

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p>Flammable material; avoid heat and sources of ignition. Irritating to skin, eyes, and the respiratory system. Harmful compound, minimize exposure. Stench -- do not inhale, use under a fume hood. May form explosive peroxides. Refrigerate.</p>	

Section I. Chemical Product and Company Identification

Chemical Name	Butyraldehyde		
Catalog Number	B0751	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Butanal		
Chemical Formula	C ₄ H ₈ O		
CAS Number	123-72-8	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Butyraldehyde	123-72-8	Min. 98.0 (GC)	Not available.	Rat LD ₅₀ (oral) 2490 mg/kg Rabbit LD ₅₀ (dermal) 3560 uL/kg Rat LD ₅₀ (subcutaneous) 10 gm/kg Rat LD ₅₀ (intraperitoneal) 800 mg/kg

Section III. Hazards Identification

Acute Health Effects	<p>Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.</p> <p>This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.</p>

Section IV. 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. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	219 °C (426.2 °F)
Flash Points	-7 °C (19.4 °F).	Flammable Limits	LOWER: 1.9% UPPER: 12.5%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
Fire Hazards	Not available.		
Explosion Hazards	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.		

Continued on Next Page

Emergency phone number (800) 424-9300

Fire Fighting Media
and Instructions

Flammable liquid.
 SMALL FIRE: Use DRY chemical powder.
 LARGE FIRE: Use alcohol foam, water spray or fog.
 Consult with local fire authorities before attempting large scale fire-fighting operations.

Section VI. Accidental Release MeasuresSpill Cleanup
Instructions

Flammable material. Harmful material. Irritating material. Stench. May form explosive peroxides.
 Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and StorageHandling and Storage
Information

FLAMMABLE. HARMFUL. IRRITANT. STENCH. MAY FORM EXPLOSIVE PEROXIDES. REFRIGERATE. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray. Always store away from incompatible compounds such as oxidizing agents, reducing agents, acids, alkalis (bases).

Section VIII. 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 station and safety shower is proximal to the work-station location.

Personal Protection

Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.



Exposure Limits

Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C

Liquid. (Clear, colorless.)

Solubility

Soluble in water, benzene, toluene, ether, acetone, alcohol.

Specific Gravity

0.81 (water=1)

Molecular Weight

72.11

Partition Coefficient

Log P_{ow} = 1.18

Boiling Point

75°C (167°F)

Vapor Pressure

12.2 kPa (@ 20°C)

Melting Point

-99°C (-146.2°F)

Vapor Density

2.5 (Air = 1)

Refractive Index

1.3780 - 1.3810

Volatility

Not available.

Critical Temperature

Not available.

Odor

Stench.

Viscosity

Not available.

Taste

Not available.

Section X. Stability and Reactivity Data

Stability

This material is stable if stored under proper conditions. (See Section VII for instructions)

Conditions of Instability

Avoid excessive heat and light.

Incompatibilities

Reactive with oxidizing agents, strong reducing agents, strong acids, strong alkalis (bases).

Section XI. Toxicological Information

RTECS Number

ES2275000

Routes of Exposure

Eye Contact. Ingestion. Inhalation.

Toxicity Data

Rat LD₅₀ (oral) 2490 mg/kg
 Rabbit LD₅₀ (dermal) 3560 uL/kg
 Rat LD₅₀ (subcutaneous) 10 gm/kg
 Rat LD₅₀ (intraperitoneal) 800 mg/kg

Chronic Toxic Effects

CARCINOGENIC EFFECTS : Not available.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Not available.
DEVELOPMENTAL TOXICITY: Not available.
 Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

Acute Toxic Effects

Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
 This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.
 Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity Not available.

Environmental Fate Butyraldehyde's production and use in the manufacture of rubber accelerators, synthetic resins, solvents, and plasticizers may result in its release to the environment through various waste streams. Butyraldehyde has been detected in emissions from fireplaces burning wood, and has been detected in gasoline and diesel vehicle emissions. Butyraldehyde can also occur in trace amounts in tea leaves, certain oils, coffee aroma, and tobacco smoke. If released to air, a vapor pressure of 111 mm Hg at 25 deg C indicates butyraldehyde will exist solely as a vapor in the ambient atmosphere. Vapor-phase butyraldehyde will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 16.4 hrs. Butyraldehyde absorbs light in the environmental UV spectrum and has the potential for direct photolysis. If released to soil, butyraldehyde is expected to have high mobility based upon an estimated Koc of 72. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 1.2X10⁻⁴ atm-cu m/mole. Butyraldehyde may volatilize from dry soil surfaces based upon its vapor pressure. If released into water, butyraldehyde is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Butyraldehyde is expected to biodegrade rapidly under both aerobic and anaerobic conditions. Under aerobic conditions, butyraldehyde, present at 100 mg/l, reached >100% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/l and the Japanese MITI test. Under anaerobic conditions, butyraldehyde underwent 99% degradation using a serum bottle technique. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 5.2 hrs and 5.3 days, respectively. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Butyraldehyde is not expected to chemically hydrolyze in the environment due to the lack of hydrolyzable functional groups. Occupational exposure to butyraldehyde may occur through inhalation and dermal contact with this compound at workplaces where butyraldehyde is produced or used. Monitoring data indicate that the general population may be exposed to butyraldehyde via inhalation of ambient air containing butyraldehyde.

Section XIII. Disposal Considerations

Waste Disposal Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification DOT Class 3: Flammable liquid

PIN Number UN1129

Proper Shipping Name Butyraldehyde

Packing Group (PG) II

DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) On DSL

EINECS Number (EEC) 204-646-6

EEC Risk Statements R10- Flammable.
R18- In use, may form flammable/explosive vapor-air mixture.
R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data ENCS No. 2-494

Section XVI. Other Information

Version 1.0
Validated on 8/7/2009.
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Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.