# Material Safety Data Sheet

HUNTSMAN
Enriching lives through innovation

## ETHYLENE GLYCOL INDUSTRIAL

## 1 . Product and company identification

**Product name** : **ETHYLENE GLYCOL INDUSTRIAL**
**Material uses** : Component of a Polyurethane System
**(M)SDS #** : 00035025
**Validation date** : 9/3/2013.
**Supplier/Manufacturer** : Huntsman International LLC
P.O. Box 4980
The Woodlands, TX 77387

Technical Information: (281) 719-7780
E-Mail: MSDS@huntsman.com

Distributed By:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

**In case of emergency** : Chemtrec: (800) 424-9300 or (703) 527-3887

## 2 . Hazards identification

**Physical state** : Liquid.
**Odor** : Odorless.
**Color** : Clear, colorless.

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Emergency overview** : DANGER!

MAY BE FATAL IF SWALLOWED. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE BIRTH DEFECTS.

Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Do not get on skin or clothing. Avoid contact with eyes. Wash thoroughly after handling.

**See toxicological information (Section 11)**

**GENERAL INFORMATION** : Read the entire MSDS for a more thorough evaluation of the hazards.

## 3 . Composition/information on ingredients

| Name | CAS number | % |
|---|---|---|
| Ethylene glycol | 107-21-1 | 60 - 100 |

## 4 . First aid measures

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

## 4 . First aid measures

**Ingestion** : Call medical doctor or poison control center immediately. Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Notes to physician** : Treatment with ethyl alcohol is indicated if toxic ingestion is suspected or if there is metabolic acidosis following ingestion of this product. Administer ethyl alcohol sufficient to maintain blood ethyl alcohol levels of above 100 mg/dL.

4-Methylpyrazole (Fomepizole, Antizole) is also a recognized antidote for this product.

## 5 . Fire-fighting measures

**Flash point** : Closed cup: 111.1°C (232°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]

**Flammable limits** : Lower: 3.2%
Upper: 15.3%

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

**Extinguishing media**

**Suitable** : Use an extinguishing agent suitable for the surrounding fire.

**Not suitable** : None known.

**Special exposure hazards** : 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 or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

**Special remarks on explosion hazards** : Not explosive

## 6 . Accidental release measures

**Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

# 7 . Handling and storage

**Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Storage** : Do not store above the following temperature: <40°C (<104°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

# 8 . Exposure controls/personal protection

| Ingredient | Exposure limits |
|---|---|
| Ethylene glycol | **ACGIH TLV (United States, 3/2012).**<br>C: 100 mg/m³ 0 hours. Form: Aerosol |

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. 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.

**Personal protection**

**Respiratory** : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): nitrile rubber

**Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Recommended: Wear suitable safety spectacles.

## 8 . Exposure controls/personal protection

**Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## 9 . Physical and chemical properties

**Appearance**

**Physical state** : Liquid.

**Color** : Clear, colorless.

**Odor** : Odorless.

**pH** : 6.5 to 7.5

**Boiling/condensation point** : 197.6°C (387.7°F)

**Melting/freezing point** : -13°C (8.6°F)

**Flash point** : Closed cup: 111.1°C (232°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]

**Flammable limits** : Lower: 3.2%
Upper: 15.3%

**Ignition Temperature (Deg C) : SIT > 450 *ASTM-D1929B** : 410 °C

**Auto-ignition temperature** : 398°C (748.4°F)

**Explosive properties** : Not explosive

**Oxidizing properties** : None.

**Vapor pressure** : <0.013 kPa (<0.1 mm Hg) [room temperature]

**Specific gravity** : 1.1

**Water solubility** : 1000 g/l 20 deg C

**Water solubility** : miscible

**Partition coefficient: n-octanol/water (log Kow)** : -1.36

**Viscosity** : Kinematic: 0.187 $cm^2/s$ (18.7 cSt at 20°C)

**Density** : 1.113 $g/cm^3$

**Vapor density** : 2.2 [Air = 1]

**Evaporation rate (butyl acetate = 1)** : <1 (butyl acetate = 1)

## 10 . Stability and reactivity

**Chemical stability** : The product is stable.

**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

**Conditions to avoid** : No specific data.

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

# 11 . Toxicological information

## Acute toxicity

| Product/ingredient name | Test | Endpoint | Species | Result |
|---|---|---|---|---|
| Ethylene glycol | No official guidelines<br>No official guidelines | LD50 Dermal<br>LD50 Oral | Mouse - Male, Female<br>Rat - Male, Female | >3500 mg/kg<br>7712 mg/kg |

## Sensitizer

| Product/ingredient name | Test | Route of exposure | Species | Result |
|---|---|---|---|---|
| Ethylene glycol | No official guidelines | skin | Guinea pig | Not sensitizing |

## Mutagenicity

| Product/ingredient name | Test | Result |
|---|---|---|
| Ethylene glycol | Experiment: In vitro<br>Subject: Bacteria<br>Metabolic activation: +/-<br>Experiment: In vitro<br>Subject: Mammalian-Animal<br>Metabolic activation: +/-<br>Experiment: In vitro<br>Subject: Mammalian-Animal<br>Metabolic activation: +/-<br>Experiment: In vivo<br>Subject: Mammalian-Animal<br>Cell: Germ | Negative<br><br>Negative<br><br>Negative<br><br>Negative |

## Carcinogenicity

| Product/ingredient name | Test | Species | Dose | Exposure | Result/Result type |
|---|---|---|---|---|---|
| Ethylene glycol | No official guidelines<br>No official guidelines | Mouse - Male, Female<br>Rat - Male, Female | 1500 mg/kg<br>1000 mg/kg | 103 weeks<br>24 months; 7 days per week | Negative - Oral - NOAEL<br>Negative - Oral - NOAEL |

## Carcinogenic class

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| Ethylene glycol | A4 | - | - | - | - | - |

## Teratogenicity

| Product/ingredient name | Test | Species | Result/Result type |
|---|---|---|---|
| Ethylene glycol | No official guidelines<br>No official guidelines<br>- | Mouse - Male, Female<br>Rat - Male, Female<br>Mouse - Male, Female | Positive - Oral<br>Positive - Oral<br>Negative - Dermal |

## Potential acute health effects

**Inhalation** : No known significant effects or critical hazards.

**Ingestion** : Very toxic if swallowed.

# 11 . Toxicological information

**Skin contact** : Slightly irritating to the skin.

**Eye contact** : Slightly irritating to the eyes.

**Potential chronic health effects**

| Product/ingredient name | Test | Endpoint | Species | Result |
|---|---|---|---|---|
| Ethylene glycol | OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents | Sub-chronic NOAEL Oral | Rat - Male, Female | 150 mg/kg/d |
| | - | Chronic NOAEL Oral | Rat - Male, Female | 200 mg/kg/d |
| | - | Chronic NOAEL Oral | Mouse - Male, Female | 1500 mg/kg/d |
| | OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents | Sub-acute NOAEL Oral | Rat - Male, Female | 200 mg/kg/d |
| | OECD 410 Repeated Dose Dermal Toxicity: 21/28-day Study | Sub-acute NOEL Dermal | Dog - Male | >4000 mg/kg |

**General** : Contains material that may cause target organ damage, based on animal data.

**Target organs** : Contains material which may cause damage to the following organs: kidneys, liver, bladder.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : Contains material which can cause birth defects.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

**Medical conditions aggravated by over-exposure**

Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

# 12 . Ecological information

**Environmental effects** : Readily biodegradable This product shows a low bioaccumulation potential.

**Aquatic ecotoxicity**

# 12 . Ecological information

| Product/ingredient name | Test | Endpoint | | Exposure | Species | Result | |
|---|---|---|---|---|---|---|---|
| Ethylene glycol | OECD 202 *Daphnia* sp. Acute Immobilisation Test | Acute | EC50 | 48 hours Static | Daphnia | >100 | mg/l |
| | No official guidelines | Acute | ErC50 (growth rate) | 96 hours | Algae | 6500 to 13000 | mg/l |
| | Unknown guidelines | Acute | LC50 | 96 hours Static | Fish | 72860 | mg/l |
| | ISO ISO 8192 | Chronic | EC20 | 30 minutes Static | Bacteria | >1995 | mg/l |
| | Unknown guidelines | Chronic | NOEC | 7 days Static | Daphnia | 8590 | mg/l |
| | Unknown guidelines | Chronic | NOEC | 7 days Static | Fish | 15380 | mg/l |

**Persistence and degradability**

| Product/ingredient name | Test | Period | Result |
|---|---|---|---|
| Ethylene glycol | OECD 301A Ready Biodegradability - DOC Die-Away Test | 10 days | 90 to 100 % |

**Conclusion/Summary** : Readily biodegradable

Ethylene glycol Readily biodegradable

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| Ethylene glycol | - | - | Readily |

**Bioaccumulative potential**

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| Ethylene glycol | -1.36 | - | low |

**Mobility in soil**

**Soil/water partition coefficient ($K_{OC}$)** : 0 to 1

**Other adverse effects** : No known significant effects or critical hazards.

**Other ecological information**

**BOD5** : Not Determined

**COD** : Not Determined

**TOC** : Not Determined

# 13 . Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been

## 13 . Disposal considerations

cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

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

## 14 . Transport information

**Proper shipping name**

**DOT** : Environmentally hazardous substance, liquid, n.o.s. (ETHYLENE GLYCOL). RQ

**TDG** : Not regulated.

**IMDG** : Not regulated.

**IATA** : Not regulated.

| Regulatory information | UN number | Classes | PG* | Label | Additional information |
|---|---|---|---|---|---|
| DOT Classification | UN3082 | 9 | III |  | **Reportable quantity** 5015 lbs / 2276.8 kg [540.41 gal / 2045.7 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements. |
| TDG Classification | Not regulated. | - | - | | - |
| IMDG Class | Not regulated. | - | - | | - |
| IATA-DGR Class | Not regulated. | - | - | | - |

PG* : Packing group

## 15 . Regulatory information

**United States**

**HCS Classification** : Highly toxic material
Target organ effects

**U.S. Federal regulations**

**TSCA 8(b) inventory** : **United States inventory (TSCA 8b)**: All components are listed or exempted.

**TSCA 5(a)2 final significant new use rule (SNUR)** : No ingredients listed.

**TSCA 5(e) substance consent order** : No ingredients listed.

**TSCA 12(b) export notification** : No ingredients listed.

# 15 . Regulatory information

**SARA 311/312** : Immediate (acute) health hazard
Delayed (chronic) health hazard

| | Product name | CAS number | Concentration % |
|---|---|---|---|
| **Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : | Ethylene glycol | 107-21-1 | 99.7 |

**Clean Air Act - Ozone Depleting Substances (ODS)** : This product does not contain nor is it manufactured with ozone depleting substances.

| | Product name | CAS number | Concentration % |
|---|---|---|---|
| **SARA 313 Form R - Reporting requirements** : | Ethylene glycol | 107-21-1 | 99.7 |

**CERCLA Hazardous substances** :

| Components | Concentration % | Section 304 CERCLA Hazardous Substance | CERCLA Reportable Quantity (Lbs) | Product Reportable Quantity (Lbs) |
|---|---|---|---|---|
| Ethylene glycol | 99.7% | Listed | 5000 | 5015 |

## State regulations

**PENNSYLVANIA - RTK** : Ethylene glycol

**California Prop 65** :

## International regulations

**Canada**

**WHMIS (Canada)** : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).

**CEPA DSL** : All components are listed or exempted.

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

**International lists** : **Australia inventory (AICS)**: All components are listed or exempted.
**China inventory (IECSC)**: All components are listed or exempted.
**Japan inventory**: All components are listed or exempted.
**Korea inventory**: All components are listed or exempted.
**Malaysia Inventory (EHS Register)**: Not determined.
**New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
**Philippines inventory (PICCS)**: All components are listed or exempted.
**Taiwan inventory (CSNN)**: Not determined.

## 16 . Other information

**Label requirements** : MAY BE FATAL IF SWALLOWED. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE BIRTH DEFECTS.

**Hazardous Material Information System (U.S.A.)** :

| | | |
|---|---|---|
| **Health** | * | 2 |
| **Flammability** | | 1 |
| **Physical hazards** | | 0 |
| **Personal protection** | | |

**The customer is responsible for determining the PPE code for this material.**

**National Fire Protection Association (U.S.A.)** :


**Date of printing** : **9/3/2013.**

**Date of issue** : 9/3/2013.

**Date of previous issue** : 1/13/2009

**Version** : 2

**Indicates information that has changed from previously issued version.**

**Notice to reader**

***While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.***

***IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.***

***THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.***

***Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.***

***NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE***

## 16 . Other information

***MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.***