SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: GLYCOL ETHER EB
CAS Number: 111-76-2
Chemical characterization: Glycol Ethers
Chemical Name: 2-butoxyethanol
Synonyms: Ethylene glycol monobutyl ether; Glycol butyl ether; Butyl glycol (BG); Ethylene glycol butyl ether (EGBE)

Use of the Substance/Mixture: Solvent, Stabilizers, Intermediate

Company: Equistar Chemicals, LP
LyondellBasell Tower, Suite 300
1221 McKinney St.
P.O. Box 2583
Houston Texas 77252-2583
Telephone: 888 777-0232
Customer Service
800 700-0946
Product Safety
Emergency telephone: CHEMTREC USA 800-424-9300
EQUISTAR 800-245-4532

E-mail address: product.safety@lyondellbasell.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable Liquids</td>
<td>4</td>
</tr>
<tr>
<td>Acute toxicity, Oral</td>
<td>4</td>
</tr>
<tr>
<td>Skin corrosion/irritiation</td>
<td>2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>2A</td>
</tr>
<tr>
<td>Specific target organ systemic toxicity - single exposure, Central nervous system</td>
<td>3</td>
</tr>
</tbody>
</table>

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

Label Elements

Hazard Symbols: !

Signal Word: Warning
Hazard Statements:
- H227 Combustible liquid.
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H336 May cause drowsiness or dizziness.

Precautionary Statements:
- Prevention:
  - P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
  - P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
  - 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.

Response:
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
- P330 Rinse mouth.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.
- P308 + P313 IF exposed or concerned: Get medical advice/ attention.
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P332 + P313 If skin irritation occurs: Get medical advice/ attention.
- P362 Take off contaminated clothing and wash before reuse.

Storage:
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

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

Other hazards:
Repeated exposure may cause skin dryness or cracking.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>&lt;99.5 %</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

First aid procedures

General advice: Consult a physician/doctor if necessary. Inhalation of high vapor concentrations can cause CNS-depression and narcosis. Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. For specific information refer to the Emergency Overview in Section 2 of this SDS. Show this material safety data sheet to the doctor in attendance.

If inhaled: Call a physician or poison control center immediately. Move to fresh air. If unconscious place in recovery position and seek medical advice.

In case of skin contact: If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Clean mouth with water and drink afterwards plenty of water. Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Call a POISON CENTER or doctor/physician.

Notes to physician

Hazards: Causes skin irritation. Moderate to severe eye irritant. Inhalation may cause CNS symptoms like headache,
dizziness, fatigue, muscular, weakness, drowsiness and lack of coordination.

**Treatment**: In vitro results with human red blood cells suggest than humans are more resistant to the hemolytic effects of EGBE than laboratory test animals such as mice, rats, and rabbits. These results suggest that hemolysis and secondary effects observed in laboratory animals are unlikely to occur in humans except in extreme cases when exposure is severe and/or prolonged. Indicators for treatment and observation include metabolic acidosis, urinary excretion of 2-butoxy acetic acid (BAA), hemolysis, or hematuria. Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

### SECTION 5. FIRE-FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Flammable properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flash point</strong></td>
<td>154 - 158 °F (68 - 70 °C)</td>
</tr>
<tr>
<td></td>
<td>at 1,013 hPa (760 mm Hg)</td>
</tr>
<tr>
<td></td>
<td>Method: Tag closed cup</td>
</tr>
<tr>
<td><strong>Autoignition temperature</strong></td>
<td>446 - 473 °F (230 - 245 °C)</td>
</tr>
<tr>
<td><strong>Lower explosion limit</strong></td>
<td>1.1 vol%</td>
</tr>
<tr>
<td><strong>Upper explosion limit</strong></td>
<td>10.6 vol%</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>not applicable</td>
</tr>
</tbody>
</table>

**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**

- Do not use solid water stream.

**Protective equipment and precautions for firefighters**

**Specific hazards during fire fighting**

- Evacuate area.
- Eliminate all ignition sources if safe to do so.
- Flash back possible over considerable distance.
- Fight fire with normal precautions from a reasonable distance.
- Cool closed containers exposed to fire with water spray.

**Special protective equipment for fire-fighters**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighter’s protective clothing will only provide
limited protection.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment. Ensure adequate ventilation. Eliminate all sources of ignition.

Environmental precautions: Do not allow contact with soil, surface or ground water. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant). Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

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.

SECTION 7. HANDLING AND STORAGE

Handling

Advice on safe handling: Containers, even those that have been emptied, will retain 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. After handling, always wash hands thoroughly with soap and water. 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.

Storage

Requirements for storage: Prevent unauthorized access.
areas and containers
No smoking.
Keep away from open flames, hot surfaces and sources of ignition.
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>TWA</td>
<td>20 ppm</td>
<td>2012</td>
<td>US (ACGIH)</td>
</tr>
<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>IDLH</td>
<td>700 ppm</td>
<td>September 2007</td>
<td>NIOSH</td>
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<tr>
<td>2-Butoxyethanol</td>
<td>111-76-2</td>
<td>TWA</td>
<td>50 ppm 240 mg/m3</td>
<td>June 23, 2006</td>
<td>US (OSHA)</td>
</tr>
</tbody>
</table>

Engineering measures
Engineering measures: Ensure that eyewash stations and safety showers are close to the workstation location.
Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment
Eye protection: Wear safety glasses as minimum eye protection. Conditions may warrant the use of chemical goggles and possibly a face shield. Consult your standard operating procedure or safety professional for advice. Use protective eye and face devices that comply with ANSI Z87.1-1987.
Hand protection: The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Skin and body protection: Appropriate protective clothing should be worn to prevent skin contact.
Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures: Selection of appropriate personal protective equipment should 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state: liquid
Color: colorless
Odor: Mild odor.
Ether-like odor.

Safety data

Flash point: 154 - 158 °F (68 - 70 °C)
at 1,013 hPa (760 mm Hg)
Method: Tag closed cup

Lower explosion limit: 1.1 vol%
Upper explosion limit: 10.6 vol%
Flammability (solid, gas): not applicable
Oxidizing properties: Not considered an oxidizing agent.
Autoignition temperature: 446 - 473 °F (230 - 245 °C)
Molecular weight: 118.17 g/mol
Decomposition temperature: not determined

pH: no data available
Melting point/freezing point: -102.6 °F (-74.8 °C)
Boiling point/boiling range: 340 - 344.3 °F (171 - 173.5 °C)
Vapor pressure: 0.8 - 1.0 hPa (0.6 - 0.8 mm Hg)
at 68 °F (20 °C)
Density: 0.90 g/cm³
at 68 °F (20 °C)

Water solubility : Miscible

Partition coefficient: n-octanol/water : log Pow: 0.81
at 77 °F (25 °C)

Viscosity, kinematic : 20 mm²/s
at 68 °F (20 °C)

2.3 mm²/s
at 104 °F (40 °C)

Relative vapor density : 4.1
(Air = 1.0)

Evaporation rate : 0.1

Explosive properties : Not explosive

SECTION 10. STABILITY AND REACTIVITY

Reactivity : May form peroxides in the presence of air.

Chemical stability : Stable under recommended storage conditions.

Conditions to avoid : Heat, flames and sparks.

Materials to avoid : Oxidizing agents
Acids
Bases
Amines
Ammonia
Acid chlorides

Hazardous decomposition products : Carbon oxides

Thermal decomposition : Carbon monoxide, carbon dioxide and unburned hydrocarbons.

Hazardous reactions : No dangerous reaction known under conditions of normal use.
Reacts with air to form peroxides.

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 cause weakness, confusion, anxiety, decreased blood pressure, and CNS depression with collapse and coma.

LD50: 1,414 mg/kg
Species: guinea pig

Test substance: Ethyl tertiary butyl ether

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

High doses may cause CNS depression (fatigue, dizziness and possibly loss of concentration, with collapse, coma and death in cases of severe over-exposure). Exposure to vapor may cause irritation of the eyes, nose, or throat. Inhalation may result in dizziness, headache, weakness, nausea and vomiting.

LC0: > 3.1 mg/l
> 641 ppm
Exposure time: 1 HOURS
Species: guinea pig

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

LD50: > 2,000 mg/kg
Species: guinea pig

Skin corrosion/irritation: Classified
Causes skin irritation.

Serious eye damage/eye irritation: Classified
Causes serious eye irritation.

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

Carcinogenicity: Not classified
Long-term exposure via inhalation at concentrations up to 125 ppm caused an increase in the incidence of liver tumors in male mice and forestomach tumors in female mice. A slight increase in adrenal tumors was observed in female rats. The NTP has determined that EGBE displays some evidence of carcinogenicity in mice, and equivocal evidence of carcinogenicity in female rats.

Germ cell mutagenicity: Not classified
No adverse effect observed.

Reproductive toxicity

Effects on fertility / Effects on or via lactation: Not classified
No adverse effect observed.

Effects on Development: Not classified
No adverse effect observed.

Target Organ Systemic Toxicant - Single exposure:
Routes of exposure: Inhalation
Target Organs: Central nervous system
Classified, May cause drowsiness or dizziness.

: High concentrations may cause central nervous system depression.

Target Organ Systemic Toxicant - Repeated exposure: Based on repeated exposure toxicity values, not classified.

Results from acute and repeat exposure studies in rats, mice and rabbits indicate that EGBE causes injury to red blood cells with subsequent intravascular hemolysis and anemia, and secondary changes in the liver and kidney. Human and guinea pig red blood cells are resistant to EGBE injury and therefore the effects noted in sensitive species are not relevant to humans.

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: Acute toxicity to fish is very low.

Toxicity to daphnia and other aquatic invertebrates: Acute toxicity to freshwater and marine invertebrates is very low.

Toxicity to algae: Acute toxicity to aquatic plants very low.

Toxicity to bacteria: Low toxicity to sewage microbes.

Toxicity to fish (Chronic toxicity): Chronic toxicity to fish is expected to be low.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): Chronic toxicity expected to be low.

Persistence and degradability

Biodegradability: 90.4 %
  Rapidly degradable.
  (After 28 days in a ready biodegradability test)

Bioaccumulative potential

Bioaccumulation: Bioconcentration factor (BCF): 3.16
  Method: (QSAR calculated value)
  This material is not expected to bioaccumulate.

Mobility in soil

Distribution among environmental compartments: Stability in water
  Not expected to hydrolyze readily.
  Contains no functional groups considered likely to be hydrolyzed in water.

Stability in soil
Low absorption to soil particulates predicted

**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.

**SECTION 13. DISPOSAL CONSIDERATIONS**

Further information

Do not dispose of waste into sewer.

Do not contaminate ponds, waterways or ditches with chemical or used container.

Dispose of as hazardous waste in compliance with local and national regulations.

**SECTION 14. TRANSPORT INFORMATION**

**DOT**

**UN number**

NA1993

**Description of the goods**

Combustible liquid, n.o.s.

(ETHYLENE GLYCOL MONOBUTYL ETHER)

**Class**

CL

**Packing group**

III

**Labels**

3

**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**

This product contains no known chemicals regulated under SARA 302/304.

**SARA 311/312**

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

Fire Hazard.
Immediate (Acute) Health Hazard.
SARA 311/312  
SARA 313  
This product contains the following chemicals subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:  

<table>
<thead>
<tr>
<th>Component</th>
<th>Reporting Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butoxyethanol</td>
<td>1%</td>
</tr>
</tbody>
</table>

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.  

This product contains the following chemicals regulated by New Jersey's Worker and Community Right to Know Act:  
111-76-2 2-Butoxyethanol  

This product contains the following chemicals regulated by Massachusetts' Right to Know Law:  
111-76-2 2-Butoxyethanol  

This product contains the following chemicals regulated by Pennsylvania's Right to Know Act:  
111-76-2 2-Butoxyethanol  

Other international regulations  
Global Inventory Status  
The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.  

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Inventory</th>
<th>Status Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>AICS</td>
<td>Compliant</td>
</tr>
<tr>
<td>Canada</td>
<td>DSL</td>
<td>Compliant</td>
</tr>
<tr>
<td>China</td>
<td>IECSC</td>
<td>Compliant</td>
</tr>
<tr>
<td>Europe</td>
<td>REACH</td>
<td>See REACH Compliance Statement</td>
</tr>
<tr>
<td>Japan</td>
<td>ENCS</td>
<td>Compliant</td>
</tr>
<tr>
<td>Korea</td>
<td>KECI</td>
<td>Compliant</td>
</tr>
<tr>
<td>New Zealand</td>
<td>NZIoC</td>
<td>Compliant</td>
</tr>
<tr>
<td>Philippines</td>
<td>PICCS</td>
<td>Compliant</td>
</tr>
<tr>
<td>United States of America</td>
<td>TSCA</td>
<td>Compliant</td>
</tr>
</tbody>
</table>

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@lyondellbasell.com for additional global inventory information.

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification
- Health Hazard: 2
- Flammability: 2
- Physical hazards: 0

NFPA Classification
- Health Hazard: 2
- Fire Hazard: 2
- 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): 2 to 15 Revision Date April 9 2014

Disclaimer

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