

**BDG\_BUTYL DIGLYCOL ETHER**

Version 1.6

Date of last issue: 2020/11/09

Revision Date: 2020/11/09

Date of first issue: 04.25.2011

**1. PRODUCT AND COMPANY IDENTIFICATION****Product name** : BDG\_BUTYL DIGLYCOL ETHER**Recommended use of the chemical and restrictions on use**Recommended use : Raw material for industry  
MonomerRestrictions on use : Prohibition of recommendation applications outside of use  
The use of biocides as defined in Article 3 of The Act on Safety Management of Consumer Chemical Products and Biocides is restricted**Manufacturer or supplier's details**

Company : LOTTE Chemical Corporation

Address : Lotte World Tower, 300, Olympic-ro, Songpa-gu, Seoul, 05551  
Rep. of KOREATelephone : Head-Office 82-2-829-4190  
Yeosu Plant(Basic) 82-61-688-2021  
Yeosu Plant(Advanced) 82-61-689-1531  
Daesan Plant 82-41-689-5800  
Ulsan Plant 82-52-278-3421Emergency telephone number : Head-Office 82-2-829-4190  
Yeosu Plant(Basic) 82-61-688-2021  
Yeosu Plant(Advanced) 82-61-689-1531  
Daesan Plant 82-41-689-5800  
Ulsan Plant 82-52-278-3421

Telefax : 82-2-834-6070

**2. HAZARDS IDENTIFICATION****GHS Classification**

Serious eye damage/eye irritation : Category 2

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.

Precautionary statements

**General Information:**

P202 Do not handle until all safety precautions have been read and understood.

**Prevention:**

P264 Wash the contact area thoroughly after handling.

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P280 Wear eye protection/ face protection.

**Response:**

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 advice/ attention.

**Storage:**

P403 + P235 Store in a well-ventilated place. Keep cool.

**Disposal:**

P501 Dispose of contents and container according to wastes control act.

**Other hazards which do not result in classification**

According to our experience and to the information provided to us, the product does not have any harmful effects if it is used and handled as specified.

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Components**

Chemical name	Common Name	CAS-No.	KE No.	Concentration (%)
2-(2-butoxyethoxy)ethanol	2-(2-butoxyethoxy)ethanol	112-34-5	KE-10466	>= 95 ~ <= 100

**4. FIRST AID MEASURES**

- General advice : Show this safety data sheet to the doctor in attendance.
- In case of eye contact : Flush eyes with water as a precaution.  
Remove contact lenses.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- In case of skin contact : Take off contaminated clothing and shoes immediately.  
Wash off with soap and plenty of water.  
If skin irritation persists, call a physician.
- If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.  
If symptoms persist, call a physician.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing

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Notes to physician : In case of ingestion, the stomach should be emptied by gastric lavage under qualified medical supervision. Oxygen, if needed.

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**5. FIREFIGHTING MEASURES****Suitable and unsuitable extinguishing media**

Suitable extinguishing media : Carbon dioxide (CO<sub>2</sub>)  
Water  
Dry powder  
Alcohol-resistant foam  
Sand

Unsuitable extinguishing media : No data available

**Specific hazards during firefighting** : Burning produces irritant fumes.  
May release toxic, irritating and/or corrosive gases.  
Exposure to decomposition products may be a hazard to health.

Hazardous combustion products : Carbon oxides

Specific extinguishing methods : Standard procedure for chemical fires.  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Extinguish using suitable media, or isolate and allow to burn out.  
Cool containers/tanks with water spray.  
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

**Special protective equipment for firefighters** : Wear self-contained breathing apparatus for firefighting if necessary.

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**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Refer to protective measures listed in sections 7 and 8.  
Evacuate personnel to safe areas.  
Remove all sources of ignition.

Environmental precautions : Do not let product enter drains.  
Prevent further leakage or spillage if safe to do so.

Methods and materials for containment and cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).  
Keep in suitable, closed containers for disposal.

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**7. HANDLING AND STORAGE**

Advice on safe handling : For personal protection see section 8.

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Use only in area provided with appropriate exhaust ventilation. Smoking, eating and drinking should be prohibited in the application area.

- Conditions for safe storage : Keep away from sources of ignition - No smoking. Keep container tightly closed in a dry and well-ventilated place. Observe label precautions.
- Materials to avoid : Flammable Substances  
strong reducing agent
- Recommended storage temperature : < 40 °C
- Storage period : 12 Months
- Packaging material : Suitable material: Polypropylene, Stainless steel, Cold Rolled Carbon Steel

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2-(2-butoxyethoxy)ethanol	112-34-5	TWA	10 ppm	KR OEL
		TWA (Inhalable fraction and vapor)	10 ppm	ACGIH

- Engineering measures** : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

**Personal protective equipment**

- Respiratory protection : Use respiratory protection (gas mask) unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

- Eye protection : Safety glasses  
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. Ensure that eyewash stations and safety showers are close to the workstation location.

- Hand protection  
Remarks : For prolonged or repeated contact use protective gloves.

- Skin and body protection : Industrial safety helmets

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Safety shoes  
Impervious clothing  
Complete suit protecting against chemicals  
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Hygiene measures : General industrial hygiene practice.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : liquid

Colour : colourless

Odour : mild

Odour Threshold : No data available

pH : ca. 7.0

Melting point/freezing point : -66 °C  
(1013.250 hPa)

Boiling point/boiling range : 231 °C  
(1013.250 hPa)

Flash point : 105 °C (1,013 hPa)

Evaporation rate : < 1.0  
(Butyl Acetate=1.0)

Flammability (solid, gas) : No data available

Flammability (liquids) : No data available

Burning rate : No data available

Self-ignition : No data available

Burning number : No data available

Upper explosion limit / Upper flammability limit : Upper flammability limit  
24.6 %(V)

Lower explosion limit / Lower flammability limit : 0.85 %(V)

Vapour pressure : 0.0291 hPa (25 °C)

Bulk density : No data available

Solubility(ies)  
Water solubility : 955 g/l (20 °C)

Solubility in other solvents : soluble

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Description: miscible with most organic solvents

Relative vapour density	:	5.6
Relative density	:	0.9553 (20 °C)
Density	:	955.3 kg/m <sup>3</sup> (20 °C)
Partition coefficient: n-octanol/water	:	log Pow: ca. 1.0 (20 °C)
Auto-ignition temperature	:	210 °C (101.325 kPa)
Decomposition temperature	:	No data available
Self-Accelerating decomposition temperature (SADT)	:	No data available
Temperature of Polymerisation (SAPT)	:	No data available
Viscosity		
Viscosity, dynamic	:	6 mPa.s (20 °C)
Viscosity, kinematic	:	6.806 mm <sup>2</sup> /s
Flow time	:	No data available
Solvent separation	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Self-heating substances	:	No data available
Heat of combustion	:	No data available
Impact sensitivity	:	No data available
Surface tension	:	0.03 mN/m, 25 °C
Conductivity	:	No data available
Molecular weight	:	162.23 g/mol
Minimum explosible dust concentration	:	No data available
Dust deflagration index (Kst)	:	No data available
Dust explosion class	:	No data available
Radioactivity	:	No data available
Metal corrosion rate	:	No data available

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Particle size : No data available  
Particle Size Distribution : No data available

**10. STABILITY AND REACTIVITY**

Chemical stability and possibility of hazardous reactions : Stable under recommended storage conditions.  
No decomposition if stored and applied as directed.

Conditions to avoid : Heat, flames and sparks.  
Direct heating, dirt, chemical contamination, sunlight, UV or ionising radiation.

Incompatible materials : Combustible material  
Strong reducing agents

Hazardous decomposition products : Hazardous decomposition products due to incomplete combustion  
Carbon monoxide  
Carbon dioxide (CO<sub>2</sub>)  
Thermal decomposition can lead to release of irritating gases and vapours.

**11. TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure : Inhalation  
Skin contact

**Health hazard information****Acute toxicity****Product:**

Acute oral toxicity : LD50 (Mouse, male): 2,410 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC0 (Rat): > 29 ppm  
Exposure time: 2 h  
Method: OECD Test Guideline 403  
Symptoms: Mild eye irritant

Acute dermal toxicity : LD50 (Rabbit, male): 2,764 mg/kg  
Method: OECD Test Guideline 402

**Skin corrosion/irritation****Product:**

Species: Rabbit  
Exposure time: 1 h  
Method: OECD Test Guideline 404  
Result: extremely mild irritation  
Remarks: According to the classification criteria of the European Union, the product is not considered as being a skin irritant.

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**Components:****2-(2-butoxyethoxy)ethanol:**

Remarks: May cause skin irritation in susceptible persons.

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Product:**

Species: Rabbit

Result: Irritating to eyes.

Method: OECD Test Guideline 405

**Components:****2-(2-butoxyethoxy)ethanol:**

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation****Product:**

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Not a skin sensitizer.

**Carcinogenicity**

No data available

**Germ cell mutagenicity****Product:**

Genotoxicity in vitro : Test Type: reverse mutation assay  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

: Test Type: Chromosome aberration test in vitro  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test  
Test species: Mouse (male and female)  
Application Route: Oral  
Method: OECD Test Guideline 475  
Result: negative

**Reproductive toxicity****Product:**

Effects on foetal development : Test Type: teratogenic test  
Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:



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633 mg/kg body weight  
Method: OECD Test Guideline 414

Test Type: teratogenic test  
Species: Rat, female  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level:  
1,000 mg/kg body weight  
Method: OECD Test Guideline 414

Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
1,000 mg/kg body weight  
Method: OECD Test Guideline 415

Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level:  
2,000 mg/kg body weight  
Method: OECD Test Guideline 415

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Product:**

Species: Rat, females  
Lowest observed adverse effect level: < 350 mg/m<sup>3</sup>  
Application Route: Inhalation  
Exposure time: 4 Weeks  
Method: OECD Test Guideline 412  
Symptoms: bronchitis

Species: Rat, male and female  
Lowest observed adverse effect level: 250 mg/kg  
Application Route: Oral  
Exposure time: 90 d  
Method: OECD Test Guideline 408  
Symptoms: Hematologic effects

Species: Rat, male  
Lowest observed adverse effect level: < 200 mg/kg  
Application Route: Dermal  
Exposure time: 90 d  
Method: OECD Test Guideline 411  
Symptoms: Skin irritation

Species: Rat, male and female  
No observed effect concentration: 14 ppm(m)  
Application Route: Inhalation

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Exposure time: 90 d  
Method: OECD Test Guideline 413

**Aspiration toxicity**

No data available

**Further information****Components:****2-(2-butoxyethoxy)ethanol:**

Remarks: No data available

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**12. ECOLOGICAL INFORMATION****Ecotoxicity****Product:**

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 1,300 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 1,101 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

**Persistence and degradability****Product:**

Biodegradability : Biodegradation: ca. 85 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C  
Remarks: According to the results of tests of biodegradability this product is considered as being readily biodegradable.

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects****Components:****2-(2-butoxyethoxy)ethanol:**

Additional ecological information : No data available

**Hazardous to the ozone layer**

Not applicable

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### 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Empty remaining contents.  
Empty containers should be taken to an approved waste handling site for recycling or disposal.

#### Disposal precautions

Dispose of in accordance with local regulations.

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### 14. TRANSPORT INFORMATION

#### International Regulations

##### UNRTDG

Not regulated as a dangerous good

##### IATA-DGR

Not regulated as a dangerous good

##### IMDG-Code

Not regulated as a dangerous good

UN number : Not applicable

Proper shipping name : Not applicable

Class : Not applicable

Subsidiary risk : Not applicable

Packing group : Not applicable

Labels : Not applicable

EmS Code : Not applicable

Marine pollutant : Not applicable

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### National Regulations

Refer to section 15 for specific national regulation.

#### Special precautions for user

Not applicable

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### 15. REGULATORY INFORMATION

#### National regulatory information

##### Regulation under the Occupational Safety and Health Act

##### Harmful Substances Prohibited from Manufacturing

Not applicable

##### Harmful Substances Required Permission for Manufacture

Not applicable

##### Hazardous substances requiring management

Not applicable

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**Special Management Materials**

Not applicable

**Controlled Substances Subject to Environment Monitoring**

Not applicable

**Controlled Substances Subject to Health Examination**

Not applicable

**Act on the Registration and Evaluation, etc. of Chemical Substances, Chemicals Control Act****Toxic Chemicals**

Not applicable

**Observational chemicals**

Not applicable

**Restricted Chemicals**

Not applicable

**Prohibited Chemicals**

Not applicable

**Toxic Release Inventory**

Not applicable

**Accident Precaution Chemicals**

Not applicable

**Dangerous Substances Safety Management Act**

Classification : Group 4, Flammable liquids, Type 3 petroleums, Water soluble liquid

Hazard rank : Hazardous rank III

Designated Quantity : 4000 litre

Safety Warning : Keep away from fire

**Air Pollution Control Act****Wastes Control Act**

Industrial waste

Follow article 13 of the act to dispose the product waste

**Other requirements in domestic and other countries****The components of this product are reported in the following inventories:**

TCSI : On the inventory, or in compliance with the inventory

TSCA : All substances listed as active on the TSCA inventory

AICS : On the inventory, or in compliance with the inventory

DSL : All components of this product are on the Canadian DSL

ENCS : On the inventory, or in compliance with the inventory

ISHL : On the inventory, or in compliance with the inventory

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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
NZIoC	: On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

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**16. OTHER INFORMATION****Further information**

Sources of key data used to compile the Safety Data Sheet : KOSHA, ICSC, NCIS, ECHA, TOXNET

**Revision number and date**

Number of Revision : 1.6

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**Other information**

Date format : yyyy/mm/dd

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.