

MATERIAL SAFETY DATA SHEET**BUTYRIC ACID**

PRODUCT CODE NUMBER(S): 2330-5

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Butyric acid; 1-Propanecarboxylic acid; n-Butanoic acid; Propylformic acid*

Chemical Family: *Saturated aliphatic carboxylic acid*

Chemical Formula: $CH_3CH_2CH_2COOH$

Product Use: *Laboratory reagent*

Manufacturer's Name and Address:

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HAZARDOUS INGREDIENTS OF MATERIALS

<i>Ingredients</i>	<i>%</i>	<i>TLV Units</i>	<i>CAS No.</i>
<i>Butyric acid</i>	<i>~99</i>	<i>Not established</i>	<i>107-92-6</i>

PHYSICAL DATA

Physical State: *Liquid*

Odour and Appearance: *Colourless, oily liquid; unpleasant, penetrating rancid, butter-like odour.*

Odour Threshold (ppm): *1-2.5 ppb (detection); 20 ppb (recognition). Good warning properties, detectable at very low concentrations.*

Vapour Pressure (mm Hg): *1 mm Hg at 20°C*

Vapour Density (Air = 1): *3.4*

Evaporation Rate: *Not available*

Boiling Point (degrees C): *164°C*

Freezing Point (degrees C): *-8 to -5.5°C*

pH: *2.9 (0.1M, aqueous)*

Specific Gravity: *0.96 at 20°C*

Coefficient of Water/Oil distribution: *LogP(oct)=0.79*

SHIPPING DESCRIPTION

UN: *2820*

T.D.G. Class: *8*

Pkg. Group: *III*

REACTIVITY DATA

Chemical Stability: *Stable*

Incompatibility with other substances: *May react violently or explosively with oxidizing agents. Reacts vigorously or violently with bases, producing heat and pressure. Reaction with reactive metals may produce flammable/explosive hydrogen gas. May react explosively with phosphorus trichloride. May ignite with potassium t-butoxide. Corrosive to steel, cast iron, lead. Not corrosive to aluminum at room temperature, but at elevated temperatures is attacked. Copper, bronze and brass are not corroded by n-butyric acid when it is free of oxidants. Type 304 and 316 stainless steel are resistant.*

Reactivity: *Avoid temperatures >72°C, ignition sources, all incompatible materials, generation of mist.*

Hazardous Decomposition Products: *CO, CO₂*

FIRE AND EXPLOSION DATA

Flammability: *Combustible liquid. Can form explosive mixtures with air at, or above, 72°C.*

Extinguishing Media: *Water spray or fog, carbon dioxide, dry chemical, alcohol or polymer foam. Use water spray to cool containers, disperse vapours, and dilute the liquid to a non-flammable mixture. Fight fire from a safe distance, from upwind. Firefighters must wear protective equipment (positive-pressure, full face-piece self contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation of mists or vapours, and contact with skin and eyes.*

Flash Point (Method Used): *72°C (CC)*

Autoignition Temperature: *425°C*

Upper Flammable Limit (% by volume): *10*

Lower Explosion Limit (% by volume): *2*

Hazardous Combustion Products: *CO, CO₂, acrid smoke*

Sensitivity to Impact: *None identified*

Sensitivity to Static discharge: *Specific information not available. Probably not sensitive, electrical conductivity high.*

TOXICOLOGICAL PROPERTIES AND HEALTH DATA**Toxicological Data:**

LD₅₀: *(oral, rat) 2,000 mg/kg; (dermal, rabbit) 510 µg/kg*

Irritation: *(rabbit) eye, 5%, severe; skin, undiluted, moderate to severe*

LC₅₀: *Not available*

Effects of Acute Exposure to Product:

Inhaled: *No human information available. Vapours or mists probably cause mild to severe irritation, with sore throat, coughing, difficulty in breathing. Severe overexposures may cause lung damage, convulsions, respiratory failure, coma and death.*

In contact with skin: *Causes moderate to severe irritation depending on concentration and duration of contact. Application of undiluted chemical to human skin caused mild burning, redness and swelling after 1 hour. Some animal studies indicate that it may be absorbed through skin, causing toxic effects.*

In contact with eyes: *Corrosive. Can cause permanent eye damage and blindness (based on animal testing, no human information available).*

Ingested: *Oral toxicity appears to be low, based on animal testing. It is corrosive, and may cause severe irritation of the mouth, throat and stomach, with nausea and vomiting. Although there is no human information available, the physical properties of this substance indicate that aspiration of even a small amount during ingestion or vomiting could cause pulmonary edema, respiratory failure, cardiac arrest and death.*

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Effects of Chronic Exposure to Product:

Carcinogenicity: No human or animal information available

Teratogenicity: No human or animal information available

Reproductive Effects: No human or animal information available

Mutagenicity: Negative in bacterial and mammalian cell in vitro tests. Positive in one in vitro test with human cells. No in vivo mammalian studies or human information.

Synergistic Products: None found

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required. It must be non-sparking, grounded, corrosion-resistant, separated from other exhaust systems, and exhausted directly outside.

Respiratory Protection: Use only in a fume hood. NIOSH approved air-purifying respirator with organic vapour cartridges for concentrations that cannot be controlled by exhaust ventilation. Higher or unknown concentrations, as in fire or spill conditions: positive-pressure, full face-piece self-contained breathing apparatus, or positive-pressure, full face-piece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and/or face shield.

Skin Protection: Butyl rubber, Responder™, or Viton™ gloves. Other resistant protective clothing, sleeves, apron, coveralls, boots, sufficient to prevent contact.

Other Personal Protective Equipment: Safety shower and eye wash readily available in work area.

Leak and Spill Procedure: Evacuate area, and provide maximum ventilation. Eliminate all sources of ignition. Cleanup personnel must be thoroughly trained in the hazards of this material and in its safe handling, and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes. Do not touch spilled material. Contain spill with dry lime, sand, or soda ash. Prevent from entering sewers or waterways. Collect contaminated adsorbent in suitable, labelled containers and hold for disposal. Wash site of spill thoroughly with detergent and water.

Waste Disposal: Follow all federal, provincial and local regulations for disposal.

Handling Procedures and Equipment: COMBUSTIBLE LIQUID. Personnel working with this substance must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective clothing and equipment. Keep away from heat, sparks, flame, and all sources of ignition. Ground and bond drums, transfer vessels, hoses and piping, during liquid transfer. Ground clips must contact bare metal. Use non-sparking tools. Use corrosion-resistant containers and transfer equipment. Keep work area free of other materials that can burn. Use the smallest possible amount in well-ventilated area, away from any incompatible materials, particularly oxidizing agents. Do not return contaminated material to the original container.

Storage Requirements: Store in suitable, labelled containers, a cool, dry, well-ventilated area, out of direct sunlight. Keep tightly closed. Store away from heat, sparks, flame, and incompatible materials. May develop pressure after long standing, open with caution. Protect from damage and inspect frequently for signs of damage or leaking. Storage area should have raised sills or ramps to contain leaks and/or conduct them to a safe area.

FIRST AID MEASURES**Specific Measures:**

Eyes: IMMEDIATELY flush eyes with gently running water for at least thirty (30) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. Get medical attention immediately.

Skin: Remove contaminated clothing under running water (including shoes, watches, belts, and rings). IMMEDIATELY flush the exposed area with large amounts of running water for at least twenty to thirty (20-30) minutes. Wear protective gloves and clothing to avoid contact with material. Get medical attention immediately. Decontaminate clothing and shoes before reuse, or discard.

Inhalation: IMMEDIATELY remove casualty to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Eliminate all sources of ignition. Give oxygen and get medical attention for any breathing difficulty.

Ingestion: DO NOT INDUCE VOMITING. Danger of aspiration with emesis. If casualty is alert and not convulsing, rinse out mouth with water and give 2 to 4 glasses of water to dilute material. Immediately get medical attention. If spontaneous vomiting occurs have casualty lean forward with head down to avoid breathing in of vomitus, and give more water to drink.

REFERENCES USED

CCINFO disc

Budavari: The Merck Index, 12th ed., 1997

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: March 26, 1992

Revision: November 2010

MSDS: 2330-5

Proposed WHMIS Designation: B3; E

Prepared by: Caledon Laboratories Ltd. (905) 877-0101
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