

Material Safety Data Sheet**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING**

Product Name : **Butyl Glycol Ether (BGE)**
Product Uses : Industrial Use.
Manufacturer/Supplier : NIPPON INTERTRADE CO.,LTD.
58 Soi31/1 Suksawat Road, Rajburana, Rajburana
Bangkok 10140 THAILAND
Telephone : +66 2 460 9266
Fax : +66 2 427 7707

Emergency Telephone : +66 02 460 9266 [working hours] or
Number : +66 096 969 6928 [out of working hours]
Other Information : -

2. HAZARDS IDENTIFICATION

GHS Classification : FLAMMABLE LIQUIDS, Category 4
ACUTE TOXICITY - ORAL, Category 4
ACUTE TOXICITY - SKIN/DERMAL, Category 4
ACUTE TOXICITY - INHALATION, Category 4
SKIN CORROSION/IRRITATION, Category 2
SERIOUS EYE DAMAGE/IRRITATION, Category 2A

GHS label elements**Symbol(s)**

Signal words : Warning

GHS Hazard Statements

Physical Hazards : H227 Combustible liquid.
Health Hazards : H302 Harmful if swallowed.

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H312 Harmful in contact with skin.
H315 Causes skin irritation
H319 Causes serious eye irritation.
H332 Harmful if inhaled.

Environmental Hazards

: Not classified as an environmental hazard under GHS criteria.

GHS 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 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 protective gloves/protective clothing/eye protection/face protection.

Response

: P370+P378: In case of fire: Use appropriate media for extinction.
P301+P312: IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell.
P330: Rinse mouth.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P322: Specific measures (see details on this label).
P363: Wash contaminated clothing before reuse.
P304+P340: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P321: Specific treatment (see details on label).
P332+P313: If skin irritation occurs: Get medical advice/attention.
P362: Take off contaminated clothing and wash before reuse.
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

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	advice/attention.
Storage	: P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
Disposal	: P501 - Dispose of contents/container in accordance with local/regional/ national/international regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	: Butyl glycol ether, Ethylene glycol monobutyl ether, 2-Butoxyethanol
CAS No	: 111-76-2
EINECS No.	: 203-905-0

Classification of components according to GHS

Chemical Name	Synonyms	CAS	Hazard Class (category)	Hazard statement	Conc.
Butyl glycol ether		111-76-2	Flam. Liq.- 4, Act. Oral – 4 Act. Skin – 4 Act. Inh – 4 Skin/Eye Irrit. – 2/2A	H227,H302 , H315,H319, H332	99.5 %

4. FIRST AID MEASURES

General Information	: Keep victim calm. Obtain medical treatment immediately.
Inhalation	: Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.
Skin Contact	: Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
Eye Contact	: Immediately flush eyes with large amounts of water for at

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**Material Safety Data Sheet****Ingestion**

least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

- : If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Notes to physician**Most important symptoms/effects, acute & delayed**

- : Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
- : Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.
- : Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.

Immediate medical attention, special treatment

- : Ingestion may cause coma, metabolic acidosis, and haemoglobinuria. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Specific Hazards

- : Carbon monoxide may be evolved if incomplete combustion occurs. The vapour is heavier than air, spreads along the ground and distant ignition is possible.

Extinguishing Media

- : Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not discharge extinguishing waters into the aquatic environment.

Unsuitable Extinguishing

- : Do not use water in a jet.

Media**Protective Equipment for Fire fighters**

- : Wear full protective clothing and self-contained breathing apparatus.

Other Advice

- : Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES



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Observe all relevant local and international regulations.

Personal Precautions, Protective Equipment and Emergency Procedures

Environmental Precautions

Methods and material for containment and clean up

Additional Advice

- : Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas.
- : Shut off leaks, if possible, without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example, by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- : For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air.

7. HANDLING AND STORAGE

General Precautions

- : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment

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Precautions for safe Handling

of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

- : Avoid inhaling vapour and/or mists. Avoid contact with skin, eyes, and clothing. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handling Temperature: Ambient.

Conditions for safe Storage

- : Keep container tightly closed. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Must be kept inhibited during storage and shipment as material can polymerise. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Storage Temperature: Ambient.

Product Transfer

- : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials

- : For containers, or container linings use mild steel, stainless steel.

Container Advice

- : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Unsuitable Materials

- : Aluminium. Most plastics. Natural, butyl, neoprene or nitrile rubbers.

Other Advice

- : Glycol ethers can be peroxide formers. Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Occupational Exposure Limits

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Material	Source	Type	ppm	mg/m3	Notation
Butyl glycol ether	ACGIH	TWA	20		

Material	Source	Hazard Designation
Butyl glycol ether	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.
	IARC	Class 3 - Not classifiable as to its carcinogenicity to humans.

Biological Exposure Index (BEI) - See reference for full details

Material	Determinant	Sampling time	BEI	Reference
Butyl glycol ether	Butoxyacetic acid (BAA), with hydrolysis in Creatinine in urine	End of shift	200 mg/g	ACGIH BEL (2008)

Appropriate Engineering Controls

: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Eye washes and showers for emergency use.

Individual protection Measures

: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory protection

: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined



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space) use appropriate positive pressure breathing apparatus.

Eye protection

- Chemical splash goggles (chemical monogoggles).
Monogoggles (EN166)

Body protection

- Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

Hand protection

- Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Longer term protection: Natural rubber. Butyl rubber. Incidental contact/Splash protection: Neoprene rubber. Viton. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Monitoring Methods

- Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods, <http://www.cdc.gov/niosh/nmam/nmammenu.html>. Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods, <http://www.oshaslc.gov/dts/sltc/methods/toc.html>. Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances, <http://www.hsl.gov.uk/publications/mdhs.aspx>.

Environmental Exposure

- Local guidelines on emission limits for volatile substances

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Controls must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Colourless Liquid.
Odour	: Characteristic
Odour threshold	: Data not available.
pH	: Not applicable.
Boiling point	: 168-173 °C /334-343 °F
Melting / freezing point	: Typical -77 °C
Flash point	: Typical 67 °C (Closed cup)
Explosion / Flammability limits in air	: 1.1- 10.6 %(V)
Auto-ignition temperature	: 440 °C / 464 °F(ASTM E659)
Vapour pressure	: 80 Pa at 20 °C / 68 °F
Density	: Typical 900 kg/m3 at 20 °C (ASTM D-1298)
Water solubility	: Completely miscible.
n-octanol/water partition coefficient (log Pow)	: 0.81
Decomposition temperature	: Note: Stable under normal conditions of use.
Evaporation rate	: 0.08 (ASTM D 3539, nBuAc=1)
Vapour density (air=1)	: 4.1 at 20 °C / 68 °F
Volatile organic carbon	: 61.4 % (EC/1999/13)

10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions of use.
Conditions to Avoid	: Avoid any source of ignition. Avoid contact with heat, sparks, open flame, and static discharge.
Incompatible materials	: Strong oxidising agents. Acids. Strong bases. Salts of strong bases. Aluminium.
Decomposition Products	: Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation. May form explosive peroxides.
Possibility of hazardous	: Data not available.

**Material Safety Data Sheet****Reactions**

Sensitivity to Static Discharge : Yes, in certain circumstances product can ignite due to static electricity.

11. TOXICOLOGICAL INFORMATION**Information on Toxicological effects**

Basis for Assessment	: Information given is based on product testing, and/or similar products, and/or components.
Likely routes of exposure	: Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.
Acute Toxicity	
Acute Oral Toxicity	: Harmful if swallowed. LD50 >300 - <=2000 mg/kg , Rat
Acute Dermal	: Harmful in contact with skin. LD50 >50 - <=200 mg/kg, Rabbit
Toxicity	
Acute Inhalation	: Harmful if inhaled. LC50 > 10,0 - <= 20,0 mg/l , 4 hours, Rat
Toxicity	
Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/ irritation	: Causes serious eye irritation.
Respiratory or skin Sensitization	: Not expected to be a sensitisier.
Aspiration hazard	: Not considered an aspiration hazard.
Germ cell mutagenicity	: Not mutagenic.
Reproductive and Developmental Toxicity	: Not expected to impair fertility. Not expected to be a developmental toxicant. Affects reproductive system in animals at doses which produce other toxic effects. Causes foetotoxicity in animals at doses which are maternally toxic.
Carcinogenicity	: Not expected to be carcinogenic. US NTP inhalation studies found no evidence of cancer in rats. In mice, a small increase in tumours of the liver and the forestomach occurred, which are of uncertain relevance to man.
Specific target organ toxicity - single exposure	: Inhalation of vapours or mists may cause irritation to the respiratory system.
Specific target organ	: Not expected to be a hazard.

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toxicity - repeated exposure

Blood: causes haemolysis of red blood cells and/or anaemia in animals, but not considered relevant for man.

12. ECOLOGICAL INFORMATION

Basis for Assessment : Information given is based on product testing.

Acute Toxicity

Fish	: Practically non toxic: LL/EL/IL50 > 100 mg/l
Aquatic Invertebrates	: Practically non toxic: LL/EL/IL50 > 100 mg/l
Algae	: Practically non toxic: LL/EL/IL50 > 100 mg/l
Microorganisms	: Practically non toxic: LL/EL/IL50 > 100 mg/l
Mobility	: If product enters soil, one or more constituents will be mobile and may contaminate groundwater. Dissolves in water.
Persistence/degradability	: Readily biodegradable. Oxidises rapidly by photo-chemical reactions in air.
Bioaccumulative potential	: Not expected to bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal

: Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.

Container Disposal

: Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleared drums. Send to drum recoverer or metal reclaimer.

Local Legislation

Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

Land (as per ADR classification) : Not regulated

This material is not classified as dangerous under ADR regulations.

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IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is either not classified as dangerous under IATA regulations or needs to follow country specific requirements.

Sea (Annex II of MARPOL 73/78 and the IBC code)

Pollution Category	: Y
Ship Type	: 3
Product Name	: Ethylene glycol monoalkyl ethers
Special Precaution	: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
Additional Information	: This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Chemical Inventory Status

AICS	: Listed.
DSL	: Listed.
INV (CN)	: Listed.
ENCS (JP)	: Listed. (2)-2424
TSCA	: Listed.
EINECS	: Listed. 203-905-0
KECI (KR)	: Listed. KE-04134
PICCS (PH)	: Listed.

16. OTHER INFORMATION

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MSDS Version Number : 2.1

MSDS Effective Date : 1-September-2018

Uses and Restrictions : Raw material for use in the chemical industry.
Use only in industrial processes

MSDS Distribution : The information in this document should be made available to all who may handle the product

Disclaimer : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.