Infosafe No™	1CH8O	Issue Date : December 2019	RE-ISSUED by CHEMSUPP

Product Name : **ETHYLENE GLYCOL MONOBUTYL ETHER**

Classified as hazardous

1. Identification

GHS Product Identifier ETHYLENE GLYCOL MONOBUTYL ETHER

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Recommended use of the chemical and restrictions on use Solvent for nitrocellulose resins, spray lacquers, quick-drying lacquers, varnishes, enamels, dry cleaning compounds, varnish removers, textile (preventing spotting in printing or dyeing), mutual solvent for 'soluble' mineral oils to hold soap in solution and to improve the emulsifying properties and laboratory reagent.

Other Names

Name	Product Code
ETHYLENE GLYCOL MONOBUTYL ETHER TG	BT018
ETHYLENE GLYCOL MONOBUTYL ETHER LR	BL018
2-Butoxyethanol, Butyl cellosolve, Butyl glycol	

Other Information

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture
Acute Toxicity - Dermal: Category 4
Eye Damage/Irritation: Category 2
Acute Toxicity - Inhalation: Category 4
Acute Toxicity - Oral: Category 4
Skin Corrosion/Irritation: Category 2

Signal Word (s) WARNING

Hazard Statement (s)
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.

Pictogram (s) Exclamation mark

Precautionary statement – Prevention
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash 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 protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – 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.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for

	breathing. P312 Call a POISON CENTER or doctor/physician if you feel unwell. 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.
Precautionary statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.
Other Information	This chemical has been the subject of a PEC reort by NICNAS. Full Public Report - Riority Existing Chemical No.6 - 2-butoxtethanol, NOHSC, 1996. This can be downloaded at: http//www.nicnas.gov.au/publications/CAR/PEC/PEC6/PEC6index.htm

3. Composition/information on ingredients

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Ethylene glycol monobutyl ether	111-76-2	100 %		

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.
Skin	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. Seek medical advice if effects persist.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor at once.

5. Fire-fighting measures

Hazards from Combustion Products	May liberate hazardous combustion gases or vapours possible in the event of fire including carbon monoxide and carbon dioxide.
Specific Methods	Small fire: Use dry chemical, CO2 or water spray. Large fire: Use water spray, fog or foam - Do NOT use water jets. If safe to do so, move undamaged containers from the fire area. Cool containers with flooding quantities of water until well after the fire is out. Avoid getting water inside the containers.
Specific hazards arising from the chemical	May be ignited by heat, sparks or flames. Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Most vapours are heavier than air and will spread along the ground and collect in low or confined areas (drains, basements,tanks). Containers may explode when heated. Fire may produce irritating, poisonous or corrosive gases. Vapours from run-off may create an explosion hazard.
Precautions in connection with Fire	Wear SCBA and fully encapsulating, gas-tight suit when handling these substances. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Spills & Disposal	Eliminate all ignition sources (no smoking, flares, sparks or flame) within at least 25m. All equipment in handling this product must be earthed. Do NOT touch or walk through this product. Stop leak if safe to do so. Prevent entry into waterways, drains, confined areas. Vapour suppressing foam may be used to control vapours. Water spray may be used to knock down or divert vapours. Absorb spill with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect material and place it in loosely-covered metal or plastic containers for later disposal. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.
Personal Precautions	Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)

Clean-up Methods - Small Spillages Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum. Put leaking containers

Environmental Precautions Avoid release to the environment.

7. Handling and storage

Precautions for Safe Handling Use in well ventilated areas away from all ignition sources. Avoid prolonged or repeated contact with skin and eyes . Avoid generation of vapours/aerosols. Under no circumstances eat, drink or smoke while handling this material. Wash hands and face thoroughly after working with material. Contaminated clothing should be removed and washed before reuse.

Conditions for safe storage, including any incompatabilities Store in cool place and out of direct sunlight. Store in well ventilated area. Store away from sources of heat or ignition. Keep container tightly closed and dry

Storage Regulations Refer Australian Standard AS 1940-2004 'The storage and handling of flammable and combustible liquids'.

Additional information on precautions for use Care should be taken to remove any peroxides present before distilling to low volume.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Ethylene glycol monobutyl ether	242	50	96.9	20	

Other Exposure Information These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
A time weighted average (TWA) has been established for 2-butoxyethanol (Safe Work Australia) of 96.9 mg/m³, (20 ppm). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. A Short term exposure limit (STEL) has been established for 2-butoxyethanol (Safe Work Australia) of 542 mg/m³, (50 ppm). The exposure value at the STEL is the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

Appropriate engineering controls Maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.

Respiratory Protection Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

Eye Protection The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336. Recommendation: Goggles or face-shield.

Hand Protection Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.

Personal Protective Equipment Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

Footwear Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Clear, colourless liquid.
Odour	Slightly etheral; mild rancid odour.
Boiling Point	166 °C
Solubility in Water	Miscible.
Solubility in Organic Solvents	Soluble in alcohol and ether.
Specific Gravity	0.9019
Vapour Pressure	0.1 mm Hg @ 20 °C
Vapour Density (Air=1)	4.1 (air = 1)
Evaporation Rate	0.1 (butyl acetate = 1)
Viscosity	6.4 cp
Volatile Component	%volatile by volume 100
Partition Coefficient: n-octanol/water	log Pow: 0.83
Flash Point	67 °C - closed cup
Flammability	Combustible liquid.
Auto-Ignition Temperature	233 - 244 °C
Flammable Limits - Lower	1.1 %
Flammable Limits - Upper	10.6 %
Molecular Weight	118.17
Other Information	Dielectric constant: 9.4 @ 20 °C Refractive index: 1.4190 @ 25 °C High dilution ratio with petroleum hydrocarbons.

10. Stability and reactivity

Chemical Stability	Stable under normal use conditons. Sensitive to air. Formation of peroxides possible.
Conditions to Avoid	Heat, flames, ignition sources and incompatibles.
Incompatible Materials	Strong oxidizing agents, strong alkalis and aluminium. Attacks some types of rubber, plastics and coatings.
Hazardous Decomposition Products	May liberate hazardous combustion gases or vapours possible in the event of fire including carbon monoxide and carbon dioxide.
Possibility of hazardous reactions	Reacts with incompatibles.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Acute Toxicity - Oral	LD50 (rat): 470 mg/kg
Acute Toxicity - Dermal	LD50 (rabbit): 220 mg/kg
Ingestion	Harmful if ingested. Ingestion of this product causes irritation of the mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract. Other symptoms include nausea, vomiting, and

	diarrhea. May cause systemic poisoning with symptoms parelleling those of inhalation.
Inhalation	Harmful by inhalation. Inhalation of the product vapours will cause irritation of the mucous membranes in the nose, throat and respiratory system. Other symptoms include of coughing, and dyspnoea, headache, nausea, shortness of breath. High concentrations have a narcotic effect.
Skin	Harmful in contact with skin. Contact causes irritation, redness, itching and pain. Danger of skin absorptions - may be absorbed through the skin with possible systemic effects.
Eye	Irritating to the eyes. Eye contact will cause tearing, stinging, blurred vision and redness. Splashes can cause severe pain.
Respiratory sensitisation	Not classified based on available information.
Skin Sensitisation	Not classified based on available information.
Germ cell mutagenicity	Not classified based on available information.
Carcinogenicity	2-Butoxyethanol [111-76-2] is evaluated in the IARC Monographs (Vol. 88; in preparation) as Group 3: Not classifiable as to carcinogenicity to humans.
Reproductive Toxicity	2-Butoxyethanol has been found to produce toxic effects in pregnant rats at about 200 ppm, with no apparent increase in congenital defects among the offspring. It did not cause testicular atrophy in males.
STOT-single exposure	Not classified based on available information.
STOT-repeated exposure	Not classified based on available information.
Chronic Effects	No studies are available on the effects of long term exposure to 2-butoxyethanol in humans. Studies indicate that repeated exposure causes blood, liver and kidney disorders in animals. Death in acute studies was generally caused by narcosis or respiratory failure, with kidney failure seen as a secondary cause. The main toxic effect observed in acute and repeated-dose animal studies is haemolysis. The effect varies considerably between species, with rates and mice the most susceptible, rabbits less susceptible, and humans and guinea pigs least susceptible. In animals, the haemolytic effects are transient at low levels in repeated exposure studies. ACUTE TOXICITY COMMENTS: Changes in the kidney, liver, spleen, and lung were found in animals exposed by ingestion, inhalation, and skin absorption. Deaths usually resulted from central nervous system depression, lung damage, and kidney injury. EFFECTS OF BLOOD CELLS: Long-term exposure to 2-butoxyethanol can cause blood changes, including anemia, in rats. Both 2-butoxyethanol and its metabolite butoxyacetic acid can cause breakdown of red blood cells. Humans appear to be less sensitive to this effect than rats.
Serious eye damage/irritation	Specific symptoms in animal studies: Eye irritation test (rabbit): Irritation.
Mutagenicity	No evidence of mutagenic properties.
Skin corrosion/irritation	Specific symptoms in animal studies: Skin irritation test (rabbit): Slight irritation.

12. Ecological information

Persistence and degradability	Biological degradation: 95%/28 d. Readily biodegradable. WATER POLLUTION FACTORS: BOD (biological oxygen demand): 0.71 COD (Chemical oxygen demand): 2.20
Mobility	Bioconcentration potential is low. Potential for mobility in soil is high.
Environmental Fate	Behaviour in environmental compartments: Distribution: log P(o/w): 0.81
Bioaccumulative Potential	No bioaccumulation is to be expected (log P(o/w) <1.0).
Acute Toxicity - Fish	LC50 (L. macrochirus): 1490 mg/l/24 h LC50 (goldfish): 1650 mg/L /24 h
Acute Toxicity - Daphnia	EC50 (Daphnia magna): 1698-1940 mg/l/24 h.
Acute Toxicity - Algae	EC50(green alga Selenastrum capricornutum, biomass growth inhibition): 911 mg/l/ 72h
Acute Toxicity - Bacteria	LC50 (Ps. putida): 700 mg/l.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS). Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	S6

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Chemical Information System, 2005'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Chem-Supply accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
Empirical Formula & Structural Formula	$C_6H_{14}O_2$

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