GBL Europe

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment
		 See Section 15.

Section 1. Chemical Product and Company Identification

Common Name/ Trade Name	**gamma-Butyrolactone**
Manufacturer	GBL EUROPE PO BOX 193 8330 AD, STEENWIJK, THE NETHERLANDS
Commercial Name(s)	Agrisynth BLO
Synonym	4-Butyrolactone; 1,2-Butanolide; 1,4-Butanolide; 2-Oxolanone; 4-Deoxytetronic acid; 4-Hydroxybutanoic acid lactone; 4-Hydroxybutanoic acid, gamma-lactone; 4-Hydroxybutyric acid lactone; 4-Hydroxybutyric acid, gamma-lactone; Butyric acid lactone; Butyric acid, 4-hydroxy-, gamma-lactone
Chemical Name	Gamma-Butyrolactone; 2(3H)-Furanone, hihydro-
Chemical Family	Not available.
Chemical Formula	C4H6O2
Supplier	GBL EUROPE PO BOX 193 8330 AD, STEENWIJK, THE NETHERLANDS

Catalog Number(s).	YY1572, B1198
CAS#	96-48-0
RTECS	LU3500000
TSCA	TSCA 8(b) inventory: gamma-Butyrolactone
CI#	Not available.

IN CASE OF EMERGENCY
CHEMTREC (24hr)
info@gbl-europe.com

CALL +31 (0)6 52 692 464

Section 2.Composition and Information on Ingredients

		Exposure Limits			
Name	**CAS #**	**TWA (mg/m³)**	**STEL (mg/m³)**	**CEIL (mg/m³)**	**% by Weight**
1) {gamma-}Butyrolactone	96-48-0				100

Toxicological Data on Ingredients

gamma-Butyrolactone:
ORAL (LD50): Acute: 1540 mg/kg [Rat]. 1460 mg/kg [Mouse].
DERMAL (LD50): Acute: >5000 mg/kg [Guinea pig].
VAPOR (LC50): Acute: >5100 mg/m³ 4 hours [Rat].

Section 3. Hazards Identification

Potential Acute Health Effects

Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Potential Chronic Health Effects

Slightly hazardous in case of skin contact (permeator).
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
Skin Contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
Serious Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Serious Inhalation	Not available.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	May be combustible at high temperature.
Auto-Ignition Temperature	Not available.
Flash Points	OPEN CUP: 98.333°C (209°F).
Flammable Limits	LOWER: 3.6% UPPER: 16%
Products of Combustion	These products are carbon oxides (CO, CO2).
Fire Hazards in Presence of Various Substances	Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Special Remarks on Fire Hazards	When heated to decomposition it emits acrid and irritating fumes. Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition sources, vapors can burn in open or explode if confined. Vapors may be heavier than air. Vapor may travel considerable distance to source of ignition and flash back to vapor source
Special Remarks on Explosion Hazards	Potentially explosive reaction with butanol + 2,4-dichlorophenol + sodium hydroxide.

Section 6. Accidental Release Measures

Small Spill	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
Large Spill	Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

Precautions	Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance	Liquid. (Oily liquid.)	**Odor**	Pleasant. (Slight.)
Molecular Weight	86.09 g/mole	**Taste**	Not available.
pH (1% soln/water)	Not available.	**Color**	Colorless. Clear
Boiling Point	204°C (399.2°F)		
Melting Point	-43.53°C (-46.4°F)		
Critical Temperature	Not available.		
Specific Gravity	1.1286 @ 15 C(Water = 1)		
Vapor Pressure	0 kPa (@ 20°C)		
Vapor Density	>3 (Air = 1)		
Volatility	Not available.		
Odor Threshold	20-50 ppm		
Water/Oil Dist. Coeff.	The product is more soluble in water; log(oil/water) = -0.6		
Ionicity (in Water)	Not available.		
Dispersion Properties	See solubility in water, methanol, diethyl ether, acetone.		
Solubility	Easily soluble in methanol, diethyl ether, acetone. Soluble in cold water, hot water. Very soluble in ethanol, benzene.		

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Excess heat, ignition sources (sparks, open flames), incompatible materials
Incompatibility with various substances	Reactive with oxidizing agents, acids, alkalis.
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	Hygroscopic; keep container tightly closed.
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Section 11. Toxicological Information

Routes of Entry	Absorbed through skin. Eye contact.
Toxicity to Animals	**WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.** Acute oral toxicity (LD50): 1460 mg/kg [Mouse]. Acute dermal toxicity (LD50): >5000 mg/kg [Guinea pig]. Acute toxicity of the vapor (LC50): >5100 mg/m^3 4 hours [Rat].
Chronic Effects on Humans	**CARCINOGENIC EFFECTS**: 3 (Not classifiable for human.) by IARC.
Other Toxic Effects on Humans	Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	May affect genetic material (mutagenic). May cause cancer based on animal test data
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: Causes skin irritation. Mildly to moderately irritating. May be absorbed through skin and cause systemic effects Eyes: Causes eye irritation. It can cause moderate to severe eye irritation. Inhalation: May cause respiratory tract irritation. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation with nausea, cramps, diarrhea, vomiting, salivation. May affect behavior/central nervous system (general anesthetic, somnolence, uncontrollable muscle twitches, headache, giddiness, nervousness, weakness, loss of reflexes, convulsions, coma), vision (blurred vision), respiration (respiratory depression, excessive respiratory tract secretion), cardiovascular system (cardiac arrythmias, various degrees of heart block, cardia arrest, hypotension, bradycardia). Other symptoms may include miosis, sweating, cyanosis, discomfort in the chest, loss of sphincter control, metabolic acidosis, mild hypothermia. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact can result irritaiton and significant absorption. Ingestion: Prolonged or repeated ingestion may affect the blood (pigmented or nucleated red blood cells, change in red blood cell count), metabolism (weight loss). Inhalation: Prolonged or repeated inhalation may affect the brain (degenerative changes), and liver.

Section 12. Ecological Information

Ecotoxicity	Ecotoxicity in water (LC50): >5 mg/l 24 hours [Fish (Rainbow Trout)]. >5 mg/l 24 hours [Fish (Goldfish)]. 220-460 mg/l 96 hours [Fish (Leuciscus idus)]. >500 mg/l 48 hours [Daphnia (daphnia magna)]. 360 mg/l 72 hours [Algae (Desmodesmus subspicatus)]. 79 mg/l 96 hours [Algae (Desmodesmus subspicatus)].
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal	Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification	Not a DOT controlled material (United States).
Identification	Not applicable.
Special Provisions for Transport	Not applicable.
DOT (Pictograms)	

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations

TSCA 8(b) inventory: gamma-Butyrolactone

California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 202-509-5).
Canada: Listed on Canadian Domestic Substance List (DSL).
China: Listed on National Inventory.
Japan: Listed on National Inventory (ENCS).
Korea: Listed on National Inventory (KECI).
Philippines: Listed on National Inventory (PICCS).
Australia: Listed on AICS.
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications

WHMIS (Canada) CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC)

R22- Harmful if swallowed.
R36/38- Irritating to eyes and skin.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37- Wear suitable gloves.
S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.)

National Fire Protection Association (U.S.A.)

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

Gloves.

Lab coat.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Splash goggles.

Section 16. Other Information

MSDS Code	**B4230**
References	Not available.
Other Special Considerations	Major Uses: Intermediate in the synthesis of polyvinylpyrrolidone, DL-methionine, piperidine, phenylbutyric acid, thiobutyric acids. Solvent for polyacrylonitrile, cellulose acetate, methyl methacrylate polymers, polystyrene. Constituent of paint removers, textile aids, drilling oils. O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 2006.., p. 260 Peer Reviewed Intermediate in the synthesis of herbicides, growth regulators, alpha-acetobutyrolactone, the rubber additive thiodibutyric acid, as a polymerization catalyst, in hairwave compositions, sun lotions, pharmaceuticals, printing inks, as an extractant in the petroleum industry, as a stabilizer for chlorohydrocarbons and phosphorus-based pesticides, as a nematocide, and as a cosolvent for capacitor electrolytes and photoresists. Schwarz W, Schossig J; Ullmann's Encyclopedia of Industrial Chemistry. 7th ed. (2005). NY, NY: John Wiley & Sons; Butyrolactone. Online Posting Date: June 15, 2000. Peer Reviewed Gamma-butyrolactone is a chemical solvent used in nail polish removers. Ellenhorn, M.J., S. Schonwald, G. Ordog, J. Wasserberger. Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning. 2nd ed. Baltimore, MD: Williams and Wilkins, 1997., p. 1103 Peer Reviewed

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