

MATERIAL SAFETY DATA SHEET

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Version 1.1

Section 1 - Product and Company Information

Product Name	GAMMA-BUTYROLACTONE-13C4, 99 ATOM % 13C
Product Number	677159
Brand	ALDRICH
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
GAMMA-BUTYROLACTONE-13C4, 99 ATOM % 13C	None	No
Formula	13C4H6O2	

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Harmful.

Harmful by inhalation and if swallowed. Irritating to eyes and skin.

Target organ(s): Central nervous system.

HMIS RATING

HEALTH: 2*

FLAMMABILITY: 1

REACTIVITY: 1

NFPA RATING

HEALTH: 2

FLAMMABILITY: 1

REACTIVITY: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

EXPLOSION HAZARDS

Vapor/air mixtures are explosive at high temperatures.

FLASH POINT

208.4 °F 98 °C Method: closed cup

EXPLOSION LIMITS

Lower: 1.4 % Upper: 16 %

AUTOIGNITION TEMP

455 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS

Hygroscopic.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Liquid	
Property	Value	At Temperature or Pressure
Molecular Weight	90.09 AMU	
pH	N/A	
BP/BP Range	204.0 - 205.0 °C	760 mmHg
MP/MP Range	- 45.0 °C	
Freezing Point	N/A	
Vapor Pressure	1.5 mmHg	20 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	1.171 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	208.4 °F 98 °C	Method: closed cup
Explosion Limits	Lower: 1.4 % Upper: 16 %	
Flammability	N/A	
Autoignition Temp	455 °C	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions of Instability: Hygroscopic.

Materials to Avoid: Strong oxidizing agents, Strong acids, Strong

bases, Zinc, Strong reducing agents, Plastics.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes eye irritation.

Inhalation: Harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Central nervous system.

SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ADDITIONAL INFORMATION

Harmful vapor.

TOXICITY DATA

Inhalation

Rat

Remarks: Harmful vapor.

Oral

Rat

Remarks: Harmful vapor.

IRRITATION DATA

Skin

Rat

Remarks: Severe irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC CARCINOGEN LIST

Rating: Group 3 Group 3

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xn
Indication of Danger: Harmful.
R: 20/22-36/38
Risk Statements: Harmful by inhalation and if swallowed.
Irritating to eyes and skin.
S: 26
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.
Risk Statements: Harmful by inhalation and if swallowed.
Irritating to eyes and skin.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
US Statements: Target organ(s): Central nervous system.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: No
NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.