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ISO 9001: 2015

MATERIAL SAFETY DATA SHEET

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

1.1 Product identifiers

γ -Butyrolactone, 99%+

Code B 2445

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4), H302

Serious eye damage (Category 1), H318

Specific target organ toxicity - single exposure (Category 3), H336

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word Danger

Hazard statement(s)

H302 Harmful if swallowed.

H318 Causes serious eye damage. H336 May cause drowsiness or dizziness. Precautionary statement(s)

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

P280 Wear protective gloves/ eye protection/ face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard none

Statements

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms :

4-Hydroxybutyric acid lactone

GBL

γ -Hydroxybutyric acid lactone

gamma-Butyrolactone

Formula : C₄H₆O₂

Molecular weight : 86.09 g/mol

CAS-No. : 96-48-0

EC-No. : 202-509-5

Registration number : 01-2119533169-37-0007

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component Classification Concentration

γ -Butyrolactone

CAS-No. 96-48-0 Acute Tox. 4; Eye Dam. 1; <= 100 %

EC-No. 202-509-5 STOT SE 3; H302, H318,

Registration number H336

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician. In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in

section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

Combustible liquid. 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary. 5.4 Further information

No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Evacuate personnel to safe areas. For personal protection see section 8. 6.2 Environmental precautions

Do not let product enter drains. 6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed

containers for disposal. 6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. For precautions see section 2.2. 7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are

opened must be carefully resealed and kept upright to prevent leakage. hygroscopic

Storage class (TRGS 510): Combustible liquids not in Storage Class 3

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Personal protective equipment

Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection

tested and approved under appropriate government standards such as NIOSH (US) or EN

166 (EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique

(without touching glove's outer surface) to avoid skin contact with this product. Dispose of

contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Body

Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected

according to the concentration and amount of the dangerous substance at the specific workplace. Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use (US) or type ABEK (EN

14387) respirator cartridges as a backup to engine protection, use a full-face supplied air

respirator. Use respirators and components tested and approved under appropriate government

standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance Form: liquid, clear

Colour: colourless

b) Odour No data available

c) Odour Threshold No data available

d) pH 4 at 100 g/l at 20 °C

e) Melting point/freezing point Melting point/range: -45 °C - lit.

f) Initial boiling point and boiling range 204 - 205 °C - lit.

g) Flash point 98 °C - closed cup

h) Evaporation rate No data available

i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	Upper explosion limit: 16 %(V) Lower explosion limit: 1.4 %(V)
k) Vapour pressure	1.5 mmHg at 20 °C
l) Vapour density	2.97 - (Air = 1.0)
m) Relative density	1.12 g/cm ³ at 20 °C
n) Water solubility	No data available
o) Partition coefficient: n-octanol/water	log Pow: -0.57
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available

9.2 Other safety information
Relative vapour density 2.97 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

hygroscopic

Stable under recommended storage conditions. 10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Strong acids, Strong bases, Strong oxidizing agents, Strong reducing agents, Zinc, Plastics

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD₅₀ Oral - Rat - 1,540 mg/kg(γ -Butyrolactone)

Remarks: Behavioral:Altered sleep time (including change in righting reflex). Behavioral:Somnolence

(general depressed activity). Respiratory disorder

LC₅₀ Inhalation - Rat - 4 h - > 5,100 mg/m³(γ -Butyrolactone)

LD₅₀ Dermal - Guinea pig - > 5,000 mg/kg(γ -Butyrolactone)

Skin corrosion/irritation

No data available(γ -Butyrolactone)

Serious eye damage/eye irritation

No data available(γ -Butyrolactone)

Respiratory or skin sensitisation

No data available(γ -Butyrolactone)

Germ cell mutagenicity

No data available(γ -Butyrolactone)

Carcinogenicity

This product is or contains a component that is not classifiable as to its classification.(γ -Butyrolactone)

(γ -Butyrolactone)

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (γ -Butyrolactone)

Reproductive toxicity

No data available(γ -Butyrolactone)

Specific target organ toxicity - single exposure

May cause drowsiness or dizziness.(γ -Butyrolactone)

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available(γ -Butyrolactone)

Additional Information

RTECS: LU3500000

an anesthetic effect on the central nervous system characterized by a loss of sensation., Preliminary excitement is the initial effect followed by relaxation, stupor, or sleep., Nausea, Dizziness, Headache(γ Butyrolactone)

Liver - Irregularities - Based on Human Evidence(γ -Butyrolactone)

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish LC50 -

Leuciscus idus (Golden orfe) - > 220 mg/l - 96 h(γ-Butyrolactone)

Toxicity to daphnia and EC50 -
other aquatic
invertebrates

Daphnia magna (Water flea) - > 500 mg/l - 48 h(γ-Butyrolactone)
(Directive 67/548/EEC, Annex V, C.2.)

Toxicity to algae

EC50 - Desmodesmus subspicatus (green algae) - 360 mg/l - 72 h(γ- Butyrolactone)

12.2 Persistence and degradability

Biodegradability

Biotic/Aerobic - Exposure time 13 d(γ-Butyrolactone)

Result: 90 % - Readily biodegradable

(Directive 67/548/EEC Annex V, C.4.F.)

12.3 Bioaccumulative potential

Biochemical Oxygen

No data available

12.4 Mobility in soil

No data available(γ-Butyrolactone)

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. 12.6 Other adverse effects

Additional ecological

No data available

information 1,160 mg/g(γ-Butyrolactone)

Demand (BOD)

Adsorbed organic bound

halogens (AOX)

Remarks: Product does not contain any organic halogens.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR/RID: -

IMDG: -

IATA: -

14.2 UN proper shipping name

ADR/RID: -

Not dangerous goods

IMDG: -

Not dangerous goods

IATA: -

Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: -

IMDG: -

IATA: -

14.4 Packaging group

ADR/RID: -

IMDG: -

IATA: -

14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

14.6 Special precautions for user

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

Section 16: Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.