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## Material Safety Data Sheet gamma-Butyrolactone MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** gamma-Butyrolactone

**Catalog Codes:** 10378

**CAS#:** 96-48-0

**RTECS:** LU3500000

**TSCA:** TSCA 8(b) inventory: gamma-Butyrolactone

**CI#:** Not available.

**Synonym:** Agrisynth BLO; 4-Butyrolactone; 1,2-Butanolide; 1,4-Butanolide; 2-Oxolanone; 4-Deoxytetrone 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, dihydro-

**Chemical Formula:** C<sub>4</sub>H<sub>6</sub>O<sub>2</sub>

**Contact Information:**

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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:** 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/m 4 hours [Rat].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of eye contact (irritant), of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), 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, CO<sub>2</sub>).

### 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.)

**Taste:** Not available.

**Molecular Weight:** 86.09 g/mole

**Color:** Colorless. Clear

**pH (1% soln/water):** Not available.

**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:** Not available.

**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 4 hours [Rat]. 3

**Chronic Effects on Humans:** CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.

**Other Toxic Effects on Humans:**

Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), 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: May cause skin irritation. May be absorbed through skin. NO data on skin irritation has been found. Eyes: May 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 arrhythmias, 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)].

**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.

### Section 15: Other Regulatory Information

**Federal and State Regulations:** TSCA 8(b) inventory: gamma-Butyrolactone

**Other Regulations:** EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

R22- Harmful if swallowed. R36- Irritating to eyes. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** h

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

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

### Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

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