Ammonia (7664-41-7)	
LD50 oral rat	350 mg/kg
LC50 Inhalation - Rat [ppm]	2000 ppm/4h

Ethylene oxide (75-21-8)	
LD50 oral rat	72 mg/kg
LC50 Inhalation - Rat [ppm]	800 ppm/4h

Ethylamine (75-04-7)	
LD50 oral rat	400 mg/kg
LD50 dermal rabbit	390 mg/kg
LC50 Inhalation - Rat [ppm]	5540 ppm/1h

Polyethylene glycol (25322-68-3)	
LD50 oral rat	22 g/kg
LD50 dermal rabbit	> 20 g/kg

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Causes serious eye irritation.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Ethylene oxide (75-21-8)	
IARC group	1 - Carcinogenic to humans
National Toxicity Program (NTP) Status	Known Human Carcinogens
In OSHA Hazard Communication Carcinogen list	Yes
In OSHA Specifically Regulated Carcinogen list	Yes

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

Ethylene oxide (75-21-8)	
STOT-single exposure	May cause respiratory irritation.

Ethylamine (75-04-7)	
STOT-single exposure	May cause respiratory irritation.

Polyethylene glycol (25322-68-3)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

Viscosity, kinematic : No data available

Symptoms/effects after eye contact : Eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Ammonia (7664-41-7)	
LC50 fish 1	0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio)

Ammonia (7664-41-7)	
EC50 Daphnia 1	25.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	0.26 – 4.6 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus)

Ethylene oxide (75-21-8)	
LC50 fish 1	73 – 96 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	137 – 300 mg/l (Exposure time: 48 h - Species: Daphnia magna)

Ethylamine (75-04-7)	
LC50 fish 1	≈ 46 mg/l Test organisms (species): Leuciscus idus
LC50 fish 2	> 500 mg/l Test organisms (species): Leuciscus idus
LOEC (chronic)	6.1 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '7 d'
NOEC (chronic)	3.2 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '7 d'

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Ammonia (7664-41-7)	
Partition coefficient n-octanol/water (Log Pow)	-1.14 (at 25 °C)

Ethylene oxide (75-21-8)	
Partition coefficient n-octanol/water (Log Pow)	-0.3 (at 25 °C)

Ethylamine (75-04-7)	
Partition coefficient n-octanol/water (Log Pow)	-0.27

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Ammonia (7664-41-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	100 lb
Section 302 EPCRA Reportable Quantity (RQ)	100 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb

Ethylene oxide (75-21-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 Listed on EPA Hazardous Air Pollutant (HAPS)	
CERCLA RQ	10 lb
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb
Section 302 EPCRA Reportable Quantity (RQ)	10 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb

Ethylamine (75-04-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
CERCLA RQ	100 lb

Polyethylene glycol (25322-68-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).

15.2. International regulations

CANADA

Ammonia (7664-41-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Toxic Substance (CEPA – Schedule I)	Yes

Ethylene oxide (75-21-8)	
Listed on the Canadian DSL (Domestic Substances List)	
Toxic Substance (CEPA – Schedule I)	Yes

Ethylamine (75-04-7)
Listed on the Canadian DSL (Domestic Substances List)

Polyethylene glycol (25322-68-3)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Ammonia (7664-41-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Ethylene oxide (75-21-8)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Ethylamine (75-04-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Polyethylene glycol (25322-68-3)
Listed on the EU NLP (No Longer Polymers) inventory

National regulations

Ammonia (7664-41-7)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on KECL/KECI (Korean Existing Chemicals Inventory) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Japanese Poisonous and Deleterious Substances Control Law Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on CICR (Turkish Inventory and Control of Chemicals) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Ethylene oxide (75-21-8)
Listed on IARC (International Agency for Research on Cancer) Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on KECL/KECI (Korean Existing Chemicals Inventory) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Japanese Poisonous and Deleterious Substances Control Law Japanese Pollutant Release and Transfer Register Law (PRTR Law) Listed as carcinogen on NTP (National Toxicology Program) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on CICR (Turkish Inventory and Control of Chemicals) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Ethylamine (75-04-7)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on KECL/KECI (Korean Existing Chemicals Inventory) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Polyethylene glycol (25322-68-3)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on KECL/KECI (Korean Existing Chemicals Inventory) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on CICR (Turkish Inventory and Control of Chemicals) Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

Ethylene oxide (75-21-8)					
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)	Maximum allowable dose level (MADL)
Yes	Yes	Yes	Yes	2 µg/day	20 µg/day

Component	State or local regulations
Ammonia(7664-41-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List

Component	State or local regulations
Ethylene oxide(75-21-8)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances; U.S. - Pennsylvania - RTK (Right to Know) List
Ethylamine(75-04-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hazard Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

SDS US (GHS HazCom 2012)

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