



Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE AND CONTACT

Material Name	: Ethylene Glycol Monobutyl Ether (EGMBE) / BC
Uses	: Use as a solvent in paints and coatings (car refinishing)
Product Code	: 0028-01
Supplier	: Chemisol Inc. 3/F Johnson Bldg. #5 D. Muñoz St. Tandang Sora, Quezon City Philippines
Telephone	: (632) 9385388
Fax	: (632) 9383818
Emergency Telephone	: (632) 9385388

2. COMPOSITION/ INFORMATION ON INGREDIENTS

Synonyms	: 2-butoxy-ethanol Butyl Glycol Ether (BGE) Butyl Glycol Ethlene glycol monobutyl ether (EGMBE) Ethlene glycol butyl ether (EGBE) 2-Butoxyethanol Butyl Cellosolve (BC)
CAS No.	: 111-76-2
INDEX No.	: 603-014-00-0
EINECS No.	: 203-905-0

3. HAZARDS IDENTIFICATION

Health Hazards	: Slightly irritating to respiratory system. Harmful by inhalation, in contact with skin and if swallowed. Irritating to skin. Risk of serious damage to eyes.
Signs and Symptoms	: Eye irritation signs and symptoms may include burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include burning sensation, redness, swelling, and/or blisters. Respiratory irritation signs and symptoms may include temporary burning sensation of the nose and throat, coughing and/or difficulty of breathing. If material enters the lungs, signs and symptoms may include coughing, choking, wheezing, difficulty of breathing, chest congestion, and shortness of breath and/or fever.
Aggravated Medical Condition	: Pre-existing conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Eyes. Skin.

4. FIRST AID MEASURES

General Information	: Keep victim calm. Obtain medical treatment immediately.
Inhalation	: Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

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- Skin Contact** : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
- Eye Contact** : Immediately flush eyes with large amounts of water for 15 minutes while holding the eyelids open. Transport to the nearest medical facility for additional treatment.
- Ingestion** : If swallowed, do not induce vomiting: transport to the nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
- Advice to Physician** : Consult a Poison Control Centre for guidance. Ingestion may cause coma, metabolic acidosis, and haemoglobinuria. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- Specific Hazards** : Carbon monoxide may be evolved if incomplete combustion occurs. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- Extinguishing Media** : Alcohol- resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not discharge extinguishing waters into the aquatic environment.
- Protective Equipment for Firefighters** : Wear full protective clothing and self contained breathing apparatus.
- Additional Advice** : Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations.

- Protective Measures** : Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. . Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches, or rivers by using sand earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its low to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas indicator.
- Clean Up Methods** : For large liquid spills (>1 drum), transfer by mechanical means such as vacuum truck to a salvage tank recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

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For small liquid spills (<1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional Advice : See Chapter 13 for information on disposal. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

7. HANDLING STORAGE

General Precautions : Avoiding breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling : Avoid inhaling vapour and/or mists. Avoid contact with the skin. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge ($\leq 1\text{m/sec}$ until fill pipe submerged to twice its diameter, then $\leq 7\text{m/sec}$). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handling Temperature: Ambient.

Storage : Keep container tightly closed. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Must be kept inhibited during storage and shipment as material can polymerise. Vapours from tanks should not be released at atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Storage Temperature: Ambient.

Product Transfer : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials : For containers, or container linings use mild steel, stainless steel.

Unsuitable Materials : Aluminium. Most plastics. Natural, butyl, neoprene or nitrile rubbers.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Additional Information : Glycol ethers can be peroxide formers.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION**Occupational Exposure Limits**

Material	Source	Type	ppm	mg/m3	Notation
EGMBE	ACGIH	TWA	20 ppm		

Additional Information : Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes. Wash hands before eating, drinking, smoking and using toilet.

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Material EGMBE	Sources ACGIH	Hazard Designation Confirmed animal carcinogen with unknown relevance to humans.
Exposure Control	: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Eye washes and showers for emergency use.	
Personal Protective Equipment	: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.	
Respiratory Protection	: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with the respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN141. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.	
Hand Protection	: Longer term protection: Butyl rubber. Incidental contact/Splash protection: natural rubber. Neoprene rubber. Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.	
Eye Protection	: Chemical splash goggles (chemical monogoggles).	
Protective Clothing	: Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.	
Monitoring Methods	: Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods http://www.cdc.gov/niosh/nmam/nmammenu.html Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha-slc.gov/dts/sltc/methods/toc.html Health and Safety Executive (HSE), UK: Methods for the determination of Hazardous Substances http://www.hsl.gov.uk/search.htm	
Environmental Exposure Controls	: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.	

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear Liquid
Odour	: Rancid Sweet.
Boiling point	: Typical 168- 173 °C
Flash point	: 67 °C
Explosion/ Flammability	: 1.1- 10.6 Vol. %
Limits in air	

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Auto-ignition temperature	: 240 °C (ASTM E-659)
Vapour pressure	: 80 Pa at 20 °C
Specific gravity	: 0.89- 0.90 at 20 °C
Water solubility	: at 20°C. Completely miscible.
Vapour density (air=1)	: 4.1
Volatile organic carbon Content	: 61 % (EC/1999/13)
Evaporation rate (nBuAc=1)	: 0.08 (ASTM D 3539, nBuAc=1)

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions of use. Glycol ethers can be peroxide formers. Potential exists for runaway reaction at elevated temperatures in the presence of strong bases and salts of strong bases. Reacts with strong oxidizing agents.
Conditions to Avoid	: Exposure to air. Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	: Strong oxidizing agents. Acids. Strong bases. Salts of strong bases. Aluminium.
Hazardous Decomposition Products	: Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquid and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation. May form explosive peroxides.
Hazardous Reactions	: Hygroscopic.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	: Information given is based on product testing.
Acute Oral Toxicity	: Moderately toxic: LD50 >200- 2000 mg/kg, Rat
Acute Dermal Toxicity	: Moderately toxic: LD50 >400-2000 mg/kg, Rabbit
Acute Inhalation Toxicity	: Moderately toxic: LC50 >2-20mg/l/ 4 hours, Rat
Skin Irritation	: Irritating to skin.
Eye Irritation	: Risk of serious damage to eyes. Effects did not fully reverse over duration of study.
Respiratory Irritation	: Inhalation of vapours or mists may cause irritation to the respiratory system. (2-Butoxyethanol)
Sensitization	: Not a skin sensitizer.
Repeated Dose Toxicity	: Blood: causes haemolysis of red blood cells and/or anaemia in animals, but not considered relevant for man.
Mutagenicity	: Not mutagenic.
Carcinogenicity	: US NTP inhalation studies found no evidence of cancer in rats. In mice, a small increase in tumors of the liver and the forestomach occurred, which are of uncertain relevance to man.
Reproductive and Developmental Toxicity	: Affects reproductive system in animals at doses which produce other toxic effects. Causes foetotoxicity in animals at doses which are maternally toxic.

12. ECOLOGICAL INFORMATION

Acute Toxicity	
Fish	: Low toxicity: LC/EC/IC50 > 1000 mg/l
Aquatic Invertebrates	: Low toxicity: LC/EC/IC50 > 1000 mg/l
Algae	: Low toxicity: LC/EC/IC50 > 100 mg/l
Microorganisms	: Low toxicity: LC/EC/IC50 > 100 mg/l
Mobility	: If product enters soil, it will be highly mobile and may contaminate

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Persistence/degradability	groundwater. Dissolves in water. : Readily biodegradable meeting the 10 day window criterion.
Bioaccumulation	: Oxidizes rapidly by photo-chemical reactions in air. : Not expected to bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal	: Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Container Disposal	: Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recoverer or metal reclaimer.
Local Legislation	: Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION**ADR**

This material is not classified as dangerous under ADR regulations.

RID

This material is not classified as dangerous under RID regulations.

IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is not classified as dangerous under IATA regulations.

Additional Information : **Packaging and Transportation of Dangerous Goods is in compliance with Chapter VIII of the regulations in terms of the National Road Traffic Act of 1996. this regulation is supported by SABS codes of practice SABS 0229 - Packaging of DG for Road Transport, SABS 0233 – IBC for DG and SABS 0232 Parts 1 & 3 – Emergency Response.**

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

EC Label Name	: 2-BUTOXYETHANOL
EC Label/ EC Number	: 203-905-0
EC Classification	: Harmful. Irritant.
EC Annex I Number	: 603-014-00-0
EC Symbols	: Xn Irritant
EC Risk Phrases	: R20/21/22 Harmful by inhalation, in contact with skin and if swallowed. R36/38 Irritating to eyes and skin.
EC Safety Phrase	: S36/37 Wear suitable protective clothing and gloves. S46 If swallowed, seek medical advice immediately and show this container or

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Other Information label.
: In compliance with the Occupational Health and Safety Act 85 of 1993 and satisfying the requirements of regulation GN1179 being the Hazardous Chemicals Substance Regulation.
Ambient Air Quality Regulation (New)

16. OTHER INFORMATION

R-phrases)

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R36/38 Irritating to eyes and skin.

MSDS Version Number : 1.1

MSDS Effective Date : 01.01.2007

MSDS Revisions : A vertical bar (|) in the left margin indicates an amendment from the previous version.

MSDS Regulation : The content and format of this safety data sheet is in accordance with Commission Directive 2001/58/EC of 27 July 2001, amending for the second time Commission Directive 91/155/EEC.

Uses and Restrictions : Use as a solvent only in industrial manufacturing processes

MSDS Distribution : The information in this document should be made available to all who may handle the product

Disclaimer : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.