

## BUTYRALDEHYDE

## Material Safety Data Sheet

Mallinckrodt Chemical Inc.

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Emergency Telephone Number

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Effective Date: 01-13-87 Supersedes 09-01-85

## PRODUCT IDENTIFICATION:

Synonyms: Butanal; butaldehyde; n-butyl aldehyde; butyraldehyde 99%.

Formula CAS No.: 123-72-8

Molecular Weight: 72.11

Hazardous Ingredients: Butyraldehyde

Chemical Formula: C4H8O

## PRECAUTIONARY MEASURES

DANGER! EXTREMELY FLAMMABLE LIQUID. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES SEVERE IRRITATION TO EYES, SKIN AND RESPIRATORY TRACT.

Do not breathe vapor.  
 Avoid contact with eyes, skin and clothing.  
 Keep container closed.  
 Use with adequate ventilation.  
 Wash thoroughly after handling.  
 Keep away from heat, sparks and flame.

## EMERGENCY FIRST AID

In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. In case of contact, immediately flush skin with plenty of water for at least 15 minutes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, call a physician immediately.  
 SEE SECTION 5.

## Physical Data

## SECTION 1

Appearance: Colorless liquid.

Odor: Characteristics pungent aldehyde odor.

Solubility: Slightly soluble in water.

Boiling Point: 75 C (167 F)

Vapor Density (Air=1): 2.5

Melting Point: -96 C (-141 F)

Vapor Pressure (mm Hg): 91.5 @ 20 C

Specific Gravity: 0.817

Evaporation Rate: (ether=1) 30

NFPA Ratings: Health: 2 Flammability: 3 Reactivity: 0

## Fire and Explosion

## SECTION 2

## Information

## Fire:

Extremely flammable. Flash point: -6.6 C (20 F)  
 Autoignition temperature: 230 C (446 F) Flammable  
 limits in air, % by volume: Lower: 1.4; upper:  
 12.5 Dangerous fire hazard when exposed to heat,  
 flame, or strong oxidizers.

## Explosion:

Above flash point, vapor-air mixtures are  
 explosive within flammable limits noted above.

Fire Extinguishing Media: Dry chemical, alcohol foam or carbon dioxide. Do not use a solid stream of water, since the stream will scatter and spread the fire. Water spray may be used to keep fire exposed containers cool.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Vapors can flow along surfaces to distant ignition source and flash back.

Reactivity Data

SECTION 3

Stability: Stable under ordinary conditions of use and storage. On prolonged exposure to air, this material may form peroxides. Readily oxidizes to butyric acid in the presence of air.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization: No information found.

Incompatibilities: As is a characteristic of aldehydes, this substance is reactive and undergoes oxidation, reduction, and condensation reactions. It is incompatible with oxidizers, and may react vigorously with chlorosulfonic acid, nitric acids, sulfuric acid, oleum and alkaline materials.

Leak/Spill Disposal Information

SECTION 4

Ventilate area of leak or spill. Remove all sources of ignition. Clean-up personnel require protective clothing and respiratory protection from vapors. Contain and recover liquid when possible. Collect as hazardous waste and atomize in a suitable RCRA approved combustion chamber, or absorb with vermiculite, dry sand, earth or similar material for disposal as hazardous waste in a RCRA approved facility. Do not flush to sewer!

Ensure compliance with local, state and federal regulations.

Health Hazard Information

SECTION 5

A. Exposure/Health Effects

Inhalation: Vapors irritate the respiratory tract. Inhalation overexposure is unlikely due to the good warning properties of the strong pungent odor. Should inhalation of high air concentrations occur, symptoms of headache, nausea, stupor, and unconsciousness may result.

Ingestion: Harmful if swallowed. Symptoms may parallel those of inhalation.

Skin Contact: Severe skin irritant. Causes redness and pain. May cause skin burns. Can be absorbed through the skin.

Eye Contact: Severe eye irritant. Contact may cause burns and eye damage.

Chronic Exposure: No information found.

Aggravation of

Pre-existing Conditions: No information found.

B. FIRST AID

- Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, call a physician immediately.
- Skin Exposure: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
- Eye Exposure: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY (RTECS, 1986)

Oral rat LD50: 2490 mg/kg Skin rabbit LD50: 3560 mg/kg Mutation references cited Irritation eye rabbit 20 mg/24H severe

Occupational Control Measures SECTION 6

Airborne Exposure Limits: None established.

Ventilation System: A local exhaust system which captures the contaminant at its source is recommended to prevent dispersion of the contaminant into the workroom air. Use explosion-proof equipment.

Personal Respirators (NIOSH Approved) For conditions of use where exposure to the vapor is apparent, a half mask chemical cartridge respirator may be worn. For emergencies, a self-contained breathing apparatus may be necessary.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

Storage and Special Information SECTION 7

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from oxidizing materials. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment. Corrosive to mildsteel. Use caution when distilling or evaporating. Leave 10% bottoms to avoid concentrating peroxides if present.

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Addendum to Material Safety Data Sheet

REGULATORY STATUS

This Addendum Must Not Be  
 Detached from the MSDS  
 Identifies SARA 313 substance(s)

Any copying or redistribution of the MSDS  
 must include a copy of this addendum

Hazard Categories for SARA  
 Section 311/312 Reporting

Acute ----- X	Chronic -----	Fire ----- X	Pressure -----	Reactive -----
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Product or Components of Product: -----	SARA EHS Sec. 302		SARA Sec. 313 Chemicals		CERCLA Sec.103	RCRA Sec.
	RQ	TPQ	List	Category	RQ lbs	261.33
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BUTYRALDEHYDE (123-72-8)	No	No	Yes	No	No	No

SARA Section 302 EHS RQ:  
 Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ:  
 Threshold Planning Quantity of Extremely Hazardous substance. An asterisk (\*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA Section 313 Chemicals:  
 Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103:  
 Comprehensive Environmental Response, Compensation and Liability Act (Superfund) Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA:  
 Resource Conservation and Recovery Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33