

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

• **Trade name:** Butane-1,4-diol

• **CAS Number:**

110-63-4

• **EC number:**

203-786-5

• **REACH registration number:** 01-2119471849-20-0014

1.2 Relevant identified uses of the substance or mixture**Sector of Use**

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

SU8 Manufacture of bulk, large scale chemicals (including petroleum products)

SU9 Manufacture of fine chemicals

• **Product category** Not applicable

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC15 Use as laboratory reagent

Environmental release category

ERC1 Manufacture of the substance

ERC2 Formulation into mixture

ERC6a Use of intermediate

• **Article category** Not applicable

Application of the substance / the preparation:

Intermediate

Laboratory chemicals

Solvents

Monomer.

1.3 Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

Will & Co. B.V.

Dellaertlaan 24

1171 HG Badhoevedorp

Netherlands

info@will-co.nl

tel +31 20 659 75 01

Further information obtainable from:

E-mail: msds@will-co.nl

Telephone: (+31) (0)20 659 75 01

1.4 Emergency telephone number:

Exclusively accessible for a practicing physician in case of accidental poisoning:

The National Poisons Information Service, Birmingham (+44) (0)121 507 4123

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

• **Classification according to Regulation (EC) No 1272/2008**



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

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Trade name: **Butane-1,4-diol**

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STOT SE 3 H336 May cause drowsiness or dizziness.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS07

Signal word Warning**Hazard statements**

H302 Harmful if swallowed.

H336 May cause drowsiness or dizziness.

Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/.if you feel unwell.

P330 Rinse mouth.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**SECTION 3: Composition/information on ingredients****3.1 Chemical characterisation: Substances****CAS No. Description**

110-63-4 Butane-1,4-diol

Identification number(s)**EC number:** 203-786-5**REACH registration number:** 01-2119471849-20-0014**Impurities and stabilising additives:**

Trace Impurities:

1-Butanol, acidic materials, acetals and aldehydes.

Components:

See Section 16 for full text of the R-, H- and EUH-phrases.

CAS: 110-63-4

Butane-1,4-diol

EINECS: 203-786-5

Acute Tox. 4, H302; STOT SE 3, H336

SECTION 4: First aid measures**4.1 Description of first aid measures****General information:**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation:

Take affected persons into fresh air and keep quiet.

If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

Loosen tight clothing such as a collar, tie, belt or waistband.

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- Seek immediate medical advice.
- **After skin contact:**
Wash off immediately with soap and plenty of water removing at the same time all contaminated clothes.
Wash clothing before re-using.
Seek immediate medical advice.
 - **After eye contact:**
Make sure to remove any contact lenses from the eyes before rinsing.
Rinse opened eye for several minutes under running water.
Seek immediate medical advice.
 - **After swallowing:**
Rinse mouth with water.
Do not induce vomiting unless directed to do so by medical personnel.
Never give anything by mouth to an unconscious person.
Call for a doctor immediately.
 - **4.2 Most important symptoms and effects, both acute and delayed**
Headache
Dizziness
Unconsciousness
Potential damage for liver and kidneys.
 - **4.3 Indication of any immediate medical attention and special treatment needed**
Treat symptomatically and supportively.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
Water spray
Dry chemical powder.
Carbon dioxide
Foam
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**
Vapours heavier than air.
Vapours may spread along floor surfaces.
- **5.3 Advice for firefighters**
- **Protective equipment:**
Wear appropriate protective equipment and self contained breathing apparatus with a full face piece operated in positive pressure mode.
Prevent mixing with alkali and amine materials.
- **Additional information**
Keep persons away.
If safe to do so, remove containers from path of fire.
Cool endangered receptacles with water spray.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Keep away from ignition sources.
Avoid contact with the spilt material.
Use respiratory protective device against the effects of fumes/dust/aerosol.
Ensure adequate ventilation
- **6.2 Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.


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- **6.3 Methods and material for containment and cleaning up:**
*Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.*
- **6.4 Reference to other sections**
*See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.*

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
*Do not eat, drink, smoke or sniff at the workplace.
Wash hands before breaks and at the end of work.
Ensure good ventilation/exhaustion at the workplace.
Keep receptacles tightly sealed.*
- **Information about fire - and explosion protection:**
 *Keep ignition sources away - Do not smoke.*

Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
*Store only in the original receptacle.
Store in a dry, cool and well ventilated place.
Keep out of the reach of children and away from food and drink.*
- **Information about storage in one common storage facility:**
*Keep away from sources of ignition.
Store away from oxidising agents.
Do not store together with alkalis (caustic solutions).
Store away from amines.*
- **Further information about storage conditions:**
*Protect against UV-radiation/sunlight.
Store receptacle in a well ventilated area.
Keep container tightly sealed.*
- **7.3 Specific end use(s)** *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:**
*Use only with adequate ventilation.
Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.
Explosion-proof equipment (for example fans, switches, and surface pipes) should be used in mechanical ventilation.*
- **8.1 Control parameters**
- **Ingredients with limit values that require monitoring at the workplace:** *Not required.*
- **DNELs**
When the recommended risk management measures (RMMs) and terms of use (OCs) are observed, any exposure is not expected to exceed the predicted DNEL (derived no-effect levels), and the resulting risk characterization ratios are expected to be less than 1.

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- **PNECs**
PNEC aqua - freshwater: 0.813
PNEC aqua - seawater: 0.0813
PNEC aqua - periodical release: 8.13 mg/L
PNEC sediment - freshwater: 3.61 mg/kg
PNEC sediment - marine water: 0.361 mg/kg
- **Additional information:** *The lists valid during the making were used as basis.*

· **8.2 Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Do not eat or drink while working.

Avoid contact with the skin.

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

· **Respiratory protection:**



Half-mask type FFP-2 according to EN194.

· **Protection of hands:**



Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

· **Material of gloves**

Nitrile rubber, NBR

Butyl rubber, BR

PVC gloves

0.7 mm or thicker.

· **Penetration time of glove material > 240 minutes**

· **Eye protection:**



Tightly sealed goggles

· **Body protection:**

Flame retardant antistatic protective clothing may be required if used in areas where flammables are processed.

· **Limitation and supervision of exposure into the environment**

Avoid release to the environment.

Do not flush into surface water or sanitary sewer system.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: *Fluid*

Colour: *Colourless*

· **Odour:** *Nearly odourless*

· **pH-value:** *Neutral*

· **Change in condition**

Melting point/freezing point: *19 - 20°C*

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Initial boiling point and boiling range: 228°C	
· Flash point:	> 121°C (OC)
· Flammability (solid, gas):	OSHA Flammability Class: IIIB
· Ignition temperature:	350°C
· Explosive properties:	Danger of explosion is present.
· Explosion limits:	
Lower:	1.95Vol %
Upper:	18.3Vol %
· Vapour pressure at 38°C:	>1mmHg
· Density at 20°C:	1.02g/cm ³
· Solubility in / Miscibility with water:	Soluble.
· Viscosity:	
Dynamic at 20°C:	84.9mPas
Kinematic at 20°C:	83.2mm ² /s
· 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid**
Heat
Flames
Sparks
- **10.5 Incompatible materials:**
Avoid contact with acids.
Avoid contact with amines.
Oxidising agents.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects

- **Acute toxicity**
Harmful if swallowed.

· LD/LC50 values relevant for classification:

Oral	LD50	1525 mg/kg (rat) (RTECS)
Dermal	LD50	>2000 mg/kg (rabbit) (RTECS)
Inhalative	LC50	> 5.1 mg/L (rat) (IUCLID)

- **Primary irritant effect:**
- **Skin corrosion/irritation** Slight irritation possible.
- **Serious eye damage/irritation** Can cause irritation on contact.
- **Inhalation:** Irritating the respiratory tract.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **Repeated dose toxicity** NOAEL: 25 mg/kg bw/day
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)** Not determined
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

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- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure**
May cause drowsiness or dizziness.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

LC50	813 mg/L (<i>Daphnia magna</i>) (48h)
	> 10000 mg/L (<i>Leuciscus idus</i>) (96h)
	> 500 mg/L (<i>Desmodesmus subspicatus</i>) (96h)

· 12.2 Persistence and degradability

Easily biodegradable

Biological elimination: 74-96% (14 days)

· 12.3 Bioaccumulative potential

Bioconcentration factor (BCF): 3.16 L/kg.

Not expected to significantly bioaccumulate.

· 12.4 Mobility in soil

Adsorption coefficient:

Koc: 0.44-8.4

log Koc: -0.356-9.1

· Additional ecological information:

· **COD-value:** 98.7% (5 days)

· General notes:

Water hazard class 2 (German Regulation) (Assessment by list): hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

· 12.5 Results of PBT and vPvB assessment

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· Uncleaned packaging:

· **Recommendation:** Disposal must be made according to official regulations.

· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· 14.1 UN-Number

· **ADR, ADN, IMDG, IATA** Void

· 14.2 UN proper shipping name

· **ADR, ADN, IMDG, IATA** Void

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Trade name: Butane-1,4-diol

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· 14.3 Transport hazard class(es)	
· ADR, ADN, IMDG, IATA	
· Class	Void
· 14.4 Packing group	
· ADR, IMDG, IATA	Void
· 14.5 Environmental hazards:	Not applicable.
· 14.6 Special precautions for user	Not applicable.
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	Not dangerous according to the above specifications.
· UN "Model Regulation":	Void

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
Regulation (EU) no. 2015/830
- **REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3**
- **National regulations:**
- **Other regulations, limitations and prohibitive regulations** Water hazard class: WGK(1) (Germany)
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**
H302 Harmful if swallowed.
H336 May cause drowsiness or dizziness.
- **Recommended restriction of use**
PC39 Cosmetics, personal care products
PC0 Other
- **Department issuing SDS:** product safety department
- **Contact:** msds@will-co.nl
- **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
- *** Data compared to the previous version altered. SECTION 15 Regulatory information.**