

Material Safety Data Sheet

Glycol Ether EB

Effective Date May 2005
Page 1 of 5

1. PRODUCT & COMPANY INFORMATION

COMPANY:

TRInternational, Inc.
1218 Third Avenue, Suite 2100
Seattle, WA 98101
206-505-3500
Infotrac 800-505-5053

Emergency Contact:

CANADA TDG

Product Identification Number
Shipping Name
Transport of Dangerous Goods Class

UN – not regulated for transport
not regulated for transport
not regulated for transport

USA 49 CFR

Product Identification Number
Shipping Name
monobutyl ether)
Classification
Label

NA – 1993 (*but see NOTE below*)
COMBUSTIBLE LIQUID, N.O.S. (ethylene glycol

Class 3; Combustible Liquid
Class 3, Combustible Liquid – label bulk

shipments only

WHMIS Class (Canada)

B 3, D 1A, D 2B

HMIS (U.S.A.)

Health – 3, Fire – 1, Reactivity - 0

Material Use
lubricants

solvent, domestic cleaner, coupling agent in

NOTE: This product was regulated for transport as UN 2369. It has been found to no longer meet the criteria for "Toxic Liquid N.O.S.", and is not regulated in Canada (since Aug 20, 2002). In the U.S.A., some producers now ship it as NA 1993, Combustible Liquid N.O.S. In Canada, if the manufacturers' Flash Point is given as below 61°C, it should be given Class 3, Packing Group 3, Flammable Liquid.

2. HAZARDOUS INGREDIENTS

| | CAS NUMBER | % | TWAEV ppm | LD ₅₀ ORAL | (mg/kg) SKIN | LC ₅₀ ppm INHALATIO N |
|---------------------------------|---------------|------|--------------|--------------------------|-----------------|--|
| Ethylene Glycol Monobutyl Ether | 111-76-2 | 100% | 20 (skin) | 320 | 220 | 370 |

3. PHYSICAL CHARACTERISTICS

Odour & Appearance clear, colourless, liquid with pleasant odour – *odour is familiar from domestic cleaners*

Odour Threshold 0.35ppm – 0.5ppm
Vapour Pressure 0.76mmHg / 0.101kPa (20°C)
Evaporation Rate (*Butyl Acetate* = 1) 0.08
Vapour Density (air = 1) 4.1
Boiling Point 171°C / 340°F
Freezing Point -70°C / -103°F
Specific Gravity 0.902 (20/20°C)

Material Safety Data Sheet

Glycol Ether EB

Effective Date May 2005

Page 2 of 5

| | |
|---------------------|---|
| Water Solubility | complete |
| - in other solvents | soluble in most organic solvents |
| Viscosity | 6.4 centipoise (20°C) |
| pH | none – <i>this product does not yield hydrogen ions in solution</i> |

4. FLAMMABILITY & REACTIVITY

| | |
|--------------------------|---|
| Flash Point | 62°C / 143°F (closed cup) – <i>most flash points for EB exceed 61°C, with 2 below 61°C</i> |
| Autoignition Temperature | 238°C / 460°F |
| Flammable Limits | 1.1% – 12.7% |
| Combustion Products | carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments |
| Firefighting Precautions | foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water - water jet spreads flames; firefighters must wear SCBA |
| Static Discharge | will not accumulate a static charge |
| Mechanical Impact | not sensitive |
| Chemical Stability | stable; will not polymerize |
| Reactive With | strong oxidising agents; strong acids or alkalies |
| Decomposition Products | may form explosive peroxides on prolonged exposure to air and light |

5. TOXICOLOGY

EFFECTS OF ACUTE EXPOSURE

| | |
|----------------------|--|
| Skin Contact | drying, mild irritant |
| Skin Absorption | yes, toxic by this route |
| Eye Contact | liquid severely irritating, vapour irritating, redness & pain; may damage eyes |
| Inhalation | very toxic by inhalation, irritating, nasal discharge, chest pain, coughing, nausea, |
| <i>this route of</i> | <i>dizziness, drowsiness, headache – low vapour pressure makes overexposure unlikely</i> |
| Ingestion | burning sensation in mouth, throat, stomach; headache, dizziness, drowsiness, intoxication; metabolic acidosis, renal damage, & respiratory failure reported in 2 cases of deliberate ingestion – <i>ingestion unlikely route of industrial exposure</i> |

EFFECTS OF CHRONIC EXPOSURE

| | |
|-------------------------------|--|
| General | experimental haemolytic agent (blood in urine) in rodents; <i>no such effects have been reported in humans</i> |
| Sensitising | not a sensitiser |
| Carcinogenic | no evidence of carcinogenic or tumorigenic activity in humans |
| Reproductive Effect in humans | experimental mutagen and teratogen in rodents; no known effect |

Material Safety Data Sheet

Glycol Ether EB

Effective Date May 2005
Page 3 of 5

Carcinogenicity & reproductive toxicity of this product was assumed from properties of glycol ethers EM, & EE. EB does NOT follow this pattern.

Synergistic With not known
Estimated LD₅₀ 320mg/kg (oral, rabbit), 470 & 910mg/kg (oral rat), 1230mg/kg (oral, mouse & guinea pig), 1200mg/kg (oral, mouse & guinea pig), 220mg/kg (skin, rabbit)
Estimated LC₅₀ 370 & 600ppm (inhalation, rat), 630ppm (guinea pig), 700ppm (mouse)

Note: LD₅₀ & LC₅₀ vary widely between species. Human toxicity may be lower than the above suggests.

6. PROTECTIVE EQUIPMENT

Hands butyl rubber, "Viton", or "Saranex" gloves
Eyes safety glasses with side shields or chemical goggles
Ventilation mechanical required to maintain vapour concentration below TWAEV, (2 above) respirator with organic vapour cartridge should be available for escape purposes
in the event of ventilation failure
Clothing impervious (hands, above) apron, boots, & long sleeves if splashing is anticipated

7. ENVIRONMENT

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, pick up using shovels, & store in closed containers for disposal
Waste Disposal **do not flush to sewer**; may be incinerated in approved facility
EnvirolInfo this product cannot accumulate in living tissue; diluted, this product is readily and rapidly biodegradable in a wastewater treatment facility; BOD testing gives 73% & 88% degradation in 5 days and 20 days; half life in air estimated as 20 hours

8. STORAGE & HANDLING

Store and use in a cool dry environment, away from sources of ignition, heat and oxidising agents. Use with adequate ventilation. Do not cut, drill, weld or grind on or near this container – vapour inside may ignite and explode. **Warning: explosive peroxides may form on prolonged contact with air (although this process may also require light). If prolonged storage of a part drum is anticipated, flush headspace with nitrogen prior to sealing. Note: this product may be more toxic than common industrial solvents (see Part 5, above). "Skin" designation (see 2, above) attached to the TWAEV means that vapour or liquid may be absorbed through the skin, adding to the total body burden.** Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace.

Material Safety Data Sheet

Glycol Ether EB

Effective Date May 2005
Page 4 of 5

9. FIRST AID

SKIN: Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.

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

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

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.

NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

10. REGULATIONS (U.S.A.)

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH): 700ppm

ALLOWABLE TOLERANCES: Ethylene glycol monobutyl ether is 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.

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

NIOSH RECOMMENDATIONS: NIOSH recommends reducing exposure to lowest feasible concn & preventing contact with the skin. /Glycol ether/ Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 5ppm (24mg/cu m). Skin.

THRESHOLD LIMIT VALUES: 8 hr Time Weighted Avg (TWA): 25ppm. 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. Notice of Intended Change for 2002: These substances, with their corresponding values and notations, comprise those for which a limit has been proposed for the first time or for which a change in the Adopted value is proposed. In each case, the proposed values should be considered trial values for the year following ratification by the ACGIH Board of Directors. If, during the year, no evidence comes to light that questions the appropriateness of these proposals, the values will be reconsidered for adoption as TLVs. A3; Confirmed animal carcinogen with unknown relevance to humans.

ATMOSPHERIC STANDARDS: This action promulgates standards of performance for equipment

Material Safety Data Sheet

Glycol Ether EB

Effective Date May 2005
Page 5 of 5

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 final product, by process units covered under this subpart.

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. Ethylene glycol mono-n-butyl ether is included on this list.

FIFRA REQUIREMENTS: Ethylene glycol monobutyl ether is 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.

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