SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **EB Solvent**
Product Description: -
Chemical Formula: $C_4H_9OC_2H_4OH$
Recommended Use: Solvent

COMPANY IDENTIFICATION

Supplier: **UNION PETROCHEMICAL PUBLIC COMPANY LIMITED**
728 Union House Building, Baromratchonnani Rd.,
Bangbumru, Bangplad, Bangkok 10700
Supplier General Contact: +662 881 8288

This (M)SDS is a generic document with no country specific information included.

SECTION 2 HAZARDS IDENTIFICATION

Hazard classification:

Physical Hazards
Flammable liquids: Category 4

Health Hazards
Acute toxicity (Oral): Category 4
Acute toxicity (Dermal): Category 4
Acute toxicity (Inhalation): Category 4
Skin irritation: Category 2
Eye irritation: Category 2A
Specific target organ toxicity - single exposure: Category 3 (Respiratory system)

GHS LABEL ELEMENTS:
Pictogram:

Signal Word: Warning

Hazard Statements:

Physical: H227: Combustible liquid.
Health: H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H332: Harmful if inhaled.
H315: Causes skin irritation.
H319: Cause serious eye irritation.
H335: May cause respiratory irritation.

Precautionary Statements:

Prevention: P210: Keep away from heat/sparks/open flames/hot surfaces.- No smoking. P261: Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray. P264: Wash skin 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/ eye protection/ face protection.

Response: P301 + P312 + P330: 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 cautiously 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 dry sand, dry chemical or 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/ container to an approved waste disposal plant.

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances/Mixtures

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*
2-BUTOXYETHANOL	111-76-2	100%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical advice/ attention.

SKIN CONTACT

Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical advice/attention.

INGESTION

Seek medical advice.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

None known.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Water spray. Dry chemical. Carbon dioxide (CO_2). Foam.
Inappropriate Extinguishing Media: None known.

FIRE FIGHTING

Specific hazards during fire-fighting: Forms peroxides of unknown stability.

Hazardous combustion products: No hazardous combustion products are known

Further information: Combustible liquid and vapor.

Special protective equipment for fire-fighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire-fighting gear.

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

ENVIRONMENTAL PRECAUTIONS

Avoid release to the environment.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13). Prevent runoff from entering drains, sewers, or streams.

SECTION 7 HANDLING AND STORAGE

ADVICE ON SAFE HANDLING

Avoid contact with skin, eyes and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Minimize exposure to air. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage.

CONDITIONS FOR SAFE STORAGE

Keep container tightly closed and in a well-ventilated place.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters/Exposure limits:

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard		Source
2-BUTOXYETHANOL	TWA	20 ppm		ACGIH
2-BUTOXYETHANOL	TWA	5 ppm	24 mg/m^3	NIOSH REL
2-BUTOXYETHANOL	TWA	50 ppm	240 mg/m^3	OSHA Z-1
2-BUTOXYETHANOL	TWA	25 ppm	120 mg/m^3	OSHA P0

ENGINEERING CONTROLS

Ensure adequate ventilation.

PERSONAL PROTECTION

Respiratory Protection: Wear respiratory protection.
Hand Protection: Wear suitable gloves.
Eye Protection: Safety glasses with side-shields.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State:	Liquid
Color:	Colorless
Odour:	Sweet, Ester-like
Odour Threshold:	0.48 ppm

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

pH:	N/D
Freezing Point:	-103 °F / -75 °C
Boiling Point / Range:	340 °F / 171 °C
Flash Point:	144 °F / 62 °C (Closed Cup)
Evaporation Rate:	0.1
Flammability (Solid, Gas):	N/D
Flammable Limits (Approximate volume % in air):	LEL: N/D UEL: N/D
Vapour Pressure:	1.17 hPa at 77 °F / 25 °C
Vapour Density (Air = 1):	4
Specific gravity:	0.90 at 68 °F / 20 °C
Solubility(ies)	
Solubility in Water:	900 g/l completely soluble (77 °F / 25 °C)
Partition coefficient (n-octanol/water):	Pow 6.46 at 68 °F / 20 °C log Pow: 0.81 at 68 °F / 20 °C
Autoignition Temperature:	446 °F / 230 °C at 1,013 hPa Method: ASTM D2155
Decomposition Temperature:	256.5 °F / 124.7 °C Decomposition energy (mass): 21.7 J/g Method: DSC Weak exotherm
Dynamic Viscosity:	3.3 mPa.s at 68 °F / 20 °C
Kinematic Viscosity:	3.642 mm^2/s at 68 °F / 20 °C
Explosive properties:	N/D
Oxidizing properties:	N/D
Molecular weight:	118.2 g/mol

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable under recommended storage conditions.

CHEMICAL STABILITY: Stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS: Forms peroxides of unknown stability.

CONDITIONS TO AVOID: Heat, flames and sparks.

INCOMPATIBLE MATERIALS: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide (CO2), Carbon monoxide

SECTION 11 TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed, in contact with skin or if inhaled.

Product:

Acute oral toxicity:	Remarks: No data available
Acute inhalation toxicity:	Remarks: No data available
Acute dermal toxicity:	Remarks: No data available

Components:

2-butoxyethanol:

Acute oral toxicity:	LD50 Oral (Rat): 1,300 mg/kg
Acute inhalation toxicity:	LC50 (Rat): > 3.9 mg/l Exposure time: 4 h Test atmosphere: vapor
Acute dermal toxicity:	LD50 Dermal (Rat): > 2,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Product:

Remarks: No data available

Components:

2-butoxyethanol:

Species:	Rabbit
Exposure time:	24 h
Result:	Slight

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Remarks: No data available

Components:

2-butoxyethanol:

Species:	Rabbit
Result:	Slight
Exposure time:	24 h

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Product:

Remarks: No data available

Components:

2-butoxyethanol:

Test Type: Skin Sensitization
Species: Guinea pig
Result: negative

Germ cell mutagenicity

Not classified based on available information.

Components:

2-butoxyethanol:

Genotoxicity in vitro: Type: Salmonella typhimurium assay (Ames test)
Metabolic activation: +/- activation
Result: negative

Genotoxicity in vivo: Test Type: Chromosome aberration test in vitro
Species: Mouse
Application Route: intraperitoneal injection
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

2-butoxyethanol:

Species:	Rat, Male and Female
Application Route:	Inhalation
Method:	OECD Test No. 451: Carcinogenicity Studies
Remarks:	negative

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

STOT-single exposure

May cause respiratory irritation.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

2-butoxyethanol:

Species:	Rat
LOAEL:	69 mg/kg
Application Route:	Oral Study
Target Organs:	Liver

Species:	Rat
NOAEL:	150 mg/kg
Application Route:	Dermal Study
Species:	Rat
	152 mg/l
Application Route:	Inhalation study

Aspiration toxicity

Not classified based on available information.

Information on likely routes of exposure

Product:

Inhalation:	Remarks: Harmful if inhaled. May cause respiratory irritation.
Skin contact:	Remarks: Causes skin irritation.
Eye contact:	Remarks: Causes serious eye irritation.
Ingestion:	Remarks: Harmful if swallowed.

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity

Components:

2-butoxyethanol:

Toxicity to fish:	LC50 (Oncorhynchus mykiss (rainbow trout)): 1,474 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates:	EC50 (Daphnia magna (Water flea)): 1,550 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants:	EC50 (Pseudokirchneriella subcapitata (algae)): 1,840 mg/l Exposure time: 72 h
Toxicity to fish (Chronic toxicity):	NOEC (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):	NOEC (Daphnia magna (Water flea)): 100 mg/l Exposure time: 21 d

Persistence and degradability

Components:

2-butoxyethanol:

Biodegradability:	Result: Readily biodegradable. Biodegradation: 90.4 % Exposure time: 28 d

Bioaccumulative potential

Components:

2-butoxyethanol:

Partition coefficient: n-octanol/water:	Pow: 6.46 log Pow: 0.81

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Waste from residues: Dispose of in accordance with local regulations.

SECTION 14 TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number:	NA 1993
Proper shipping name:	Combustible liquid, n.o.s. (ethylene glycol monobutyl ether)
Class:	CBL
Packing group:	III
Labels:	None
ERG Code:	128
Marine pollutant:	no
Remarks:	Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15 REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards: Acute Health Hazard
Fire Hazard

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop. 65
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

The ingredients of this product are reported in the following inventories:

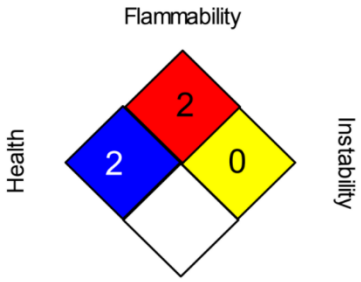
CH INV:	On the inventory, or in compliance with the inventory
DSL:	On the inventory, or in compliance with the inventory
AICS:	On the inventory, or in compliance with the inventory
NZIoC:	On the inventory, or in compliance with the inventory
ENCS:	On the inventory, or in compliance with the inventory
ISHL:	On the inventory, or in compliance with the inventory
KECI:	On the inventory, or in compliance with the inventory
PICCS:	On the inventory, or in compliance with the inventory
IECSC:	On the inventory, or in compliance with the inventory
TCSI:	On the inventory, or in compliance with the inventory
TSCA:	All substances listed as active on the TSCA inventory

TSCA list
No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements**.**

SECTION 16 OTHER INFORMATION

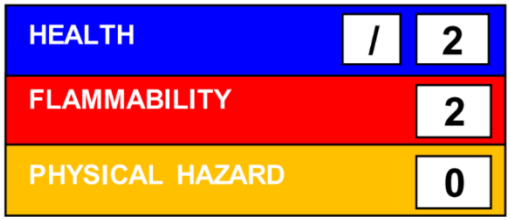
Further information

NFPA 704:



Special hazard

HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL:	USA. NIOSH Recommended Exposure Limits
OSHA P0:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH/TWA:	8-hour, time-weighted average

NIOSH REL/TWA:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA:	8-hour time weighted average
OSHA Z-1 / TWA:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS – Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ – Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date: 11/12/2019
