

Safety Data Sheet

1. Chemical product and company identification

Product name : γ-Butyrolactone

SDS code : A5-12

Company/undertaking identification :

HAYASHI PURE CHEMICAL IND.,LTD.

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Emergency number : 06-6910-7305

2. Hazards identification

GHS classification

Physical hazards	Desensitized explosives	classification not possible
	Explosives	No classification
	Flammable gases	No classification
	Aerosol	No classification
	Oxidizing gases	No classification
	Gases under pressure	No classification
	Flammable liquids	No classification
	Flammable solids	No classification
	Self-reactive substances and mixtures	No classification
	Pyrophoric liquids	No classification
	Pyrophoric solids	No classification
	Self-heating substances and mixtures	classification not possible
	Substances and mixtures which in contact with water emit flammable gases	No classification
	Oxidizing liquids	No classification
	Oxidizing solids	No classification
	Organic peroxides	No classification
	Corrosive to metals	classification not possible
Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (dermal)	No classification
	Acute toxicity (inhalation:gas)	No classification
	Acute toxicity (inhalation:vapors)	classification not possible
	Acute toxicity (inhalation:dust/mist)	No classification
	Skin corrosion/irritation	No classification
	Serious eye damage/eye irritation	Category 2A
	Respiratory sensitization	classification not possible
	Skin sensitization	classification not possible
	Germ cell mutagenicity	No classification
	Carcinogenicity	classification not possible
	Reproductive toxicity	classification not possible
	Specific target organ toxicity (single exposure)	Category 2 (central nervous system)
	Specific target organ toxicity (single exposure)	Category 3 (Narcosis)

Environmental hazards	Specific target organ toxicity (repeated exposure)	classification not possible
	Aspiration hazard	classification not possible
	Hazardous to the aquatic environment, short-term (acute)	No classification
	Hazardous to the aquatic environment, long-term (chronic)	No classification
	Hazardous to the ozone layer	classification not possible

Hazard pictograms (GHS JP)



GHS07



GHS08

Signal word (GHS JP)	: Warning
Hazard statements (GHS JP)	: Harmful if swallowed (H302) Causes serious eye irritation (H319) May cause drowsiness or dizziness (H336) May cause damage to organs (central nervous system) (H371)
Precautionary statements (GHS JP)	
Prevention	: Do not breathe dust/fume/gas/mist/vapors/spray. (P260) Wash hands, forearms and face thoroughly after handling. (P264) Do not eat, drink or smoke when using this product. (P270) Use only outdoors or in a well-ventilated area. (P271) Wear protective gloves/protective clothing/eye protection/face protection. (P280)
Response	: IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. (P301+P312) IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338) IF exposed or concerned: Call a POISON CENTER or doctor. (P308+P311) Call a POISON CENTER or doctor if you feel unwell. (P312) Rinse mouth. (P330) If eye irritation persists: Get medical advice/attention. (P337+P313)
Storage	: Store in a well-ventilated place. Keep container tightly closed. (P403+P233) Store locked up. (P405)
Disposal	: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

3. Composition/information on ingredients

Distinction of substance or mixture	: Substance
Synonyms	: 4-Butyrolactone, γ -Hydroxybutyric acid lactone

Name	Concentration or Concentration range	Formula	Kanpo number		CAS RN
			CSCL no	ISHL no	
γ -Butyrolactone	$\geq 99.0\%$, $\leq 100\%$	C ₄ H ₆ O ₂	(5)-65,(5)-3337,(9)-137	Existing Chemical Substance	96-48-0

The above concentration or concentration range are not product specification.
All percentages listed in the above concentration or concentration range are mass%, unless otherwise specified.

4. First aid measures

First aid measures

- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
Get immediate medical advice/attention.
- First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing.
Gently wash with plenty of soap and water.
Get immediate medical advice/attention.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get immediate medical advice/attention.
- First-aid measures after ingestion : Do NOT induce vomiting.
Rinse mouth.
Get immediate medical advice/attention.

5. Fire fighting measures

- Suitable extinguishing media : Use proper extinguishing media depending on peripheral fire.
- Unsuitable extinguishing media : Do not use a heavy water stream.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.
In the case of peripheral fire, quickly remove movable containers to safe places.
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Before entering, ventilate the area.
Do not let unauthorized persons come close to the area.
Immediately place the leakage area in isolation, with taking proper distances for all directions.
Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

Environmental precautions

- Environmental precautions : Avoid release to the environment.
Prevent entry to sewers and public waters.

Methods and Equipment for Containment and Cleaning up

- Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it.
Collect leaking and spilled liquid in sealable containers as far as possible.
Wash out the spilled area with large amounts of water.

7. Handling and storage

Handling

- Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.
- Precautions for safe handling : Do not eat, drink or smoke when using this product.
Thoroughly wash your hands and gargle after handling.
Ensure good ventilation of the work station.
Do not contact, breathe or swallow.
- Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

Storage

Storage conditions	: Store locked up. Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.
Material used in packaging/containers	: Light shielding airtight container.
Technical measures	: Comply with applicable regulations.
Storage temperature	: Cool and dark place

8. Exposure controls / Personal protection equipment

Appropriate engineering controls	: Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location.
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Protective equipment

Respiratory protection	: Gas mask for organic gases
Hand protection	: Impervious protective gloves
Eye protection	: Protective glasses (general glasses, glasses with side-shields, goggles)
Skin and body protection	: Impervious aprons, Impervious work clothing, Protective long boots

9. Physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid
Color	: colorless transparent
Odor	: characteristic odor
pH	: No data available
Melting point	: -44 °C
Freezing point	: No data available
Boiling point	: 203 – 204 °C
Flash point	: 98.3 °C (Cleveland open cup)
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 0.15 kPa (20°C)
Relative density	: No data available
Density	: 1.1 g/cm ³ (20°C)
Relative gas density	: No data available
Solubility	: Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in benzene.
Partition coefficient n-octanol/water (Log Pow)	: -0.57
Explosive limits (vol %)	: 2.2 – 15.0 vol % (in air)
Viscosity, kinematic	: No data available
Particle characteristics	: No data available

10. Stability and reactivity

Reactivity	: No data available
Chemical stability	: Stable under normal handling conditions.
Possibility of hazardous reactions	: Reacts with strong acids, strong oxidizing agents, strong reducing agents and strong bases.
Conditions to avoid	: Sunlight, heat, moisture. Ignition sources such as flame, spark, and static electricity. Contact with strong oxidizing agents, strong acids, strong bases, strong reducing agents, vinyl chloride resin, polystyrene, etc.
Incompatible materials	: Strong oxidizing agents, Strong acids, Strong bases, Strong reducing agents, Vinyl chloride resin, Polystyrene
Hazardous decomposition products	: No data available

11. Toxicological information

The information in this section is based on the "GHS Classification Results" by NITE.

γ-Butyrolactone	
Acute toxicity (oral)	Category 4
Acute toxicity (dermal)	No classification
Acute toxicity (gas)	No classification
Acute toxicity (vapour)	classification not possible
Acute toxicity (inhalation:dust/mist)	No classification
Skin corrosion/irritation	No classification
Serious eye damage/irritation	Category 2A
Respiratory sensitization	classification not possible
Skin sensitization	classification not possible
Germ cell mutagenicity	No classification
Carcinogenicity	classification not possible
Reproductive toxicity	classification not possible
STOT-single exposure	Category 2 Category 3 (Narcosis)
STOT-repeated exposure	classification not possible
Aspiration hazard	classification not possible

12. Ecological information

The information in this section is based on the "GHS Classification Results" by NITE.

γ-Butyrolactone	
Hazardous to Aquatic Environment - Acute Hazard	No classification
Hazardous to Aquatic Environment - Chronic Hazard	No classification
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Hazardous to the ozone layer	classification not possible

13. Disposal considerations

- Ecology - waste materials : With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
- Contaminated container and packaging : Empty the packaging completely prior to disposal.
Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

14. Transport information

International Regulations

Transport by sea(IMDG)

- UN-No. (IMDG) : Not applicable
- Proper Shipping Name (IMDG) : Not applicable
- Packing group (IMDG) : Not applicable
- Transport hazard class(es) (IMDG) : Not applicable

Air transport(IATA)

- UN-No. (IATA) : Not applicable
- Proper Shipping Name (IATA) : Not applicable
- Packing group (IATA) : Not applicable
- Transport hazard class(es) (IATA) : Not applicable

- Marine pollutant** : Not applicable

Regulations in Japan

- Regulatory information by sea : Not applicable
- Regulatory information by air : Not applicable

- Special transport precautions** : When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

15. Regulatory information

National law

Industrial Safety and Health Law	: Not applicable
Japanese Poisonous and Deleterious Substances Control Law	: Not applicable
Fire Service Law	: Group 4 - Flammable liquids - 3rd Class petroleum - soluble (Law Art.2 Para.7, Attached Table 1, Group 4)
Law Relating to Prevention of Marine Pollution and Maritime Disasters	: Noxious Liquid Substances - Category Y (Law Art.3(3), Enforcement Order, Art.1-2, Attached Table No.1 Item 2)
Foreign Exchange and Foreign Trade Control Act	: Export Trade Control Ordinance appendix 1-16
Japanese Pollutant Release and Transfer Register Law (PRTR Law)	: Not applicable

16. Other information

Data sources	: Handbook of 17120 Chemical Products, The Chemical Daily Co, Ltd. International Chemical Safety Cards. National Institute of Technology and Evaluation (NITE). 2016 Emergency Response Guidebook (ERG 2016).
Other information	: The SDS is copyrighted material of Hayashi Pure Chemical Ind, Ltd. This Safety Data Sheet is intended to be provided for business operators who handle chemical substance products of the relevant product and is not intended to assure safety in any way. The Safety Data Sheet does not verify all the information on the applicable chemical substance in the present time. With the recognition in that unknown danger constantly exists in the relevant chemical substance, the product shall be used in the principle of self-responsibility of the user with the highest priority to safety from transport and unpacking to disposal. When the relevant chemical substance is used, the user him/herself shall collect safety information and shall investigate laws and regulations at the place, organizations, countries, etc. where the substance is actually used and give the highest priority to them. The Company shall take no responsibility for investigating state and local regulations and the user shall handle this problem on his/her own responsibility. In the event that SDS in Japanese and SDS translated into other languages exist, the document described in Japanese is prior to all other documents whether or not there is any difference in contents, and documents in other languages shall be references.