

	Material Safety Data Sheet			Doc. No.	MSDS-002
				Initial Issue Date	1996. 6.
				Revision Date	Jul. 2022
Substance Name	1,4-Butanediol				
CAS NO	KE NO	UN NO	EC NO		
110-63-4	KE-03788	2810	203-786-5		

1. Identification of the substance/mixture and of the company:

1.1 Substance name	1,4-Butanediol
1.2 Intended Use and Use Limitations	
Intended Use	-
Use Limitations	-
1.3 Company identification	
Company:	Korea PTG Co., Ltd.
Address:	15, Yongyeon- ro, 179beon-gil, Nam-gu, Ulsan Korea
Tel, Number:	Tel 82-52-257-5240 Fax 82-52-257-5246
Emergency number:	Tel 82-52-257-5240
Team:	Safety & Environment Team

2. Hazard-Risk:

2.1 Hazard-Risk classification	Acute toxicity substance -Oral: cat4 Skin corrosion or irritation substance : cat2
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2.2 Label element, including and precautionary statements

Pictogram



Signal word	Warning
Hazard-Risk statement	H302 Harmful if swallowed H315 Cause severe skin burns and eye damage
precautionary statement	
Prevention	P264 Wash ... thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/protective clothing/eye protection/face protection
Response	P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330 Rinse mouth. P302+P352 IF ON SKIN: Wash with plenty of soap and water. P321 Specific treatment (see ... on this label). P332+P313 If skin irritation occurs: Get medical advice/attention.. P362 Take off contaminated clothing and wash before reuse.
Storage	Store and Handle According to current regulations and standards
Disposal	P501 Dispose of contents/container to ...

2.3 Other hazard-Risk which are not included in the classification(NFPA)

Health	1
Fire	1
Reactivity	0

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3. Composition/Information on Ingredients:

Substance name	Trivial name	CAS No.	Content(%)
1,4-Butanediol	Butylene Glycol	110-63-4	>99.5%

4. First aid measures:

4.1 In case of intrusion into eye	Wash eyes for at least 15 minutes with plenty of water. Consult with a doctor.
4.2 In case of skin contamination	Remove contaminated clothing and shoes and then wash skins for at least 15 minutes with plenty of water. If necessary, Consult with a doctor. Rinse contaminated clothing and shoes before reuse.
4.3 In case of respiratory	If adverse effects occur, move them to uncontaminated area Do artificial respiration if needed. Consult with a doctor.
4.4 In case of ingestion	If large amount is swallowed, Consult with a doctor.
4.5 The most important accute/delaed symptom	
Inhale	
Short time exposure	Irritation
Long time exposure	Insesibility. Reduced reflexes. kidney trouble
Intake	
Short time exposure	Nausa. Vomit. Headache. Sleepiness. kidney trouble.
Long time exposure	kidney trouble, liner trouble.
Skin contact	
Short time exposure	Irritation
Long time exposure	Insesibility. Reduced reflexes. kidney trouble
Eyes contact	
Short time exposure	Irritation
Long time exposure	Cause visual impairment
4.6 Indication of immediate medical attention and Doctor	No Data Available

5. Explosion,fire measures:

5.1 Suitable(Inappropriate) extinguishing media	
Suitable extinguishing media	Extinguishing powder. CO2. Water, general foam, Alchol formal.
Inappropriate extinguishing media	No Data Available
Major fire	Use general water or big water sprinke by fine spray.
5.2. Specific hazards arising from the chemical	
Heat decomposition product	Carbon oxides
Fire and explosion risk	There is a slight risk of fire.
5.3 Protective equipment and precaution for fire-fighters	
	If safe to do so, remove containers from area of fire. Prevent shatter using high-pressure water spray. Dike for later disposal.

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Use suitable extinguishing media
 Avoid inhalation of Material or combustion by-products.
 Stay up wind and keep out of low areas.

6. Accidental release measures:

6.1 Personal precautions, protective equipment

If worker can stop leak without personal risk, Stop leak

6.2 Environmental precautions

Atmosphere

No Data Available

Soil

No Data Available

Underwater

No Data Available

6.3 Methods and materials for containment and cleaning

Minor spills

Absorb with sand or other non-combustible materials.
 Absorb with Suitable non-combustible materials for disposal.
 Collect spilled material in appropriate container for disposal.
 Keep unnecessary people away, isolate hazard area and deny entry.

Major spills

No Data Available

7. Handling and storage:

7.1 Precautions for safe handling

Rinsing thoroughly after handling.

Please conduct proper ventilation

Avoid contact with skin and clothing

Store in an airtight container.

Do not intake and inhalation.

7.2 Conditions for safe storage

Store in an airtight container.

Comply with local regulations for storage.

Keep separated from with incompatible materials.

Store in a cool and dry area.

Store at a well-ventilated area.

Separate the product with strong inorganic oxidants such as nitric acid.

8 Exposure controls/personal protection:

8.1 Exposure limits of chemical substance, Biological exposure limits

Domestic regulation

No Data Available

ACGIH regulation

Not Applicable

Biological exposure limits

Not Applicable

8.2 Appropriate engineering controls

Install ventilation equipment.

Ensure compliance with applicable exposure limits.

8.3 Individual protective equipment

Respiratory Protection

Frequent use or heavy exposure, respiratory protection if needed.

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Eye protection

Hands protection

Body protection

Respiratory protection is ranked in order from minimum to maximum

Take into account the warning properties before use

Gas Mask(Organic vapor)

Air-purifying respirator(Organic vapor)

Wear splash resistant safety goggles.

Provide an emergency eye wash foundation and quick drench shower in the immediate work area.

Wear appropriate chemical resistant gloves.

Wear appropriate chemical resistant clothes.

9. Physical and chemical properties:

9.1 Appearance

Physical state

Viscous liquid

Colour

Achromatic color.

9.2 Odour:

Very mild odor

9.3 Odour threshold:

-

9.4 pH:

Neutral

9.5 Melting point/freezing point

19 °C - 20 °C

9.6 Initial boiling point and boiling range

228 °C

9.7 Flash point:

> 121 °C ((o.c.))

9.8 Evaporation rate

No Data Available

9.9 Flammability (solid, gas)

No Data Available

9.10 Upper/lower flammability or explosive limits

18.3/1.95%

9.11 Vapour pressure

0.0105mmHg((25 °C))

9.12 Solubility

Water solubility: Soluble, 1000 g/L at 20 °C)

9.13 Vapour density

3.1

9.14 density

1.017

9.15 N-octanol/water partition coefficient

-0.83

9.16 Auto-ignition temperature

350°C

9.17 Decomposition temperature

No Data Available

9.18 Viscosity

84.9cP((20 °C))

9.19 Molecular weight

90.12

9.20 Molecular formula

C4H8(OH)2

10. Stability and reactivity:

10.1 Chemical stability

Polymerisation will not occur.

10.2 Possibility of hazardous reactions

Stable under normal condition.

10.3 Conditions to avoid

Avoid heat, flame, spark and ignition source. Avoid contact with incompatible materials.

10.4 Substance to avoid

metals, Acids, oxidizing materials, Peroxide

10.5 Hazardous decomposition products

Thermal decomposition products,Carbon oxides, Various organic tissue

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11. Toxicological information:

11.1 Information on the likely route of exposure

Inhalation	Short term exposure causes irritation
Oral	Short term exposure may cause nausea, vomiting, headache,
Skin Contact	Short term exposure causes irritation
Eye contact	Short term exposure causes irritation

11.2 Delayed and immediate effects and also chronic effects from short and long term exposure

Acute toxicity

Oral	LD50 1500 mg/kg rat
Dermal	LD50 > 5000 mg/kg rat
Inhalation	Dust LC50 > 5100 mg/m ³ 4hr rat

Skin corrosion or irritation

Slight irritating (rabbit)

SIDS

Serious eyes damages or irritation

Slight irritating (rabbit)

SIDS,IUCLID

Respiratory sensitization

No Data Available

Skin sensitization

Not sensitizing(guinea pig)

SIDS,IUCLID

Carcinogenicity

IARC	No Data Available
NTP	No Data Available
OSHA	No Data Available
WISHA	No Data Available
ACGIH	No Data Available
Germ cell mutagenicity	In-vitro/negative, In-vivo/negative

IUCLID

Reproductive toxicity

No Data Available

Target organ systemic toxicity substance(single

No Data Available

Target organ systemic toxicity substance(repeated

Rat/No major symptoms

IUCLID

Aspiration hazard

No Data Available

11.3 Numerical Scale of toxicity(Acute toxicity Estimates)

No Data Available

12. Ecological information:

12.1 Aquatic-terrestrial ecotoxicity

Fish	LC50 > 1240 mg/l 96hr Cyprinus carpio
Crustacean	EC50 > 1000 mg/l 48hr Daphnia magna
Bird	ErC50 > 1000 mg/l 48hr Selenastrum capricornutum

12.2 Persistence and degradability

Persistence	log Kow -0.88
degradability	No Data Available

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12.3 Bioaccumulative potential

Accumulation

BCF 0.4

Biodegradation

96(%) 14day

12.4 Mobility in soil

No Data Available

12.5 Other hazardous effects

No Data Available

13. Disposal considerations:

13.1 Disposal methods

No Data Available

13.2 Disposal attention

Consider notices of regulations in case that it is indicated in waste disposal regulation.

14. Transport information:

14.1 U.S. Department of Transportation(DOT)

Not regulated as dangerous good

14.2 International Maritime Organization(IMDG)

Not regulated as dangerous good

14.3 International Air Transport Association(IATA) / International Civil Aviation Organization(ICAO)

Not regulated as dangerous good

15. Regulatory information:

15.1 Industrial Safety and Health Act

No Data Available

15.2 Toxic Chemicals Control Act

No Data Available

15.3 Safety Control of Dangerous Substances Act

Follow the laws of your country

15.4 Waste management Act.

Specify waste

15.5 Other requirements in domestic and other countries

Domestic regulation

Persistent Organic Pollutants Management Act

Not Applicable

Foreign regulation

American Management Information(OSHA Regulation) Not Applicable

American Management Information(CERCLA Regulation) Not Applicable

American Management Information(EPCRA 302 Regulation) Not Applicable

American Management Information(EPCRA 304 Regulation) Not Applicable

American Management Information(EPCRA 313 Regulation) Not Applicable

American Management Information

(Rotterdam Convention material)

Not Applicable

American Management Information

(Stockholm Convention material)

Not Applicable

American Management Information

(Montreal Protocol material)

Not Applicable

EU classification Information(Final classification results)

Not Applicable

EU classification Information (Risk statement)

Not Applicable

EU classification Information (Safety statement)

Not Applicable

16. Other information:

16.1 Reference

SIDS (Oral)

SIDS (Dermal)

SIDS (Inhalation)

SIDS (Skin corrosion or irritation)



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SIDS,IUCLID (Serious eyes damages or irritation)
SIDS,IUCLID (Skin sensitization)
IUCLID (Germ cell mutagenicity)
IUCLID (Target organ systemic toxicity substance(repeated exposure))
Directive 92/69/EEC, C.1, GLP, IUCLID (Fish)
OECD TG 202, GLP, NITE (Crustacean)
OECD TG 201, GLP, NITE (Bird)
OECD TG 107, IUCLID (Persistence)
IUCLID (Accumulation)
IUCLID (Biodegradation)
Jun. 1996.

16.2 Initial Issue Date

16.3 Revision number and date

- Revision Number

- Revision Date

16.4 Others

4

Jul. 2019.

No Data Available