

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ETHYLENE GLYCOL, INDUSTRIAL GRADE
CAS Number: 107-21-1
Chemical characterization : Ethylene Glycols
Chemical Name : Ethylene Glycol
Synonyms : All Grades includes: Antifreeze, High Purity, Industrial, Polyester Grade

Identified uses : Monomer; Intermediate; Functional Fluids

Prohibited uses : Aerosol applications such as theater fogs, linen sprays, pepper sprays, air sanitizers

Company : Equistar Chemicals, LP
LyondellBasell Tower, Suite 300
1221 McKinney St.
P.O. Box 2583
Houston Texas 77252-2583

Telephone : Customer Service
888 777-0232
Product Safety
800 700-0946

Emergency telephone : CHEMTREC USA 800-424-9300
EQUISTAR 800-245-4532

E-mail address product.safety@lyb.com

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Acute toxicity; Oral	Category 4
Skin irritation	Category 2
Specific target organ systemic toxicity - single exposure; Oral	Category 1
Central nervous system, Kidney	
Specific target organ systemic toxicity - repeated exposure; Oral	Category 2
Kidney	

GHS Classification Scale (1= severe hazard; 4= slight hazard)

Label elements

Hazard symbols :



ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.
 H315 Causes skin irritation.
 H370 Causes damage to organs (Central nervous system, Kidney) if swallowed.
 H373 May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.

Precautionary Statements**: Prevention**

P264 Wash hands thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

Response

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
 P330 Rinse mouth.
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P332 + P313 If skin irritation occurs: Get medical advice/ attention.
 P362 Take off contaminated clothing and wash before reuse.
 P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
 P314 Get medical advice/ attention if you feel unwell.

Storage

P405 Store locked up.

Other hazards

No additional information available.

3. Composition/information on ingredients**Substances****Ingredients**

Chemical Name	CAS-No. EC-No.	Weight %	Component Type
Ethylene glycol	107-21-1	95.0 - 100.0 %	A
Diethylene Glycol	111-46-6	<=5.0 %	C

Key:

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

(A) Substance
(C) Impurity

SECTION 4. FIRST AID MEASURES**First aid procedures**

- General advice : Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.
- If inhaled : If overcome by exposure, remove victim to fresh air immediately.
If breathing is difficult, give oxygen.
- In case of skin contact : Wash thoroughly with soap and water.
- In case of eye contact : Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.
- If swallowed : Rinse mouth with water.

Notes to physician

- Symptoms : Kidney Damage
- Treatment : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES**Flammable properties**

- Flash point : 232 °F (111 °C)
at 1,013.25 hPa (760.00 mm Hg)
- Autoignition temperature : 748 °F (398 °C)
at 1,013.25 hPa (760.00 mm Hg)
- Lower explosion limit : 3.2 vol%
- Upper explosion limit : 15.3 vol%

Fire fighting

- Suitable extinguishing media : SMALL FIRE: Use dry chemicals, CO₂, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.
- Unsuitable extinguishing media : Even if material is water soluble, may not be practical to extinguish fire by water dilution.

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

Protective equipment and precautions for firefighters

- Specific hazards during fire fighting : Ethylene glycol mist in air is a moderate fire and explosion hazard.
Individuals should perform only those fire-fighting procedures for which they have been trained. Fire fighters should wear self-contained breathing apparatus in the positive pressure mode with a full face piece when there is a possibility of exposure to smoke, fumes or hazardous decomposition products. Cool tanks and containers exposed to fire with water.
Cool containers with flooding quantities of water until well after fire is out.
- Special protective equipment for fire-fighters : Wear an approved positive pressure self-contained breathing apparatus and firefighter turnout gear.
Structural firefighter's protective clothing will only provide limited protection.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Methods for containment / Methods for cleaning up : Eliminate all sources of ignition.
All equipment used when handling this product must be grounded.
Do not touch or walk through spilled material.
Stop leak if you can do it without risk.
Prevent entry into waterways, sewers, basements or confined areas.
A vapor suppressing foam may be used to reduce vapors.
Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Use clean non-sparking tools to collect absorbed material.
For large spills, dike and pump into properly labeled containers for reclamation or disposal. For small spills, soak up with absorbent material and place in properly labeled containers for disposal.
Report spills or leaks to the proper regulatory authorities.

SECTION 7. HANDLING AND STORAGE**Handling**

- Advice on safe handling : Avoid open heating or agitation that may generate vapors or mists.
Do not handle near heat, sparks, or flame. Avoid contact with incompatible agents. Use only with adequate ventilation/personal protection. Avoid contact with eyes, skin and clothing. Do not enter storage area unless adequately ventilated. Metal containers involved in the transfer of this material should be grounded and bonded.
Containers, even those that have been emptied, will retain

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

product residue and vapor and should be handled as if they were full. Do not eat, drink or smoke in areas where this material is used.

Storage

Requirements for storage areas and containers : Store containers in a cool, dry, ventilated, fire resistant area away from sources of ignition and incompatible materials. Ground all equipment containing this material. Keep container tightly closed and properly labeled.

8. Exposure controls/personal protection**Control parameters****Ingredients with workplace control parameters****Occupational Exposure Limits**

Ingredients	CAS-No.	Type	Limit Value	Basis Revision Date	Additional Information
Ethylene glycol	107-21-1	CEILING	100 mg/m ³ aerosol only	US (ACGIH) 2012	

Consult local authorities for acceptable exposure limits.

Exposure controls**Engineering measures**

General room ventilation plus local exhaust at points of emission to maintain levels of airborne contaminants below exposure limits.

Personal protective equipment

- Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Where unknown concentrations are encountered or during an emergency, use NIOSH approved supplied air respirators.
- Hand protection : Wear chemical resistant gloves such as rubber, neoprene or vinyl.
- Eye and face protection : Safety glasses are recommended for normal use. Use splash goggles when eye contact due to splashing or spraying liquid is possible.
- Skin and body protection : Appropriate protective clothing should be worn to prevent skin contact. The equipment must be cleaned thoroughly after each use.
- Hygiene measures : Selection of appropriate personal protective equipment should

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices.

Wash hands before eating, drinking, smoking, or using toilet facilities.

Take off contaminated clothing and wash before reuse.

Shower after work using plenty of soap and water.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Physical state : liquid at 68 °F (20 °C) (1,013.25 hPa (760.00 mm Hg))

Color : Clear, colorless.

Odor : Slight sweet odor.

Safety data

Flash point : 232 °F (111 °C)
at 1,013.25 hPa (760.00 mm Hg)

Lower explosion limit : 3.2 vol%

Upper explosion limit : 15.3 vol%

Flammability (solid, gas) : Not applicable

Autoignition temperature : 748 °F (398 °C)
at 1,013.25 hPa (760.00 mm Hg)

Decomposition temperature : not determined

pH : no data available

Melting point/range : 9 °F (-13 °C)

Boiling point/boiling range : 387.3 °F (197.4 °C)
at 1,013 hPa (760 mm Hg)

Vapor pressure : 0.1 hPa (0.1 mm Hg)
at 77 °F (25 °C)

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

Density	: 1.11 g/cm ³ at 68 °F (20 °C) (Water = 1)
Water solubility	: Miscible in water.
Partition coefficient: n-octanol/water	: log Pow: -1.36
Viscosity, kinematic	: 145 mm ² /s at 77 °F (25 °C)
Relative vapor density	: 2.14 (Air = 1.0)
Remarks - Other information	: No additional information available.

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Heat, sparks, open flames and strong oxidizing conditions.
Materials to avoid	: Strong oxidizer. Strong acids. Permanganates. Peroxides. Dichromates. Reactive sodium compounds. Sulfur compounds. Alkali metals. Nitrates.
Hazardous decomposition products	: Carbon Monoxide and Carbon dioxide.
Thermal decomposition	: Carbon oxides (CO, CO ₂)
Hazardous reactions	: Hazardous polymerization will not occur. The product is stable.

SECTION 11. TOXICOLOGICAL INFORMATION

Product Summary	: The below given information is based on the assessment of the product including impurities.
Acute toxicity	
Acute oral toxicity	: Classified Harmful if swallowed. Ingestion may include inebriation, nausea and vomiting, metabolic acidosis, and CNS depression. Tachycardia,

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

hypertension, hyperventilation, hypoxia and renal failure are also possible.

: LD50 (Oral): 7,712 mg/kg
Species: Rat

: Mean lethal dose (estimated): 1,400 - 1,600 mg/kg
Species: Humans

Acute inhalation toxicity : Based on acute toxicity values, not classified.

: LC50: > 2.5 mg/l
Exposure time: 6 HOURS
Species: Rat

Acute dermal toxicity : Based on acute toxicity values, not classified.

: LD50: > 3,500 mg/kg
Species: Mouse

Skin corrosion/irritation : Classified
Causes skin irritation.

Serious eye damage/eye irritation : Based on eye irritation values, not classified.

Respiratory or skin sensitization : Skin sensitization
Not classified
No adverse effect observed.

: Respiratory sensitization
Not classified
no data available

Chronic toxicity

Carcinogenicity : Not classified

Contains a substance that has a positive carcinogenicity study. Inconsistent reports of bladder tumors in rats that received chronic high oral exposure to diethylene glycol can not be attributed to diethylene glycol and are not evidence of a primary carcinogenic effect but rather due to the development of bladder stones and their mechanical damage.

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

- Germ cell mutagenicity : Not classified
No adverse effect observed.
- Reproductive toxicity**
- Effects on fertility /
Effects on or via lactation : Not classified
May cause toxicity to reproduction at high oral doses.
- Effects on Development : Not classified
May be toxic to embryo/fetal development and teratogenic at high exposure levels.
(Based on Diethylene Glycol)
- Target Organ Systemic Toxicant - Single exposure** : Classified, Causes damage to organs., Ingestion may include inebriation, nausea and vomiting, metabolic acidosis, and CNS depression. Tachycardia, hypertension, hyperventilation, hypoxia and renal failure are also possible.
: Routes of exposure: Ingestion
Target Organs: Central nervous system, Kidney
- Target Organ Systemic Toxicant - Repeated exposure** : Classified, May cause damage to organs through prolonged or repeated exposure., Kidney and bladder effects due to the formation of oxalate crystals may occur following prolonged exposure to high oral doses.
: Routes of exposure: Ingestion
Target Organs: Kidney
- Aspiration hazard** : Based on physico-chemical values or lack of human evidence, not classified.

12. ECOLOGICAL INFORMATION**Ecotoxicology Assessment**

- Acute aquatic toxicity : Based on acute aquatic toxicity values, not classified.
- Chronic aquatic toxicity : Not classified, based on readily biodegradability and low acute toxicity.
- Toxicity to fish** :
Low acute toxicity to fish

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

Toxicity to daphnia and other aquatic invertebrates : Low acute toxicity to aquatic invertebrates.

Toxicity to algae : Low toxicity to algae.

Toxicity to bacteria : Low toxicity to sewage microbes.

Toxicity to fish (Chronic toxicity) : Low chronic toxicity to fish.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Low chronic toxicity to aquatic invertebrates.

Persistence and degradability

Biodegradability : Rapidly degradable.
: 90 - 100 %
Testing period: 10 d

Bioaccumulative potential

Bioaccumulation : This material is not expected to bioaccumulate.
: Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 10

Mobility in soil

Distribution among environmental compartments : Stability in soil
Low potential for soil adsorption expected (QSAR calculated value)
: Stability in water
no data available

Additional advice Environmental fate and pathways : No additional information available.

Results of PBT and vPvB assessment

Not applicable.

Other adverse effects

Additional ecological information : No additional information available.

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations. Recovery and reuse, rather than disposal, should be the ultimate goal of handling efforts. The materials resulting from clean-up operations may be hazardous wastes and therefore, subject to specific regulations.
Comply with federal, state, or local regulations for disposal.

SECTION 14. TRANSPORT INFORMATION**DOT**

UN number : 3082
Description of the goods : Environmentally hazardous substance, liquid, n.o.s.
(ETHYLENE GLYCOL)
Class : 9
Packing group : III
Labels : 9

SECTION 15. REGULATORY INFORMATION

If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

SARA 302/304

<u>Component</u>	<u>TPQ</u>	<u>RQ</u>
Ethylene glycol		5000 lbs

SARA 311/312

Based upon available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312:

Immediate (Acute) Health Hazard.

Delayed (Chronic) Health Hazard.

SARA 313

This product contains the following chemicals subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:

<u>Component</u>	<u>Reporting Threshold</u>
Ethylene glycol	1.0%

State Reporting

This material is not known to contain a chemical substance known to the State of California to cause cancer, reproductive, or developmental toxicity under California Proposition 65. However, LyondellBasell has not tested for the presence of listed chemical substances.

SAFETY DATA SHEET

lyondellbasell

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

This product contains the following chemicals regulated by New Jersey's Worker and Community Right to Know Act:

107-21-1 Ethylene glycol

This product contains the following chemicals regulated by Massachusetts' Right to Know Law:

107-21-1 Ethylene glycol

This product contains the following chemicals regulated by Pennsylvania's Right to Know Act:

107-21-1 Ethylene glycol

111-46-6 Diethylene Glycol

Other international regulations**Global Inventory Status**

The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.

*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant
Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant
Taiwan	TCSCA	Compliant

REACH status

If the product has been purchased from any company of the LyondellBasell group of companies registered in the European Union, we confirm that the chemical substance in this product has been pre-registered or, where required under REACH, registered, and that we have the intention to proceed with any required registration in accordance with the deadlines set forth in REACH. (Regulation (EU) No. 1907/2006)

Contact product.safety@lyb.com for additional global inventory information.

SECTION 16. OTHER INFORMATION**Further information****HMIS Classification**

: Health Hazard: 1
 Chronic Health Hazard: *
 Flammability: 1
 Physical hazards: 0
 PPE: Splash Goggles, Gloves,

1*	1	0	H
----	---	---	---

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

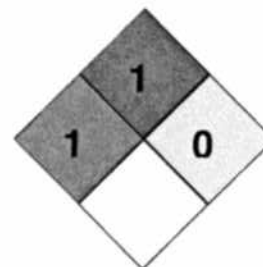
Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

Apron, Vapor Respirator

NFPA Classification : Health Hazard: 1
Fire Hazard: 1
Instability: 0

**Other Information**

HMIS rating scale (0 = minimal hazard; 4 = severe hazard)

NFPA rating scale (0 = minimal hazard; 4 = severe hazard)

Material safety datasheet sections which have been updated:

Revised Section(s): 1 4 11 15 March 17 2015

Disclaimer

This document is generated for the purpose of distributing health, safety, and environmental data.

Information is correct to the best of our knowledge at the date of the SDS publication.

It is not a specification sheet nor should any displayed data be construed as a specification.

Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally. **SELLER MAKES NO WARRANTY; EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY) OTHER THAN AS SEPARATELY AGREED TO BY THE PARTIES IN A CONTRACT.**

This product(s) may not be used in:

(i) any U.S. FDA Class I, Health Canada Class I, and/or European Union Class I medical devices, without prior notification to Seller for each specific product and application; or (ii) the manufacture of any of the following, without prior written approval by Seller for each specific product and application: U.S. FDA Class II Medical Devices; Health Canada Class II or Class III Medical Devices; European Union Class II Medical Devices; film, overwrap and/or product packaging that is considered a part or component of one of the aforementioned medical devices; packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration; tobacco related products and applications, electronic cigarettes and similar devices, and pressure pipe or fittings that are considered a part or component of a nuclear reactor. Additionally, the product(s) may not be used in: (i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices; (ii) applications involving permanent implantation into the body; (iii) life-sustaining medical applications; and (iv) lead, asbestos or MTBE related applications. All references to U.S. FDA, Health Canada, and European Union regulations include another country's equivalent regulatory classification.

Alkylate, Duopac, Duoprime, Filmex, MPDIOL, Polymeg, SAA-100, SAA-101, TBAc, Tebol, T-Hydro, and Tufflo are trademarks owned or used by the LyondellBasell family of companies. Duopac, Duoprime, Filmex, MPDIOL, Polymeg, Tebol, T-Hydro and Tufflo are registered in the U.S. Patent and Trademark Office.

ETHYLENE GLYCOL, INDUSTRIAL GRADE

Gen. Variant: SDS_US_GHS

Version 1.1

Revision Date 03/23/2015

Print Date 04/13/2015

SDS No.: 3265

Language Translations

The information presented in this document has been translated from English by a vendor LyondellBasell believes to be reliable. LyondellBasell and its vendor have made a good-faith effort to verify the accuracy of the translation, but assume no liability or other responsibility for any errors that may have occurred. Please refer to our web site (www.lyondellbasell.com) for the original document written in English.