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Our commitment to sustainability.



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1. PRODUCT IDENTIFICATION

Name: *Glycol Ether EB*

Synonyms: *2-butoxy-1-ethanol, 2-butoxyethanol, ethylene glycol monobutyl ether, ethylene glycol n-butyl ether*

CAS# 111-76-2

Product Uses: *solvent in cleaners, coupling agent in lubricants & coatings*

Supplier *Megaloid Laboratories Limited*
Identifier: *5515 North Service Road, Suite 306*
Burlington, Ontario, Canada
L7L 6G4
Phone: 905-337-7411 / Fax: 905-337-1686

EMERGENCY INFORMATION **Call CHEMTREC - (800) 424-9300 (CCN # 693764)**

2. HAZARDS

GHS Class <i>(category)</i>	Flammable <i>(4)</i>	Acute oral <i>(4)</i>	Acute inhalation <i>(4)</i>	Acute dermal <i>4)</i>	Serious eye irritant <i>(2A)</i>	STOT <i>(3)</i>
Signal Word	WARNING					
Hazard Statements	<i>Combustible liquid (H227)</i>	<i>Harmful if swallowed (H302)</i>	<i>Harmful in contact with skin (312)</i>	<i>Harmful if inhaled (H332)</i>	<i>Causes serious eye irritation (H319)</i>	<i>May cause respiratory irritation. (H335)</i>



Label Pictograms

GHS Precautionary Statements for Labelling

Prevention

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.

P261 Avoid breathing vapours.

P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear eye protection, protective gloves and clothing of butyl rubber
Response	
P301, P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302, P352, P312	IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
P304, P340, P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305, P351, P338	IF IN EYES: rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P332, P313	If skin irritation occurs: Get medical advice/ attention.
P337, P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370, P378	IN CASE OF FIRE: use alcohol-resistant foam to extinguish.
Storage	
P403, P233	Store in a well-ventilated place. Keep container tightly closed.
P403, P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
Disposal	
P501	Dispose of contents and container in accordance with local, regional, national and international regulations.

3. COMPOSITION

Chemical Name:	CAS No.	%	Other Identifiers
<i>2-Butoxyethanol</i>	<i>111-76-2</i>	<i>100</i>	<i>EC # 203-905-0</i>

4. FIRST AID

Inhalation

Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

Skin Contact

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

Eye Contact

Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

Ingestion

Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

First-aid Comments

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The

stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. FIRE FIGHTING & FLAMMABILITY

Extinguishing Media

Suitable Extinguishing Media

Foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water - water jet spreads flames

Specific Hazards Arising from the Product

*Carbon monoxide, nitrogen oxides, smoke, part oxidized hydrocarbon fragments
Cannot accumulate a static charge on agitation or pumping.*

Special Protective Equipment and Precautions for Fire-fighters

Firefighters must wear SCBA. Fire-fighters may enter the area if positive pressure SCBA and full Bunker Gear is worn.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Eliminate all ignition sources. Use grounded, explosion-proof equipment. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

Environmental Precautions

Avoid release to the environment. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

Methods and Materials for Containment and Cleaning Up

Leak Precaution: dyke to control spillage and prevent environmental contamination

Handling Spill: Ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal.

Other Information

Report spills to local health, safety and environmental authorities, as required.

7. HANDLING & STORAGE

Precautions for Safe Handling

Empty containers may contain a flammable / explosive vapour. Always ensure that containers, whether empty or full, are tightly sealed unless in use. Empty containers may contain a flammable/explosive vapour. Never cut, drill, weld or grind on or near this container, whether empty or full. Always replace drum, pail or IBC cap prior to moving the container!

Avoid generating or breathing product vapour. If vapour forms in use, install adequate ventilation to control airborne concentration to regulated limits (see Part 8). If dealing with a spill, and ventilation is impractical, wear a suitable respirator (part IX). If the spill is extensive, use an air-supplied respirator.

This product is more toxic than most industrial solvents. The "skin" designation (Part 8) indicates that liquid and even vapour may be absorbed through the skin in toxic amounts. Avoid skin contact & wash work clothes frequently. An eye bath & safety shower must be available near the workplace.

Conditions for Safe Storage

Store and use in a cool dry environment, away from sources of ignition, heat and oxidizing agents. This product may react with oxygen on prolonged storage (>one year) to form explosive peroxides. Keep containers full & tightly sealed. If prolonged storage of a part container is anticipated, flush headspace with dry nitrogen gas prior to sealing.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	20ppm / 97mg/m ³ (skin)	Ontario STEV	not listed
ACGIH TLV	20ppm / 97mg/m ³ (skin)	ACGIH STEL	not listed
OSHA PEL	25ppm / 120mg/m ³ (skin)	OSHA STEL	not listed

Ventilation	Mechanical ventilation may be required to maintain airborne titre below TWAEVM.
Hands	Nitrile or "Viton" gloves recommended – other types may also protect; consult supplier to confirm suitability.
Eyes	Safety glasses with side shields – always protect the eyes
Clothing	Wear impermeable (above) apron, boots, & long sleeves if there is any likelihood of splashing.

Appropriate Engineering Controls

Ensure adequate ventilation.

9. PHYSICAL PROPERTIES

Appearance	Clear colourless liquid.
Odour	mild, pleasant ether odour
Odour threshold	0.35 ppm
pH	Not applicable
Melting Point/Freezing Point	-75 °C (-103 °F) (freezing)
Initial Boiling Point/Range	168 °C (334 °F)
Flash Point	62 °C (144 °F) (closed cup)
Evaporation Rate	0.08 (n-butyl acetate = 1)
Flammability (Solid, Gas)	Not Available
Upper/Lower Flammability or Explosive Limit	12.7% (upper); 1.1% (lower)
Vapour Pressure	0.76 mm Hg (0.10 kPa) at 20 °C (68 °F)
Vapour Density (air = 1)	4.1
Relative Density (water = 1)	0.902 at 20 °C
Solubility	Very soluble in water; common organic solvents.
Partition Coefficient, n-Octanol/Water (Log Kow)	0.83

Auto-ignition Temperature	238 °C (460 °F)
Conversion Factor	1 ppm = 4.82mg/m ³
Viscosity	3.26 centipoises at 20 °C (68 °F) (dynamic)
Physical State	Liquid
Molecular Weight	118 grams / mole
Molecular Formula	C ₆ H ₁₄ O ₂

10. REACTIVITY

Dangerously Reactive with strong oxidising agents; strong acids; perchloric acid; strong alkalis
Also attacks certain plastics – eg: PVC, PETE, “Viton”, nitrile rubber.

Chemical Stability

Stable; will not polymerize

Possibility of Hazardous Reactions

Decomposition products - none apart from Hazardous Combustion Products.

Conditions to Avoid

Decomposes in the presence of oxygen.

11. TOXICITY

Acute Toxicity	
LD₅₀ (oral)	300-320mg/kg (rabbit), 250-3000mg/kg (rat), 1160-1230mg/kg (mouse), 1415mg/kg (guinea pig)
LD₅₀ (skin)	400-500, 840mg/kg (rabbit), 210, 1200mg/kg (guinea pig), 1200mg/kg (mouse), 2000mg/kg (rat)
LC₅₀ (inhalation)	375-925ppm (rat), 700ppm (mouse), above 630ppm (guinea pig)

Prolonged or repeated exposure may cause skin cracking & dermatitis; repeated absorption may damage liver & kidneys (incl. kidney stones); red cell damage in rodents, probably not in humans.

Skin Corrosion/Irritation

Mild irritant in humans; severe skin irritant in rabbits.

Serious Eye Damage/Irritation

Liquid irritating; vapour irritating above 100ppm; severely irritating in animals.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Headache, dizziness, drowsiness, confusion; at 100-200ppm, nasal discharge & coughing seen.

Skin Absorption

Yes, slowly; toxic effects possible by this route if exposure is extensive.

Ingestion

Headache, dizziness, drowsiness, confusion & vomiting – possibly respiratory failure & coma; ingestion is not an expected route of industrial exposure..

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Harmful effects on the kidneys, crystals or stones in the kidneys, harmful effects on the liver.

Respiratory and/or Skin Sensitization

Not classified based on available information.

Carcinogenicity

Not a carcinogen. IARC: Group 3 – Not classifiable as to its carcinogenicity to humans. ACGIH®: A3 – Confirmed animal carcinogen. NTP: Not specifically listed. OSHA: Not specifically listed.

Reproductive Toxicity

Development of Offspring

No known effect in humans or animals.

Germ Cell Mutagenicity

No known effect on humans or animals.

12. ECOLOGICAL INFORMATION

Bioaccumulation	Not a bioaccumulator.
Persistence and Degradability	Biodegradation - Biodegrades readily & rapidly in the presence of oxygen; 75% in 10 days, 75% in 20 days, 75% in 28 days, 91% in 14 days, 90% in 28 days Abiotic Degradation - reacts with atmospheric hydroxyl (OH) radicals; estimated ½-life in air is 16 hours
Mobility in soil, water	Sufficiently water soluble to move readily in soil & water.
Aquatic Toxicity	
LC50 (Fish, 96hr)	1490 & 2940mg/litre (Lepomis macrochirus), 1250mg/litre (Menidia beryllina), 2950mg/litre (Lepomis macrochirus). 1474mg/litre (Oncorhynchus mykiss) & others
EC50 (Crustacea, 48hr)	600-1000mg/litre (Crangon crangon), 1700 & 1940mg/litre (Daphnia magna, 24hr)
LOEC50 (Algae, 72hrs)	900mg/litre (Scenedesmus quadricauda), 911mg/litre (Pseudokirchnerella subcapitata)
EC5 (Microorganisms)	910mg/litre (Chilomonas paramecium), 700mg/litre (Pseudomonas putida) – this is an EC ₅

13. DISPOSAL

Water Disposal

Do not flush to sewer, recycle solvent if possible; may be incinerated in approved facility

Containers

Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.


Pails must be vented and thoroughly dried prior to crushing and recycling.

IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs).

Steel containers must be inspected, pressure tested & recertified every 5 years.

Never cut, drill, weld or grind on or near this container, even if empty

14. TRANSPORT CLASSIFICATION

Canada TDG	PIN	Not regulated for transport	 U.S.A. only
U.S.A. 49 CFR	PIN	NA1993	
U.S.A. 49 CFR	Shipping Name	Combustible Liquid, n.o.s. (ethylene glycol butyl ether)	
U.S.A. 49 CFR	Class & Packing Group	Combustible, PG III	

Marine Pollutant	Not a Marine Pollutant	
ERAP Required	NO	
Reportable Quantity	NO	
E R G No.	128	

15. REGULATIONS

Canada DSL	On Inventory
U.S.A. TSCA	On Inventory
Europe EINECS	On Inventory

Canadian Regulations

CEPA - National Pollutant Release Inventory (NPRI)

Part 1A, Part 5.

U.S.A. Regulations

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 313

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

Component	Reporting Threshold
2-Butoxyethanol	1.0%

Immediately Dangerous to Life or Health: 700 ppm

Allowable Tolerances: Residues of ethylene glycol monobutyl ether are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert ingredients in pesticide formulations applied to growing crops only. Residues of the following chemical substances are exempted from the requirement of a tolerance when used in accordance with good manufacturing practice as ingredients in an antimicrobial pesticide formulation, provided that the substance is applied on a semi-permanent or permanent food-contact surface (other than being applied on food packaging) with adequate draining before contact with food. ... (c) The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Food-processing equipment and utensils. Ethanol, 2 butoxy- is included on this list.

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time-Weighted Avg: 50 ppm (240 mg/cu m). Skin designation. Vacated 1989 OSHA PEL TWA 25 ppm (120 mg/cu m), skin designation, is still enforced in some states.

NIOSH Recommendations: Recommended Exposure Limit: 10 Hour Time-Weighted Average: 5 ppm (24 mg/cu m). Skin designation.

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 20 ppm. Excursion Limit

Recommendation: Excursions in worker exposure levels may exceed three times the TLV-TWA for no more than a total of 30 min during a work day and under no circumstances should they exceed five times the TLV-TWA, provided that the TLV-TWA is not exceeded. A3: Confirmed animal carcinogen with unknown relevance to humans.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Ethylene glycol monobutyl ether is produced, as an intermediate or a final product, by process units covered under this subpart.

State Drinking Water Guidelines: Maine 3,500 ug/l

TSCA Requirements: Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. 2-Butoxyethanol is included on this list. Effective date: 4/13/89; Sunset date: 6/30/98.

FIFRA Requirements: Residues of ethylene glycol monobutyl ether are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. Residues of the following chemical substances are exempted from the requirement of a tolerance when used in accordance with good manufacturing practice as ingredients in an antimicrobial pesticide formulation, provided that the substance is applied on a semi-permanent or permanent food-contact surface (other than being applied on food packaging) with adequate draining before contact with food. ... (c) The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Food-processing equipment and utensils. Ethanol, 2 butoxy- is included on this list. As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their continued use. Under this pesticide reregistration program, EPA examines newer health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether the use of the pesticide does not pose unreasonable risk in accordance to newer safety standards, such as those described in the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA '88 were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern than those on List C, and with List C containing pesticides of greater concern than those on List D. Butoxyethanol is found on List C. Case No: 3036; Pesticide type: fungicide, antimicrobial; Case Status: No products containing the pesticide are actively registered. Therefore, we are characterizing the case as "cancelled." Under FIFRA, pesticide producers may voluntarily cancel their registered products. EPA also may cancel pesticide registrations if registrants fail to pay required fees or make/meet certain reregistration commitments, or if EPA reaches findings of unreasonable adverse effects. Active ingredient (AI): butoxyethanol; AI Status: The active ingredient is no longer contained in any registered products.

FDA Requirements: Ethylene glycol monobutyl ether is an indirect food additive for use only as a component of adhesives.

Global Inventory Status

Country/Region	Inventory	Status
Australia	AICS	Compliant
China	IECSC	Compliant
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant

16. OTHER INFORMATION

NFPA RATING	Health 2	Flammability 2	Instability 0
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Prepared for Megaloid Laboratories Limited by Richard Koscher
 Preparation Date: November 2009
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Key to Abbreviations	<p>ACGIH® = American Conference of Governmental Industrial Hygienists AIHA® = AIHA® Guideline Foundation HSDB® = Hazardous Substances Data Bank IARC = International Agency for Research on Cancer NFPA = National Fire Protection Association NIOSH = National Institute for Occupational Safety and Health NTP = National Toxicology Program OSHA = US Occupational Safety and Health Administration RTECS® = Registry of Toxic Effects of Chemical Substances</p>
References	<p>CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA ("BIOVIA"). Available from Canadian Centre for Occupational Health and Safety (CCOHS).</p>
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