BARSOL

EASTMAN

> MATERIAL SAFETY DATA SHEET

>100000068/F/USA
>Revision Date: 02/12/1999
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Responsible Care®
A Public Commitment

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: "EASTMAN" EB Solvent

Product Identification Number(s): SPC 25921

Manufacturer/Supplier: Eastman Chemical Company, Kingsport, Tennessee 37662

MSDS Prepared by: Eastman Product Safety and Stewardship, Eastman Chemical Company, Kingsport, TN 37662

For Emergency Health, Safety & Environmental Information, call 800-EASTMAN

For Emergency Transportation Information, call CHEMTREC at 800-424-9300 or call 800-EASTMAN

For Other Information, call your Eastman representative or the Eastman operator at 423-229-2000 (USA)

Chemical Name: 2-butoxyethanol

Synonym(s): EAN 902270; PM 00650-00; ethylene glycol monobutyl ether; 2-butoxyethanol

Molecular Formula: C6H14O2

Molecular Weight: 118.18

Product Use: solvent

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry Number)

100 ethylene glycol monobutyl ether (000111-76-2)

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3. HAZARDS IDENTIFICATION

WARNING!
HARMFUL IF INHALED, ABSORBED THROUGH SKIN, OR SWALLOWED
MAY CAUSE BLOOD DISORDERS BASED ON ANIMAL DATA
CAUSES SKIN AND EYE IRRITATION
PEROXIDE FORMER
COMBUSTIBLE LIQUID AND VAPOR

HMIS Hazard Ratings: Health - 2*, Flammability - 2, Chemical Reactivity - 0

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NFPA Hazard Ratings: Health - 2, Flammability - 2, Instability - 0

NOTE: HMIS and NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

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4. FIRST-AID MEASURES

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention.

Eyes: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Call a physician or poison control center immediately. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person.

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5. FIRE FIGHTING MEASURES

Extinguishing Media: water spray, dry chemical, carbon dioxide (CO2), alcohol foam

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Use water spray to keep fire-exposed containers cool.

Hazardous Combustion Products: carbon dioxide, carbon monoxide

Unusual Fire and Explosion Hazards: Forms peroxides of unknown stability. Classified as combustible.

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6. ACCIDENTAL RELEASE MEASURES

Eliminate all ignition sources. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

For Large Spills: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams.

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7. HANDLING AND STORAGE

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Personal Precautionary Measures: Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: Keep away from heat and flame. Keep from contact with oxidizing materials. Minimize exposure to air. After opening, purge container with nitrogen before reclosing. If peroxide formation is suspected, do not open or move container. Do not distill to near dryness. Addition of water or appropriate reducing materials will lessen peroxide formation.

Storage: Keep container closed. Store away from heat and light.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV): 25 ppm TWA, skin

OSHA (USA) Permissible Exposure Limit (PEL, 1989 Table Z-1-A values or section-specific standards): 25 ppm TWA, skin

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn. Respirator type: mist, organic vapor. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998.

Eye Protection: Wear safety glasses with side shields (or goggles) and a face shield.

Skin Protection: Wear chemical-resistant gloves, boots, and protective clothing appropriate for the risk of exposure. Contact glove manufacturer for specific information.

Recommended Decontamination Facilities: eye bath, washing facilities, safety shower

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9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical Form: liquid
- Color: colorless
- Odor: slight
- Odor Threshold: 0.48 ppm

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- Specific Gravity at 20°C (68°F) (water = 1): 0.902
- Vapor Pressure at 20°C (68°F): 0.8 mbar (0.6 mm Hg)
- Vapor Density (Air = 1): 4.0
- Evaporation Rate (n-butyl acetate = 1): 0.1
- Boiling Point: 169°C (336°F)
- Melting Point: -75°C (-103°F)
- Viscosity at 20°C (68°F): 6.40 mPa.s or cP
- Solubility in Water at Ambient Temperature: complete
- pH: not applicable
- Octanol/Water Partition Coefficient: not available
- Flash Point (Tag closed cup): 62°C (143°F)
- Lower Flammable Limit at 93°C (199°F): 1.1 volume %
- Upper Flammable Limit at 135°C (275°F): 12.7 volume %
- Autoignition Temperature (ASTM D-2155): 238°C (460°F)
- Sensitivity to Mechanical Impact: insensitive at 100 kg-cm
- Sensitivity to Static Discharge: not available

10. STABILITY AND REACTIVITY

Stability: Stable; however, forms peroxides of unknown stability.

Incompatibility: Material can react violently with strong oxidizing agents.

Hazardous Polymerization: will not occur

11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General: May cause blood disorders based on animal data.

Inhalation: Harmful if inhaled.

Eyes: Causes irritation.

Skin: Harmful if absorbed through skin. Causes irritation.

Ingestion: Harmful if swallowed.

Acute Toxicity Data:

Oral LD-50 (rat): 1746 mg/kg
Oral LD-50 (mouse): 1519 mg/kg
Oral LD-50 (guinea pig): 1414 mg/kg
Inhalation LC-50 (mouse): 700 ppm/7 hour(s)
Inhalation LC-50 (female guinea pig): >633 ppm/1 hour(s) (highest concentration tested)
Inhalation LC-50 (male guinea pig): >691 ppm/1 hour(s) (highest concentration tested)

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Dermal LD-50 (rabbit): 435 mg/kg
Dermal LD-50 (guinea pig): >2000 mg/kg (only dose tested)
Skin irritation (guinea pig): strong
Skin irritation (rabbit): moderate
Repeated skin application (rabbit): slight irritation
Skin sensitization (human): none
Eye irritation (rabbit): moderate

Definitions for the following section(s): LOEL = lowest-observed-effect level, NOAEL = no observed-adverse-effect level, NOEL = no-observed-effect level.

>Subchronic Toxicity Data:

> Inhalation study (9 days, rat): LOEL = 86 ppm (target organ effects: red
> blood cell); NOEL = 20 ppm

> Inhalation study (3 months, rat): LOEL = 77 ppm (reduced body weight gain),
> (target organ effects: red blood cell); NOEL = 25 ppm

> Dermal study (13 weeks, rabbit): NOEL = 150 mg/kg/day (highest dose tested)

> Oral study (6 weeks, male rat): LOEL = 222 mg/kg/day (target organ effects:
> red blood cell), (target organ effects: liver); NOEL = not established

>Carcinogenicity Data:

> Inhalation study (male rat, 31, 63, 125 ppm, 2 years): no evidence of
> carcinogenic activity

> Inhalation study (female rat, 31, 63, 125 ppm, 2 years): equivocal evidence
> of carcinogenic activity (pheochromocytoma)

> Inhalation study (male mouse, 63, 125, 250 ppm, 2 years): some evidence of
> carcinogenic activity (hemangiosarcoma of liver)

> Inhalation study (female mouse, 63, 125, 250 ppm, 2 years): some evidence of
> carcinogenic activity (squamous cell papilloma or carcinoma of forestomach)

Developmental Toxicity Data:

Inhalation study (rat): NOEL for developmental toxicity = 200 ppm (highest concentration tested)

Inhalation study (rat): LOEL for embryo/fetotoxicity = 100 ppm; LOEL for maternal toxicity = 100 ppm (target organ effects: red blood cell); NOEL for embryo/fetotoxicity = 50 ppm; NOEL for maternal toxicity = 50 ppm; NOEL for teratogenicity = 200 ppm (highest concentration tested)

Inhalation study (rabbit): LOEL for embryo/fetotoxicity = 200 ppm (highest concentration tested); LOEL for maternal toxicity = 200 ppm; NOEL for embryo/fetotoxicity = 100 ppm; NOEL for maternal toxicity = 100 ppm; NOEL

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for teratogenicity = 200 ppm

Dermal study (rat): NOEL for developmental toxicity = 1.43-2.50 ml/kg/day

Dermal absorption rate (human, in vitro): 0.198 mg/cm2/hour

Metabolism data (male rat): metabolite(s): n-butoxyacetic acid

Mutagenicity/Genotoxicity Data:

Salmonella typhimurium assay (Ames test): negative (+/- activation)
Chromosomal aberration assay: negative (in vitro)
CHO/HGPRT assay: negative (+/- activation)
Mouse micronucleus assay: negative

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12. ECOLOGICAL INFORMATION

Introduction: This environmental effects summary is written to assist in addressing emergencies created by an accidental spill which might occur during the shipment of this material, and, in general, it is not meant to address discharges to sanitary sewers or publicly owned treatment works.

Data for this material have been used to estimate its environmental impact. It has the following properties: a high biochemical oxygen demand and a potential to cause oxygen depletion in aqueous systems, a low potential to affect aquatic organisms, a low potential to affect algal growth, a high potential to biodegrade (low persistence) with unacclimated microorganisms from activated sludge. After dilution with a large amount of water, followed by secondary waste treatment, this material is not expected to cause adverse environmental effects.

Oxygen Demand Data:

ThOD: 2.30 g oxygen/g
COD: 2.18 g oxygen/g
BOD-5 at 3 microliter(s)/l: 1.3 g oxygen/mL
BOD-20 at 3 microliter(s)/l: 1.8 g oxygen/mL

Acute Aquatic Effects Data:

24-h LC-50 (goldfish): 1650-1700 mg/L
24-h EC-50 (daphnid): 1850 mg/L
24-h LC-50 (daphnid): 1720 mg/L
48-h LC-50 (daphnid): 835 mg/L
96-h LC-50 (fathead minnow): 2137 mg/L
96-h LC-50 (bluegill sunfish): 1490 mg/L
168-h LC-50 (guppy): 983 ppm

Acute Algal Effects:

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168-h EC-50 (Selenastrum capricornutum): >1000 mg/L

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13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Incinerate.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

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14. TRANSPORT INFORMATION

- DOT (USA) Status: quantities of 450 liters (119 gallons) or less are not regulated; the following requirements apply to larger quantities:
- Class combustible liquid, packing group III

- Air - International Civil Aviation Organization (ICAO)
- ICAO Status: not regulated

- Sea - International Maritime Dangerous Goods (IMDG)
- IMDG Status: not regulated

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15. REGULATORY INFORMATION

- This document has been prepared in accordance with the MSDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.
- OSHA Classification: hazardous

- California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986): material(s) known to the State to cause cancer: none known to Eastman
- California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986): material(s) known to the State to cause adverse reproductive effects: none known to Eastman

- This document has been prepared in accordance with the MSDS requirements of the WHMIS Controlled Products Regulation.
- WHMIS (Canada) Status: controlled
- WHMIS (Canada) Hazard Classification: B/3, D/1/B

- Carcinogenicity Classification (components present at 0.1% or more):

  - International Agency for Research on Cancer (IARC): not listed
  - American Conference of Governmental Industrial Hygienists (ACGIH): not listed
  - National Toxicology Program (NTP): not listed
  - Occupational Safety and Health Administration (OSHA): not listed

- Chemical(s) subject to the reporting requirements of Section 313 or Title

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III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: 2-butoxyethanol (glycol ether category)

- SARA (U.S.A.) Sections 311 and 312 hazard classification(s): delayed (chronic) health hazard, immediate (acute) health hazard, fire hazard

- US Toxic Substances Control Act (TSCA): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

- Canadian Environmental Protection Act (CEPA) and Domestic Substances List (DSL): This product is listed on the DSL. Any impurities present in this product are exempt from listing.

- European Inventory of Existing Commercial Chemical Substances (EINECS): This product is listed on EINECS. EINECS Number: 2039050

- Australian Inventory of Chemical Substances (AICS) and National Industrial Chemicals Notification and Assessment Scheme (NICNAS): This product is listed on AICS or otherwise complies with NICNAS.

- Japanese Handbook of Existing and New Chemical Substances: This product is listed in the Handbook or has been approved in Japan by new substance notification. MITI Number: 2-407

- Korean Toxic Substances Control Act: This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act. ECL Number: KE-04134

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16. OTHER INFORMATION

Label Statements:

WARNING!
HARMFUL IF INHALED, ABSORBED THROUGH SKIN, OR SWALLOWED
MAY CAUSE BLOOD DISORDERS BASED ON ANIMAL DATA
CAUSES SKIN AND EYE IRRITATION
PEROXIDE FORMER
COMBUSTIBLE LIQUID AND VAPOR

Avoid breathing vapor.
Avoid contact with eyes, skin, and clothing.
Do not taste or swallow.
Do not distill to near dryness.
Keep material from heat, light, and flame.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: If inhaled, move to fresh air. Treat symptomatically. Get medical attention. In case of contact, immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and

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shoes. If easy to do, remove contact lenses. Get medical attention. Wash clothing before reuse. Destroy or thoroughly clean contaminated shoes. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

IN CASE OF FIRE: Use water spray, dry chemical, carbon dioxide (CO2), alcohol foam. Use water spray to keep fire-exposed containers cool.

IN CASE OF SPILL: Eliminate all ignition sources. Flush spill area with water spray. Prevent runoff from entering drains, sewers, and streams.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

CAUTION: FOR MANUFACTURING, PROCESSING OR REPACKING BY TRAINED PERSONNEL

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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