


Number: 011

Section 1. Product and Company Identification

Product name: Ethylene glycol monobutyl ether
Synonyms: -
Recommended use and Restrictions on use: The solvent of Nitro-cellulose resin; Spray enamel; Quick-drying enamel; Varnish; Enamel; Dry-cleaning compound; Varnish remover; Fabric (avoid making the dots when printing or dyeing), Soluble The common solvents of mineral oil in order to maintain homogenous of the soap solution and to improve the emulsifying.
Manufacturer, Importer, or Supplier: Shiny Chemical Industrial Co., Ltd. Address: No.5, Yeong Gong 1 st Rd, Yeong An Dist., Kaohsiung 82841, Taiwan, R.O.C. Telephone: +886-7-8619171 ext. 711~714
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Section 2. Hazards Identification

Classification: <ol style="list-style-type: none">1. Acute toxicity (Inhalation), Category 22. Acute toxicity (Skin), Category 33. Acute toxicity (Oral), Category 44. Flammable liquid, Category 45. Serious eye damage/eye irritation, Category 2A6. Skin corrosion / irritation, Category 27. Toxic for reproduction, Category 28. Specific target organ systemic toxicity (single exposure), Category 2
Label elements: 
Hazard pictograms: Toxicity, Health Hazards Signal word: Danger Hazard Statements: <ol style="list-style-type: none">1. Fatal if inhaled.2. Toxic in contact with skin.3. Harmful if swallowed.4. Combustible liquid.

5. Causes serious eye irritation.
6. Causes skin irritation.
7. Suspected of damaging fertility or the unborn child.
8. May cause damage to organs through prolonged or repeated exposure.

Precautionary statements:

1. Wear appropriate protective clothing.
2. Keep containers in a well-ventilated place.
3. If contacted with eyes, flush with plenty of water before seek for medical attention.

Other Hazards: -

Section 3. Composition/Information on Ingredients

Pure substance

Chemical Name: Ethylene glycol monobutyl ether

Synonyms: Ethylene glycol monobutyl ether, Butyl cellosolve (R), Ethylene glycol n-butyl ether, 2-Butoxyethanol, EGBE

CAS NO. : 111-76-2

Weight: 100%

Section 4. First Aid Procedures

Description of first aid measures:

- Inhalation:
 1. Eliminating the pollution source, or moving the affected people to breathe the fresh air.
 2. If the patient stops breathing, give the patient artificial respiration.
 3. Seek medical attention immediately.
- Skin contact:
 1. In case of direct contact, flush eyes with clean water for at least 20 minutes.
 2. Take off the contaminated clothes, shoes and paper ornaments (such as watch belt, belt).
 3. Seek medical attention immediately.
 4. Clean the pollutant clothes, shoes and paper ornaments before discard or use them.
 5. Absorption through skin contact can reach the poisoning level.
- Eye contact:
 1. Hold eye lid open, flush eyes with warm water at least 20 minute; avoid contaminating the other eye with the flushing water.
 2. See a physician as soon as possible.
- Ingestion:

1. Do not induce vomiting or feed anything orally.
2. See a physician as soon as possible.

The most Important Symptoms and Hazardous Effects: Irritation; high concentration for several hours may cause upper respiratory tract irritation and the damage of liver and kidney.

Protection for emergency personnel: Apply appropriate personal protective equipment such as class C clothing to conduct first aid in a safety area.

Notes to Physicians: Consider gastric lavage while swallow the chemical.

Section 5. Firefighting Measures

Suitable extinguishing media: Carbon dioxide, Chemical powder, alcohol-resistant foam.

Special hazards during firefighting:

1. The vapors may accumulate at low-lying places.
2. The airtight container may break while being heated in the firing place.

Firefighting procedures:

1. Cooling down the tanks or the containers with mist could make the temperature lower than the flash point.
2. Move the container away from the firing place under the safety condition.
3. Spraying the mist to expel the vapors if the leaking substances are not lighted.
4. Large-scale fire in tanks area: use automatic kits controlling frame or auto-spraying nozzle until the fire be put off. Once the condition is out of control, try to withdrawal all members and let the fire burned out.
5. Staying away from the two sides of the tanks.
6. Immediately evacuate all people while the tank' s safety valve alarmed or color changed by firing.

Protective equipment for firefighters: The firemen should wear the respirators, chemical resistant clothes (if necessary, wearing the anti-flash coat coated with aluminum).

Section 6. Accidental Release Measures

Personal precautions:

1. Prohibit members from entering.

Environmental precautions:

1. Provide adequate protective apparatus, and ventilate the area.
2. Remove all sources of ignition.

Methods for cleaning up:

1. Only trained people can conduct the cleaning procedures.
2. Trying to stop or decrease the leakage under the safety circumstance.

3. To retrieve as possible, or use clay, sands and sawdust or other absorbent to absorb and collect.
4. Avoid the substance be flew to the sewer and drainage system.
5. Inform the authorities while mass of substances leak to the environment.
6. A small amount of leakage can be treated with some cleaning apparatus.

Section 7. Handling and Storage

Handling:

1. Operation should be conducted at well ventilated place and use the minimum dose.
2. Using the fire-proof vessels as possible.
3. Keep away from the heating source and sparks while handling.
4. Wear adequate protective equipment, in case that contact to eyes and skin.
5. Keep away from the sparks, heating source, and the common working area.
6. Using the exhaust machine and electrical apparatus which will not produce sparks.
7. The containers should be closed well and stored at the ground connection fire-proof closet.

Storage:

1. The containers should be closed well and stored at the ground connection fire-proof closet which located at the cool and well ventilated place.
2. It is better to store at the certificated safety container.
3. Use the solvent tolerant materials at the storage and operation area.

Section 8. Exposure controls

Engineering controls:

1. While handling a small amount of chemicals, use the local ventilation apparatus.
2. While handling a great quantity of chemicals isolate the workers or confined the process at the airtight space.

Control parameters

TWA	STEL	CEILING	BEIs
25 ppm	37.5 ppm	-	-

Personal protective equipment:

- Respiratory protection:
 1. Below 50 ppm: Ventilation type of respiratory protective apparatus, respiratory protective apparatus with organic vapor filter container.
 2. Below 125 ppm: Motive force air clean respiratory protection with organic vapor filter container or flow-fixing type ventilation breathing mask.
 3. Below 250 ppm: Organic vapor filter tank of gas mask. Breathing apparatus with

organic vapor filter. Breathing apparatus with organic vapor filter, full-face airline supplied, self-contain air breathing apparatus.

- Below 700 ppm: Full-face positive pressure self-contain air breathing apparatus.
- Concentration unknown: Positive pressure full-face airline supplied plus positive pressure self-contain air breathing apparatus.
- Life Saving: Gas mask with organic vapor filter. Life-saving type self-contain breathing apparatus.

- Hand protection: Impervious gloves composed of Butyl rubber, Saranex, or Viton is better.
- Eye protection: Chemical anti-splash spectacle. Face protective mask.
- Skin and physical protection: Coveralls working clothes and working boots composed of Butyl rubber, Saranex, or Viton.

Hygiene measures:

- Take off the pollutant clothes quickly after the work, do not dress or abandon before cleaning, and the laundry must be informed the danger of the pollutants.
- Forbid smoking or diet in the workplace.
- After dealing with the material, washing hands thoroughly.
- Keep the working place clean.

Section 9. Physical and Chemical Properties

Appearance: Colorless and sweet smell ether liquid	Odor: Moderate
Odor threshold: 0.1 ppm (detection)	Melting point: -70.25°C
pH: -	Boiling point/Boiling range: 170.8°C
Flammability (solid, gas): -	Flash point: 62°C
Decomposition temperature: -	Test method: close cup
Auto-ignition temperature: 238°C	Explosion limits: 1.1% (93°C) ~ 12.7% (135°C)
Vapor pressure: 0.76 mmHg (20°C)	Vapor density: 4.1 (air=1)
Density: 0.9 (Water=1)	Solubility: Soluble with water
Partition coefficient (n-octanol/water, log K _{ow}): 0.8	Volatility rate: 0.07 ~ 0.08 (Butyl acetate=1)

Section 10. Stability and Reactivity

Chemical stability: Stable
Possibility of hazardous reactions:
<ol style="list-style-type: none"> Strong Oxidants, Strong base: possible violent reaction, with fire explosion hazards. Rubber, plastic, or paint will corrupt the materials.

Conditions to avoid: Temperature higher than 62°C, sunlight and open flames.

Materials to avoid: Strong oxidants, Strong base, Rubber, plastic, paint.

Hazardous decomposition products: Peroxidase

Section 11. Toxicological Information

Exposure Route: Skin, inhalation, ingestion, eye.

Symptoms: Irritation, nausea, pain, swelling, unconsciousness, corneal injury.

Acute toxicity:

- Inhalation:
 1. The chemical irritate the nose and pharyngeal, and makes the metal taste orally and headache.
 2. Exposed to high concentration (300 ~ 600 ppm) for several hours will lead to the respiratory tract irritation, consciousness loss, damage to liver and kidney.
- Skin: Slightly irritation.
- Eyes:
 1. The vapors will irritate eyes.
 2. The liquid will make irritation, pain, swell and corneal damage for several days.
- Ingestion: The symptoms may be similar to the inhalation.
- LD₅₀ (animal test, entry): 470 mg/kg (rat, swallow); 220 mg/kg (rabbit, skin)
- LC₅₀ (animal test, entry): 486 ppm (rat, inhalation).

Chronic / Long-term toxicity:

1. The chemical might irritate respiratory tract and eyes, damage blood cells and develop blood urine.
2. In animal model, reproductive system damage developed.
3. 25 ppm/6 hour(s) (pregnant 6 ~ 15 days, female rats, inhalation), which makes the embryo abnormal.

Section 12. Ecological Information

Ecological toxicity:

1. LC₅₀ (fish): 1,490 mg /L/96 hours
2. EC₅₀ (aquatic invertebrates): -
3. Bioconcentration factor (BCF): -

Persistence and degradability: Because the chemical will not absorb UV, it is expected will not proceed photochemical reaction.

- Half-life (Air): 3.28 ~ 32.8 hours
- Half-life (Water surface): 168 ~ 672 hours
- Half-life (Groundwater): 336 ~ 1,344 hours
- Half-life (Soil): 168 ~ 672 hours

Bioaccumulative potential: No accumulation. The chemical substance can be

absorbed through the skin, lung, intestine, stomach, then metabolized and expelled.

Mobility in soil: -

Other adverse effects: -

Section 13. Disposal Considerations

Waste disposal:

1. Consult the relevant regulation to deal with.
2. Take specific sanitary landfills or incinerators processing method.

Section 14. Transport Information

United Nations Number (UN No.): 2810

UN Proper Shipping Name: Organic toxic liquid, N.O.S.

Transport Hazard classes: 6.1

Packaging Group: III

Marine pollutant (Yes/No): No

Specific Transport Measures and Precautionary Conditions: -

Section 15. Regulatory Information

Applicable Regulations:

1. Labor Safety and Health Law.
2. Regulation of Labeling and Hazard Communication of Dangerous and Harmful Materials.
3. Organic solvent poisoning prevention rules.
4. Harmful substances concentration permission standards in the labor working environment.
5. Road Traffic Safety Rules.
6. Industrial waste storage and disposal facilities standard.
7. Public Hazardous Substances & Flammable Pressurized Gases Establishment Standards & Safety Control Regulations.

Section 16. Other Information

References	<ol style="list-style-type: none"> 1. CHEMINFO Database · CCINFO CD · 2005-3 2. RTECS Database · TOMES PLUS CD · Vol.65 · 2005 3. HSDB Database · TOMES PLUS CD · Vol.65 · 2005 4. ChemWatch Database · 2005-1
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Notes	The symbol " - " in this sheet indicates no available information; the

	symbol " / " indicates the information is not applicable to the substance.
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