



Product Safety Summary Sheet

DuPont™ 1,4-Butanediol

Chemical Identification, Product Identification or Common Name:

CAS number: 110-63-4

CAS name: 1,4-Butanediol

EC Name: butane-1,4-diol

EC Number: 203-786-5

IUPAC name: Butane-1,4-diol

Product Uses and Applications:

1,4-Butanediol (BDO) is generally used in the manufacture of polymers, fibers, polyurethanes, solvents and in the synthesis of industrial organic chemicals.

Physical Properties of the Chemical or Product:

1,4-Butanediol is a colorless, stable but slightly volatile organic liquid with a boiling point of 230 degrees C (446 degrees F) and a melting point of 20.4 degrees C (68.7 degrees F). This chemical is not considered hazardous for reactivity, oxidizing potential, explosiveness or flammability.

Exposure Potential:

Workplace exposure:

Workplace activities where contact with 1,4-butanediol may occur is during substance handling (e.g. loading and unloading) at manufacturing facilities. A combination of engineering controls, appropriate respiratory protection and permeation resistant gloves should be used to minimize exposure during product handling and use. Workers should follow the recommended safety measures contained within the (Material) Safety Data Sheet (M/SDS) and on any product packaging. Employees should be trained in the appropriate work processes and safety equipment to limit exposure to chemical substances. Personal Protective Equipment (PPE) should include safety glasses with side shields. Heat protective gloves should also be worn during all hot work activities.

Occupational use of this substance is considered to be safe provided the recommended safety measures given in the (M)SDS are followed. Use only properly specified equipment which is specified as suitable for this material.

Consumer exposure: Direct consumer exposure to 1,4-Butanediol is not expected as the chemical is typically used in industrial applications only.

Environmental exposure: Risk management measures for industrial site use include containment through engineering and institutional controls. 1,4-Butanediol will not persist or bioaccumulate in the environment, and is readily biodegradable. Inadvertent releases to the environment that could occur should be responded to in accordance with all applicable laws and regulations. Regulations may vary by region, country, state, county, city, or local government.

Health Information

Note: The information contained in this section may be useful to someone handling the pure undiluted substance such as a manufacturer or transporter. The data, while verifiable, are not intended to be comprehensive nor replace the data found in the (M)SDS. Consumers are not expected to come in contact with the pure substance. For more information on health hazards and recommended protective equipment, please refer to the (M)SDS.

Exposures may affect human health as follows:

Effect Assessment	Result
Acute Toxicity	Oral: Considered to have low acute toxicity by ingestion. May cause central nervous system effects (narcosis, drowsiness, dizziness, or altered behaviors) if ingested. Inhalation: Considered to have low acute toxicity by inhalation. May cause central nervous system effects (narcosis, drowsiness, dizziness, or altered behaviors) if inhaled. Dermal: Considered to have low acute toxicity by skin contact. May cause central nervous system effects (narcosis, drowsiness, dizziness, or altered behaviors) if prolonged skin contact occurs.
Irritation	Skin: Not considered to be a skin irritant. Eye: May cause slight eye irritation.
Sensitization	Not considered to be a skin sensitizer.
Mutagenicity	Not mutagenic.
Carcinogenicity	Not expected to be a carcinogen. The carcinogenic potential of 1,4-Butanediol has not been evaluated in animal studies. However, gamma-butyrolactone is a related substance that shares a common metabolic pathway. Gamma-butyrolactone is not carcinogenic in animal studies.
Toxicity after repeated exposure	After repeated inhalation exposure, 1,4-Butanediol may cause central nervous system effects (narcosis, drowsiness, dizziness or altered behaviors).
Toxicity for reproduction	1,4-Butanediol has caused slight reductions in fetal body weights of rats but these effects were considered to be secondary to reduced body weights of the maternal rats. 1,4-Butanediol is not

	considered to be either a developmental or a reproductive toxicant..
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Environmental Information

Note: The information in this chapter is intended to provide brief and general information of this substance's potential for environmental impact. The results in the table below refer to testing performed with the non-formulated, concentrated substance. The data contained in this section explain the relative effect of the concentrated substance on the environment, as defined by certain tests. The data, while verifiable, are not intended to be comprehensive nor replace the data found in the (M)SDS. The data does not replace the data given in the (M)SDS. For more information and recommended protective measures, please refer to the (M)SDS.

Effect Assessment	Result
Aquatic Toxicity	Considered to have low acute toxicity to freshwater fish, invertebrates and algae.
Biodegradability Persistence	Readily biodegradable. Not expected to persist due to rapid degradation in the environment.
Bioaccumulation potential	Not expected to bioaccumulate.

Overall, 1,4-Butanediol is not considered to be either persistent or bioaccumulative, or to present a significant risk to aquatic organisms.

Risk Management

Workplace Management:

Risk management measures for industrial site use include containment through engineering and institutional controls and the use of personal protective equipment (PPE) as appropriate. Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on the appropriate personal protective equipment to be used and on the safe handling of this material.

Consumer Risk Management:

Consumer exposure to 1,4-Butanediol is not expected as the chemical is typically used in industrial applications only.

Regulatory Information:

Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on regulatory restrictions that may govern the manufacture, sale, transportation, use and/or disposal of this chemical or product. Regulations may vary by region, country, state, county, city, or local government.

First Aid Information:

For all First Aid or Emergency information, consult the (Material) Safety Data Sheet ((M)SDS).

Information Sources:

Data is compiled from a variety of sources, including publicly available documents, internal data and other sources such as, but not limited to, Chemical Safety Reports and (Material) Safety Data Sheets ((M)SDS).

Contact Information:

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