

Safety data sheet
according to 1907/2006/EC, Article 31



Printing date 03.06.2021

Revision: 03.06.2021

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

- **1.1 Product identifier**
 - **Trade name:** γ-butyrolactone (GBL)
 - **Synonyms:**
gamma-butyrolactone, butyrolactone, BLO, 1.4-lactone, 4-butyrolactone, 4-hydroxybutyric acid lactone, gamma-hydroxybutyric acid lactone, oxolan-2-one, Dihydro-2(3H)-Furanone
 - **CAS Number:**
96-48-0
 - **EC number:**
202-509-5
 - **1.2 Relevant identified uses of the substance or mixture and uses advised against :**
 - **Identified/Recommended uses:**
Chemical for synthesis
Flavouring agents
Solvent
Raw Material for:
Cleaning agent/ Cleaner
Surface cleaning
 - **1.3 Details of the supplier of the safety data sheet**
 - **Manufacturer/Supplier:**
Dairen Chemical Corporation
9th Fl., No. 301, SongJiang Rd.
Taipei City, 10483, TAIWAN
Tel: +886-2-7743-1500 Fax: +886-2-2509-9619
www.dcc.com.tw
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- **REACH Information:**
 - **REACH Registration Number(s):**
This product is not registered under EU REACH Regulation. EU importer is responsible for all REACH registration obligations.
 - **Further information obtainable from:** Respective plant's environmental, health, and safety (EHS) Dept.
 - **1.4 Emergency telephone number:** +886-2-7743-1500 (08:30-17:30; GMT+8)

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture:**
 - **Classification according to Regulation (EC) No 1272/2008**
Acute Tox. 4 H302 Harmful if swallowed.
Eye Dam. 1 H318 Causes serious eye damage.
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:**
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- GHS05 GHS07
- **Signal word:** Danger
 - **Hazard statements:**
Harmful if swallowed.
Causes serious eye damage.
May cause drowsiness or dizziness.

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Precautionary statements:

- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Wear eye protection / face protection.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Immediately call a POISON CENTER/doctor.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.
- 2.3 Other hazard:** None known.

SECTION 3: Composition/information on ingredients

- 3.1 Chemical characterisation: Substances**
- CAS No. Description**
96-48-0 gamma-butyrolactone
- EC number:** 202-509-5

SECTION 4: First aid measures

- 4.1 Description of first aid measures**
- General information:** First aider needs to protect himself.
- After inhalation:** Supply fresh air; consult doctor in case of complaints.
- After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- After eye contact:**
Rinse opened eye for 15 minutes under running water. If symptom persists consult a doctor.
Seek medical treatment.
- After swallowing:**
Drink plenty of water and provide fresh air. Call for a doctor immediately.
Do not induce vomiting unless directed to do so by medical personnel.
- 4.2 Most important symptoms and effects, both acute and delayed:**
CNS disorders
Drowsiness
Dizziness
Respiratory arrest
- 4.3 Indication of any immediate medical attention and special treatment needed**
Medical supervision for at least 48 hours.
Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media**
- Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Use fire extinguishing methods suitable to surrounding conditions.
- 5.2 Special hazards arising from the substance or mixture**
Carbon monoxide (CO)
Carbon dioxide (CO₂)
- 5.3 Advice for firefighters**
- Protective equipment:**
Wear protective fire fighting clothing (including fire fighting helmet, coat, trousers, boots, and gloves).
Wear positive-pressure self-contained breathing apparatus (SCBA).

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SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Do not breathe dust/fume/gas/mist/vapours/spray.
- **6.2 Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **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.
Ensure adequate ventilation.
- **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**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- **Information about fire - and explosion protection:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
Store in cool, dry place in tightly closed receptacles.
Suitable material for receptacles and pipes: Stainless steel.
Suitable material for receptacles and pipes: Soft steel.
- **Further information about storage conditions:** Keep container tightly sealed.
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**
- **Additional information about design of technical facilities:**
Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines.
Local exhaust ventilation may be necessary for some operations.
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
- **Ingredients with limit values that require monitoring at the workplace:** Not required.
- **Derived No Effect Levels (DNELs):** :
- **Workers:**
DNEL (inhalation, chronic effects systemic): 130 mg/m³; AF=3
DNEL (inhalation, acute effects systemic): 958 mg/m³; AF=9
DNEL (dermal, chronic effects systemic): 19
- **Consumers:**
DNEL (inhalation, chronic effects systemic): 28 mg/m³; AF=5
DNEL (inhalation, acute effects systemic): 340 mg/m³; AF=15
DNEL (dermal, chronic effects systemic): 8 mg/kg bw/day; AF=20
DNEL (oral, chronic effects systemic): 8 mg/kg bw/day; AF=20
- **Predicted No Effect Concentrations (PNEC):**
PNEC(fresh water): 0.056 mg/l with assessment factor of 1000

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PNEC (marine water): 0.0056 mg/l with assessment factor of 10000
PNEC (intermittent release): 0.56 mg/l with assessment factor of 100
PNEC (sewage treatment plant; STP): 452 mg/l with assessment factor of 10
PNEC (freshwater sediments): 0.24 mg/kg sediment dw with assessment factor of N/A
PNEC (marine sediments): 0.02 mg/kg sediment dw with assessment factor N/A
PNEC (soil): 0.014683 mg/kg soil dw with assessment factor of N/A

Personal protective equipment:**General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Do not eat, drink, smoke or sniff while working.
Avoid contact with the eyes and skin.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Be sure to clean skin thoroughly after work and before breaks.
Ensure that washing facilities are available at the work place.

Respiratory protection:

Use suitable respiratory protective device in case of insufficient ventilation.
Required when vapours/aerosols are generated.
Short term filter device:
Filter A/P2

Protection of hands:

Protective gloves

The selected protective gloves have to satisfy the specifications of standard EN 374 or its equivalent.
Replace gloves immediately when torn or any change in appearance (dimension, colour, flexibility etc) is noticed.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Full Contact:

Butyl rubber, BR

Recommended thickness of the material: ≥ 0.7 mm

Splash Contact:

Natural latex

Chloroprene rubber, CR

PVC gloves

Recommended thickness of the material: ≥ 0.5 mm**Penetration time of glove material**

Full Contact:

Break through time: > 480 min

Splash Contact:

Break through time: > 30 min

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· **Eye protection:**

Safety glasses with side shields conforming to EN166, ANSI 87.1-2010, or equivalent.

· **Body protection:**

Protective work clothing

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**· **General Information**· **Appearance:**

Form: Liquid
Colour: Colourless

· **Odour:** Odourless· **Odour threshold:** Not determined.· **pH-value (100 g/l) at 20 °C:** 4-6· **Change in condition****Melting point/freezing point:** ~ -43.5 °C**Initial boiling point and boiling range:** 204-206 °C· **Flash point:** 100-101 °C (Open Cup)· **Flammability (solid, gas):** Not applicable.· **Ignition temperature:** 445 °C· **Decomposition temperature:** Not determined.· **Auto-ignition temperature:** Not determined.· **Explosive properties:** Product does not present an explosion hazard.· **Explosion limits:****Lower:** 2.7 Vol %**Upper:** 15.6 Vol %· **Vapour pressure at 20 °C:** >1 hPa· **Density at 20 °C:** 1.13 g/cm³· **Relative density:** Not determined.· **Vapour density:** >3 (air=1)· **Evaporation rate:** Not determined.· **Solubility in / Miscibility with****water:** Fully miscible.· **Partition coefficient: n-octanol/water:** Not determined.· **Viscosity:****Dynamic:** Not determined.**Kinematic:** Not determined.**Organic solvents:** 99.5 %**VOC (EC)** 99.50 %· **9.2 Other information** No further relevant information available.

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SECTION 10: Stability and reactivity

- **10.1 Reactivity:** When properly handled and stored, no dangerous reaction is known.
- **10.2 Chemical stability:**
This product is stable under prescribed use and storage.
Sensitive to moisture.
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
Heating
- **10.3 Possibility of hazardous reactions:** Reacts with strong acids and alkali.
- **10.4 Conditions to avoid:** Protect from heat. Keep ignition sources away.
- **10.5 Incompatible materials:**
Strong acids
Strong oxidizing agents
Strong bases
Zinc
various plastics
- **10.6 Hazardous decomposition products:**
Carbon monoxide (CO) and carbon dioxide (CO₂)
Nitrogen oxides

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity**
Harmful if swallowed.

- **LD/LC50 values relevant for classification:**

96-48-0 gamma-butyrolactone

Oral	LD50	1540 mg/kg (rat)
Dermal	LD50	5640 mg/kg (gui)

- **Skin corrosion/irritation:**
Not classified based on available data.
Rabbit: not irritating (OECD Test Guideline 404)
- **Serious eye damage/eye irritation:**
Causes serious eye damage.
Non-corrosive but causes irreversible eye damage.
- **Respiratory or skin sensitization:**
Not classified based on available data.
Mice (Local Lymph Node Assay): Not sensitizing to the skin (OECD Test Guideline 429)
- **Germ Cell Mutagenicity:**
Not classified based on available data.
In-vivo genotoxicity (fruit fly): negative (OECD 407)
- **Carcinogenicity:**
Not classified based on available data.
Mouse (oral, long-term exposure): negative (OECD Guideline N/A; NTP)
- **Reproductive Toxicity:**
Not classified based on available data.
Rat - Negative (OECD 414)
- **Specific Target Organ Toxicity - Single Exposure (STOT SE):** May cause drowsiness or dizziness.
- **Specific Target Organ Toxicity - Repeated Exposure (STOT RE):**
Not classified based on available data.
- **Aspiration Hazard:** Not classified based on available data.
- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.

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- **Serious eye damage/irritation**
Causes serious eye damage.
 - **Respiratory or skin sensitisation** No sensitising effects known.
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SECTION 12: Ecological information

- **12.1 Toxicity**
 - **Aquatic toxicity:**
Not classified based on available data.
EC50 (Daphnia Magna, 48hr): > 500 mg/L (OECD N/A; EU Method C.2)
ErC50 (alga, 72hr): >1000 mg/L (OECD N/A; DIN 38412, part 9)
LC50 (96hr, freshwater fish): 56 mg/L (OECD 203)
 - **12.2 Persistence and degradability**
Easily biodegradable
Degradation : 77% (14d, OECD 301C)
 - **12.3 Bioaccumulative potential**
Bioconcentration Factor (BCF) = 3.16 L/kg
Bioaccumulation is not expected.
 - **12.4 Mobility in soil**
Partition coefficient, soil organic carbon/water (Koc) : 3.501-6.477
Henry's Law Constant (H) : 1.84 10.4 Pa m³/mol .
 - **Additional ecological information:**
 - **General notes:**
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
 - **12.6 Other adverse effects** No further relevant information available.
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SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
 - **Recommendation**
After prior treatment product has to be disposed of in an incinerator for hazardous waste adhering to the regulations pertaining to the disposal of particularly hazardous waste.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Any disposal method should also comply with national, regional, provincial, and local laws.
 - **Uncleaned packaging:**
 - **Recommendation:**
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.
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**
- **Dangerous Goods classification Status:** Not classified as a dangerous good with respect to transport regulations (IMDG, IATA, ADN, ADR, US DOT).
- **ADR, ADN, IMDG, IATA** None (Not a Dangerous Good)
- **14.2 UN proper shipping name**
- **ADR, ADN, IMDG, IATA** None (Not a Dangerous Good)

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- **14.3 Transport hazard class(es)**
- **ADR, ADN, IMDG, IATA**
- **Class** None (Not a Dangerous Good)
- **14.4 Packing group**
- **ADR, IMDG, IATA** None (Not a Dangerous Good)
- **14.5 Environmental hazards:**
- **Marine pollutant:** No
- **14.6 Special precautions for user** Not applicable.
- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**
- **UN "Model Regulation":** None (Not a Dangerous Good)

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3
- **Additional classification according to Decree on Hazardous Materials, Annex II:** None
- **Status of global inventories:**
All component(s) within this product is listed or exempted from the following country's chemical inventory:
Mexico - INSQ
Thailand - TECI
USA – TSCA
Australia – AICS
Canada – DSL
China – IECSC
EU – EINECS/NLP
Japan – ENCS
Korea – KECI
New Zealand – NZIoC
Philippines – PICCS
Taiwan – TCSI
Vietnam – NCI
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

- **Abbreviations and acronyms:**
ADR: Accord relatif au transport international 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)
VOC: Volatile Organic Compounds (USA, EU)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity – Category 4
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

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Sources

Most toxicological and eco-toxicological data are obtained from European Chemical Agency (ECHA)'s public dissemination website.

<https://echa.europa.eu/registration-dossier/-/registered-dossier/14990>

Disclaimer for REACH Registration Number(s), if provided:

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