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Material Safety Data Sheet

Gamma Butyrolactone

Section 1: Chemical Product and Company Identification

Molecular formula: C₄H₆O₂

CAS Nr: 96-48-0

EINECS: 202-509-5

Molecular weight: 86.09

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	By Weight
Gamma-Butyrolactone	96-48-0	100%

Toxicological Data on Ingredients: Not applicable.

Section 3: Hazards Identification

Emergency overview

Irritating to eyes and respiratory system.

State of matter: liquid

Colour: colourless

Odour: odourless, faint odour

Potential health effects

Acute toxicity:

Of moderate toxicity after single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact. The inhalation of a highly enriched/saturated vapor-air-mixture represents an unlikely acute hazard.

Irritation / corrosion:

Not irritating to the skin. May cause severe damage to the eyes.

Sensitization:

Skin sensitizing effects were not observed in animal studies.

Carcinogenicity:

Results from a number of long-term carcinogenity studies are available. Taking into account all of the information, there is no indication that the substance is carcinogenic. Literature data.

Teratogenicity:

No indications of a developmental toxic / teratogenic effect were seen in animal studies.Literature data.

Genotoxicity:

In the majority of tests performed (bacteria/microorganisms/cell cultures) a mutagenic effect was not found. A mutagenic effect was also not observed in in-vivo assays. Literature data.

Medical conditions aggravated by overexposure:

Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product.

Signs and symptoms of overexposure: unconsciousness

Potential environmental effects

Aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Section 4: First Aid Measures

General advice:

Remove contaminated clothing.

If inhaled:

Keep patient calm, remove to fresh air. Assist in breathing if necessary. Consult a physician.

If on skin:

Wash affected areas thoroughly with soap and water. Remove contaminated clothing. If irritation develops, seek medical attention.

If in eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If swallowed: If person is conscious

Section 5: Fire and Explosion Data

Flash point: 100 ° C (DIN 51758)
Autoignition: 455 ° C (DIN 51794)
Lower explosion limit: 3.6 %(V)
Upper explosion limit: 15.6 %(V) (136 ° C)

Suitable extinguishing media:

water spray, dry powder, foam, carbon dioxide

Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

Section 6: Accidental Release Measures

Personal precautions:

Avoid contact with the skin, eyes and clothing.

Environmental precautions:

Discharge into the environment must be avoided.

Cleanup:

For large amounts: Pump off product.

For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).

Dispose of absorbed material in accordance with regulations.

Section 7: Handling and Storage

Handling

General advice:

Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Storage

General advice:

Containers should be stored tightly sealed in a dry place. Storage in galvanized containers is not recommended.

Storage incompatibility:

General advice: Segregate from alkalies and alkalizing substances.

Storage stability:

Storage duration: 24 Months

Section 8: Exposure Controls/Personal Protection

Personal protective equipment

Respiratory protection:

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator as needed.

Hand protection:

Chemical resistant protective gloves, Suitable materials, rubber, plastic

Eye protection:

Tightly fitting safety goggles (chemical goggles).

General safety and hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with the skin, eyes and clothing. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Wash soiled clothing immediately.

Section 9: Physical and Chemical Properties

Form:	liquid
Odour:	odourless, faint odour
Odour threshold:	No data available.
Colour:	colourless
pH value:	approx. 4 - 5 (100 g/l, 20 ° C)
Freezing point:	-43.5 ° C
Boiling range:	204 - 206 ° C (1,013 hPa)
Vapour pressure:	approx. 0.4 mbar (20 ° C) (calculated) 3 mbar (approx. 50 ° C) (Directive 92/69/EEC, A.4)
Density:	1.13 g/cm ³ (20 ° C) (DIN 51757)
Partitioning coefficient	-0.566 (25 ° C)
Viscosity, dynamic:	1.9 mPa.s (20 ° C) 1.25 mPa.s (50 ° C)
Solubility in water:	(20 ° C) miscible
Miscibility with water:	miscible in all proportions
Solubility (qualitative):	miscible
solvent(s):	organic solvents,
Molar mass:	86.09 g/mol

Section 10: Stability and Reactivity Data

Conditions to avoid:

Avoid heat. Avoid open flames.

Substances to avoid:

strong acids, bases, oxidizing agents

Hazardous reactions:

Violent reactions with concentrated alkalis and oxidizing agents.

Section 11: Toxicological Information

Acute toxicity

Oral:

Type of value: LD50

Species: rat

Value: 1,582 mg/kg (BASF-Test)

Inhalation:

Type of value: LC50

Species: rat

Value: > 5.1 mg/l

Exposure time: 4 h

An aerosol was tested.

Literature data.

Dermal:

Type of value: LD50

Species: guinea pig

Value: > 5,000 mg/kg

Literature data.

Irritation / corrosion

Skin:

Species: rabbit

Result: non-irritant

Method: BASF-Test

Eye:

Species: rabbit

Result: Risk of serious damage to eyes.

Method: OECD Guideline 405

Experiences in humans:

High concentrations have a narcotizing effect.

Section 12: Ecological Information

Fish

Acute:

DIN 38412 Part 15 static

Leuciscus idus/LC50 (96 h): > 220 - < 460 mg/l

The details of the toxic effect relate to the nominal concentration.

Aquatic invertebrates

Acute:

Directive 79/831/EEC Daphnia magna/EC50 (48 h): > 500 mg/l

The details of the toxic effect relate to the nominal concentration.

Aquatic plants

Toxicity to aquatic plants:

DIN 38412 Part 9 green algae/EC50 (72 h): > 1,000 mg/l

The details of the toxic effect relate to the nominal concentration.

Microorganisms

Toxicity to microorganisms:

DIN 38412 Part 8 bacterium/EC50 (17 h): > 10,000 mg/l

The details of the toxic effect relate to the nominal concentration.

Bioaccumulation

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Section 13: Disposal Considerations

Waste disposal of substance:

Must be disposed of or incinerated in accordance with local regulations.

Container disposal:

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

Section 14: Transport Information

Land transport

Not classified as a dangerous good under transport regulations

Sea transport

Not classified as a dangerous good under transport regulations

Air transport

Not classified as a dangerous good under transport regulations

Section 15: Other Regulatory Information

References: Not available.

Other Special Considerations: Not available.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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