Safety Data Sheet(SDS)

According to Regulation (EU) No. 2020/878

Version : 3-1

Revision date : 01-06-2026

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product identifier : BG_BUTYL_GLYCOL_ETHER

Other means of identification : No data

1.2. Relevant identified uses of the substance or mixture and uses advised against

○ Relevant identified uses

1.Raw materials and intermediates, Textile dyes and impregnating products, Washing and cleaning products

○ Uses advised against

Use for recommended use only
Do not use it for weapons manufacturing and related purposes.

1.3. Details of the supplier of the safety data sheet

○ Seller

Company name : Lotte Daesan Petrochem Corporation
Address : 82 Dokgot 1-ro, Daesan-eup, Seosan-si, Chungcheongnam-do
Telephone number : +82-41-689-5114
Fax number : +82-41-689-5985
Email : www.ldpc.co.kr (contact)

1.4. Emergency telephone number

Emergency phone number : (Control Room) +82-41-689-5119
Opening hours : 08:30~17:30 (GMT+9)
Other comments(e.g. language(s) of the phone service) : English

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

- Acute toxicity(Oral) Category 4
- Acute toxicity(Inhalation:Vapours) Category 3
- Skin corrosion/irritation Category 2
- Serious eye damage/eye irritation Category 2

2.2. Label elements

Hazard pictograms

Signal word

- DANGER

Hazard statements

H302 Harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
H331 Toxic if inhaled

Precautionary statements

- Prevention

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Avoid contact during pregnancy/ while nursing.
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

P301+P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311 Call a POISON CENTER / toxins center / physician.
P321 Specific treatment (see supplemental instructions on the administration of antidotes on this label).
P330 Rinse mouth.
P332+P313 If skin irritation occurs: Get medical advice/ attention.
P337+P313 If eye irritation persists: Get medical advice/ attention.
P362+P364 Take off contaminated clothing and wash it before reuse.

- Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

- Disposal

P501 Discard the contents/containers in accordance with the laws and laws related to waste.

2.3. Other hazards

- No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance name	1) CAS No 2) EC No	Classification	1) Index number 2) SCL 3) M-Factor 4) ATE	Content(wt%)
2-Butoxyethanol	1) 111-76-2 2) 203-905-0	Acute Tox. 4, Acute Tox. 3, Skin Irrit. 2, Eye Irrit. 2	1) - 2) - 3) - 4) Acute toxicity(Oral) : 1414mg/kg	100

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- 4.1.1. Eye contact
  - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
  - Seek immediate medical assistance.
- 4.1.2. Skin contact
  - For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.
  - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
  - For minor skin contact, avoid spreading material on unaffected skin.
  - Remove and isolate contaminated clothing and shoes.
  - Seek immediate medical assistance.
- 4.1.3. Inhalation
  - Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
  - Administer oxygen if breathing is difficult.
  - Give artificial respiration if victim is not breathing.
  - If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
  - Move to fresh air.
  - Keep victim warm and quiet.
- 4.1.4. If swallowed
  - Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
  - Seek immediate medical assistance.

4.2. Most important symptoms and effects, both acute and delayed

- No data available

4.3. Indication of any immediate medical attention and special treatment needed

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media
  - Dry chemical.
  - CO_2.
  - Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
  - Direct water.
  - Use dry sand or earth to smother fire.
  - Water spray.
- Unsuitable extinguishing media
  - Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

- Containers may explode when heated.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some may burn but none ignite readily.

5.3. Advice for firefighters

- Substance may be transported in a molten form.
- Dike fire-control water for later disposal; do not scatter the material.
- Evacuate area and fight fire from a safe distance.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Move containers from fire area if you can do it without risk.
- Rescuers should put on appropriate protective gear.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment
  - The wearing of suitable protective equipment to prevent any contamination of skin, eyes and personal clothing.
- Emergency procedures
  - Removal of ignition sources, provision of sufficient ventilation.

6.1.2. For emergency responders

- Wear protective equipment and keep unprotected persons away.
- Avoid dust formation.

6.2. Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3. Methods and material for containment and cleaning up

6.3.1. For containment

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

6.3.2. For cleaning up

- Clear spills immediately.
- Don't use a brush or compressed air for cleaning surfaces or clothing.

6.3.3. Other information

- Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Reduce airborne dust and prevent scattering by moistening with water.
- Absorb the liquid and scrub the area with detergent and water.

6.4. Reference to other sections

- Section 8 (protective equipment), section 13 (disposal instructions)

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Avoid breathing vapors from heated material.
- Avoid prolonged or repeated contact with skin.
- Do not enter storage area unless adequately ventilated.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Handling refer to engineering control/personal protection section.
- Loosen closure cautiously before opening.
- Please note that materials and conditions to be avoided.
- Use care in handling/storage.
- Use only in a well-ventilated area.

7.2. Conditions for safe storage, including any incompatibilities

- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.
- Keep away from food and drinking water.

7.3. Specific end use(s)

- See section 1 for recommended use.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components	Occupational Exposure	ACGIH regulations	Biological limit values	DNEL/DMEL	PNEC-Values
2-Butoxyethanol	20 ppm TWA; 98 mg/m3 TWA 50 ppm STEL; 246 mg/m3 STEL	20 ppm TWA	No data available	No data available	No data available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2. Individual protection measures, such as personal protective equipment

○ Eye/face protection

- If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.

○ Skin protection

(i) Hand protection

- Wear chemical safety gloves.

(ii) Other

- No data available

○ Respiratory protection

- If you have a direct contact or exposed to the material, wear the appropriate form of respiratory protection certified.

○ Thermal hazards

- Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

8.2.3. Environmental exposure controls

- Ensure not to cause envirionmental pollution by discharging into rivers or other waterways.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Property name	Values	Source
Physical state	Liquid	
Colour	colourless	
Odour	sweet	
Melting point/freezing point	-75 ℃	
Initial boiling point and boiling range(℃)	171 ℃	
Flammability(solid, gas)	No data available	
Upper/lower flammability or explosive limits	Upper 12.7 %(V) Lower 1.1 %(V)	
Flash point(℃)	67 ℃	
Auto ignition temperature	230 ℃ (1,013 hPa)	
Decomposition temperature	No data available	
pH	7.0 (25 ℃)	
Kinematic viscosity(㎟/s, 40℃)	3.64 ㎟/s (20 ℃)	
Solubility	900 g/L (20 ℃), Miscible with most organic	
Partition coefficient(n-octanol/water)	Pow : 6.46 (20 ℃) logPow : 0.81 (25 ℃)	

Vapour pressure	0.8 hPa (20 ℃)	
Density/Relative density	No data available	
Relative Vapour density	4.08	
Particle characteristics	Not applicable	
Specific gravity	0.9 (20 ℃)	

9.2. Other information

9.2.1. Information with regard to physical hazard classes

- No data available

9.2.2. Other safety characteristics

- No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some may burn but none ignite readily.

10.2. Chemical stability

- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some may burn but none ignite readily.

10.3. Possibility of hazardous reactions

- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some may burn but none ignite readily.

10.4. Conditions to avoid

- Ignition source(heat, spark, flame, etc.).

10.5. Incompatible materials

- Combustibles, reducing material.

10.6. Hazardous decomposition products

- Corrosive/toxic fume.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Irritating, corrosive and/or toxic gas.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

○ Acute toxicity

- Acute toxicity(Oral)
  - EU-CLP Classifications (Category 4 : 500mg/kg)
  LD50 1414 ㎎/kg Experimental species: Guinea pig (OECD TG 401, GLP)
- Acute toxicity(Dermal)
  - LD50 >2000 ㎎/kg Experimental species: Rat
- Acute toxicity(Inhalation:Gases)
  - No data available
- Acute toxicity(Inhalation:Vapours)
  - EU-CLP Classifications (Category 3 : 3mg/L)
  Vapor LC50 >7.4 ㎎/ℓ 7 hr Test species: Rat
- Acute toxicity(Inhalation:Dust/mist)
  - No data available

○ Skin corrosion/irritation

- EU-CLP Classifications (Category 2)
The result of a skin irritation test using rabbits was erythema irritation 2, which does not fall under the GHS standards but is sufficient to be considered irritating. EU Method B.4

○ Serious eye damage/eye irritation

- EU-CLP Classifications (Category 2)
The eye irritation test results showed that it was irritating with a conjunctival irritation index of 2.6, iritis of 0.56, and conjunctival edema of 1.8. OECD TG405, GLP

○ Respiratory sensitization

- No data available

○ Skin sensitization

- Skin sensitization test using guinea pigs Non-sensitivity OECD TG 406

○ Carcinogenicity

- 3 (IARC)
A3 (ACGHI)
2 (Notification of Ministry of Employment and Labor)

○ Germ cell mutagenicity

- In vitro reversion mutation test using microorganisms.OECD TG471, chromosomal abnormality test using mammalian cells. OECD TG473 negative results, in vivo micronucleus test using mammalian bone marrow cells. OECD TG474 negative results.

○ Reproductive toxicity

- As a result of the second-generation reproductive toxicity test (NTP), NOAEL (parent toxicity) = 720 mg/kg bw/day due to the effects of weight loss and fertility, NOAEL (F1, F2) = 720 mg/kg bw/ due to the weight loss of the offspring day, no effect on reproductive toxicity was observed, as a result of developmental toxicity test using rats (OECD TG414), no developmental toxicity and teratogenic effects were observed NOAEL (development) = 100 mg/kg bw/day, NOAEL (teratogenicity)> 200 mg/kg bw/day

○ Specific target organ toxicity single exposure

- As a result of respiratory irritation test using mice, RD50 2818 ppm was found to be minimal or non-sensory stimulation.

○ Specific target organ toxicity repeated exposure

- As a result of OECD TG408 repeated oral toxicity test using rats for 90 days, hepatic and slight cytoplasmic abnormalities were observed in histopathological findings, but no harmful effects were observed. NOAEL male <69 mg/kg bw/day, NOAEL female <82 mg/kg bw/day 90-day repeated inhalation toxicity test using mice OECD TG413, GLP Results NOAEC<31ppm due to hematological effects

○ Aspiration hazard

- No data available

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

- 2-Butoxyethanol
  Not applicable

11.2.2. Other information

- 2-Butoxyethanol
  No other hazards have been identified

SECTION 12: Ecological information

12.1. Toxicity

- Fish
  LC50 1474 mg/ℓ 96 hr Oncorhynchus mykiss (OECD Guideline 203)
- Crustaceans
  EC50 1800 mg/ℓ 48 hr Daphnia magna (OECD TG 202)
- Aquatic algae
  EC50 911 mg/ℓ 72 hr Selenastrum capricornutum (OECD TG 201)

12.2. Persistence and degradability

- Degradability
  No data available
- Biodegradation
  90.4% 28 days (OECD TG 301G)

12.3. Bioaccumulative potential

- n-octanol water partition coefficient
  0.81 log Kow (25 °C, pH=7, BASF standard method)
- Bioconcentration factor(BCF)
  No data available

12.4. Mobility in soil

No data available

12.5. Result of PBT and vPvB assessment

Not applicable

12.6. Endocrine disrupting properties

Not applicable

12.7. Other adverse effects

Not applicable

SECTION 13: Disposal considerations

13.1. Waste treatment methods

13.1.1. Product / Packaging disposal

- Empty containers should be taken to an approved waste handling site for recycling or disposal.

○ Waste codes / waste designations according to LoW

- No data available

13.1.2. Waste treatment-relevant information

- Disposal according to local regulations.

13.1.3. Sewage disposal-relevant information

- Disposal according to local regulations and avoid release to the environment.

13.1.4. Other disposal recommendations

- No data available

SECTION 14: Transport information

14.1. UN number or ID number : Not applicable

14.2. UN proper shipping name : Not applicable

14.3. Transport hazard class(es) : Not applicable

14.4. Packing group : Not applicable

14.5. Environmental hazards : No

14.6. Special precautions for user :

Emergency measures in case of fire : Not applicable

Emergency measures in the effluent : Not applicable

14.7. Maritime transport in bulk according to IMO instruments :

Not applicable

- ADR

· Tunnel restriction code : No data available

- IMDG

· Marine pollutant : No

- Air transport(IATA)

· UN No. : Not applicable

· Proper shipping name : Not applicable

· Class or division : Not applicable

· Packing group : Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU regulations

- EU - REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances

- 2-Butoxyethanol : Use restricted. See item 75.

- EU - REACH (1907/2006) - Annex XIV - Substances Subject to Authorization

- 2-Butoxyethanol : Not applicable

15.1.2. Other EU regulations

- EU - Persistent Organic Pollutants (POPs) (2019/1021) - Annex III - Substances Subject to Release Reduction Provisions

- Not applicable

- EU - Persistent Organic Pollutants (POPs) (2019/1021) - Annex I - Substances Subject to Prohibitions

- Not applicable

- EU - Persistent Organic Pollutants (POPs) (2019/1021) - Annex IV - Waste Management - Concentration Limits

- Not applicable

- EU - Persistent Organic Pollutants (POPs) (2019/1021) -Annex V-Waste Management-Maximum Concentration Limits

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - WB Phase 1 - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - WB Phase 2 - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II B - Vehicles - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - SB Phase 1 - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - SB Phase 2 - VOCs

- Not applicable

- EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances - Lower-Tier Requirements

- Not applicable

- EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances - Higher-Tier Requirements

- Not applicable

- EU - Export and Import Restrictions (649/2012) - Chemicals Subject to Export Notification Procedure

- Not applicable

- EU - Export and Import Restrictions (649/2012) - Chemicals and Articles Subject to Export Ban

- Not applicable

- EU - Export and Import Restrictions (649/2012) - Chemicals Subject to the PIC Procedure under the Rotterdam Convention

- Not applicable

- EU - Export and Import Restrictions (649/2012) - Chemicals Qualifying for PIC Notification

- Not applicable

15.2. Chemical safety assessment

- A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

16.1. Key literature references and sources for data

NCIS, KOSHA, Montreal Protocol, ECHA, OECD SIDS, EU IUCLID, HSDB(PubChem), NITE, NTP, ACGIH, IARC, NIOSH, ChemIDplus, EPA, EPI Suite, INCHEM

16.2. Issuing date : 26-12-2022

16.3. Indication of changes

- Revision number : 3-1
- Revision date : 01-06-2026

16.4. Abbreviations and acronyms

ACGIH : American Conference of Governmental Industrial Hygienists
ADR : Agreement Concerning the International Carriage of Dangerous Goods by Road
ATE : The Acute Toxicity Estimate
ECHA : European Chemicals Agency
EPA : United States Environmental Protection Agency
EPI Suite : The Estimation Programs Interface for Windows
EU IUCLID : International Uniform Chemical Information Database
HSDB : Hazardous Substances Data Bank
IARC : International Agency for Research on Cancer
IATA : International Air Transport Association
IMDG : International Maritime Dangerous Goods Codes
INCHEM : Internationally Peer Reviewed Chemical Safety Information
M-Factor : The Multiplication Factor
NIOSH : National Institute of Occupational Safety and Health
NITE : National Institute of Technology and Evaluation(JAPAN)
NTP : National Toxicology Program
SCL : Specific Concentration Limit
OECD SIDS : Organization for Economic Co-operation and Development Screening Information Dataset

For explanation of abbreviations see section 16.

- This substance/mixture contain(s) only ingredients which have been registered, or are exempt from registration, according to Regulation (EC) No. 1907/2006 (REACH).

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
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