Product Safety Assessment
Diethylene Glycol Butyl Ether Acetate

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Names
- CAS No. 124-17-4
- Diethylene glycol butyl ether acetate
- Diethylene glycol monobutyl ether acetate
- Diethylene glycol n-butyl ether acetate
- EC No. 204-685-9
- DEGBEA
- Butyl CARBITOL™ Acetate Solvent
- Glycol ether DBA

Product Overview
- Diethylene glycol butyl ether acetate is a colorless liquid with a mild, fruity ethereal odor. It is an ethylene-series (or E-series) hydrophilic, slow-evaporating glycol ether. It is sold by The Dow Chemical Company and its global affiliates under the trade name Butyl CARBITOL™ Acetate Solvent. For further details, see Product Description.
- Diethylene glycol butyl ether acetate is used as a latex coalescent in water-based architectural and industrial coatings and as a solvent in specialty printing inks. For further details, see Product Uses.
- Consumer exposure to diethylene glycol butyl ether acetate may occur through the contact with certain latex paints and specialty printing inks. Check the product label for ventilation and protective equipment requirements. For further details, see Exposure Potential.
- Eye contact may cause slight irritation. Prolonged skin contact may cause slight irritation with local redness. Exposure to vapors is unlikely at room temperature. Low toxicity if swallowed. For further details, see Health Information.
- Diethylene glycol butyl ether acetate is combustible. It is stable at normal storage and use temperatures, but can decompose (oxidize) at elevated temperatures, especially in the presence of strong bases, acids, or strong oxidizing agents. For further details, see Physical Hazard Information.

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Manufacture of Product\(^3,4\)

- **Capacity** – The Dow Chemical Company and its global affiliates have production facilities for E-series glycol ethers in Taft and Plaquemine, Louisiana; Freeport and Seadrift, Texas.
- **Process** – Diethylene glycol butyl ether acetate is produced by first reacting ethylene oxide with dry n-butyl alcohol to form diethylene glycol butyl ether. That ether is then reacted with acetic acid or acetic anhydride to form diethylene glycol butyl ether acetate. The reaction sequence is shown below.

\[
\begin{align*}
\text{n-Butyl alcohol} & \quad \text{Ethylene} & \quad \text{Diethylene glycol n-butyl ether} \\
\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + 2\text{CH}_2=\text{CH}_2 & \quad \rightarrow & \quad \text{C}_4\text{H}_9\text{O}-(\text{CH}_2\text{CH}_2\text{O})_2-\text{CH}_2\text{CH}_2\text{OH} \\
\text{Diethylene glycol n-butyl ether} & \quad \text{Acetic acid} & \quad \text{Diethylene glycol n-butyl ether acetate} \\
\text{C}_4\text{H}_9\text{O}-(\text{CH}_2\text{CH}_2\text{O})_2-\text{CH}_2\text{CH}_2\text{OH} & \quad + & \quad \text{CH}_3\text{O}\text{C}-\text{CH}_3 + \text{H}_2\text{O}
\end{align*}
\]

Product Description\(^2\)

Diethylene glycol butyl ether acetate is a clear liquid with a mild, fruity, ether-like odor. It has superior dispersion stability and a good balance of volatility, solvency, and water solubility. Diethylene glycol butyl ether acetate is an ethylene-series (or E-series) glycol ether and is manufactured and marketed by The Dow Chemical Company and its global affiliates under the trade name Butyl CARBITOL™ Acetate Solvent.

Product Uses\(^5,6\)

Glycol ethers are primarily used as solvents for cleaning fluids, paints, coatings, and inks. Diethylene glycol butyl ether acetate is an acetate form of the material used as a latex coalescent in water-based architectural and industrial coatings and as a solvent in specialty printing inks.

Exposure Potential\(^1\)

Diethylene glycol butyl ether acetate is used in the production of industrial and consumer products. Based on these uses, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in facilities that manufacture glycol ethers or in the various industrial or manufacturing facilities that use these products. Those working with glycol ethers in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit exposure. See Health Information.
- **Consumer exposure to products containing glycol ethers** – Diethylene glycol butyl ether acetate may be found in certain paints, inks, and cleaning products used by consumers. Follow product instructions carefully to minimize the risk of exposure. See Health Information.
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or ground water. Small amounts of diethylene glycol butyl ether acetate may be released to the air by evaporation from cleaners, coatings, or other products containing it. It gradually photodegrades in the atmosphere. However, because diethylene glycol butyl ether acetate is partially water soluble, once introduced to

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water, it will tend to remain dissolved in water. Because it is readily biodegradable, diethylene glycol butyl ether acetate will be removed by wastewater-treatment facilities. Absorb small spills with materials such as sand or vermiculite. Collect spillage in suitable and properly labeled containers. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, diethylene glycol butyl ether acetate should be collected in suitable and properly labeled containers and disposed of according to applicable governmental requirements. When relevant in scale or risk, the community should be notified of the hazards associated with the specific release event. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Immediately withdraw all personnel from the area. Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use water spray or fog, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Alcohol-resistant foams are preferred. Use of a direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Fight the fire from a protected location or safe distance. If glycol ethers are present in a fire situation, they can produce toxic gases. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

**Eye contact** – Contact may cause slight irritation.

**Skin contact** – Prolonged contact may cause slight irritation with local redness. Prolonged exposure is not likely to result in absorption of harmful amounts.

**Inhalation** – At room temperature exposure to vapor is minimal due to low volatility. Vapor from heated material or mist may cause respiratory irritation.

**Ingestion** – Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. Based on physical properties, not likely to be an aspiration hazard.

**Repeated exposure** – In animal studies, repeated exposures not expected to cause significant adverse effects.

**Other** – In animal testing, similar materials did not cause cancer, birth defects, or any other fetal effects. *In vitro* genetic toxicity studies were negative. Based on information for a similar material, animal genetic toxicity studies were negative.

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

Diethylene glycol butyl ether acetate does not evaporate easily, but small amounts may evaporate from paints, inks, or other products containing it. It gradually photodegrades in the atmosphere. Because diethylene glycol butyl ether acetate is partially soluble in water, once introduced to water, it has a tendency to remain there. Diethylene glycol butyl ether acetate has minimal tendency to bind to soil or sediment.

Diethylene glycol butyl ether acetate is unlikely to persist in the environment. It is readily biodegradable (OECD 301B test: 100% biodegraded after 20 days), which suggests that the
compound will be removed from water and soil environments, including biological wastewater-treatment facilities.

Diethylene glycol butyl ether acetate is not likely to accumulate in the food chain (bioconcentration potential is low), and is slightly to moderately toxic to fish and other aquatic organisms on an acute basis (LC_{50} is between 10 and 100 mg/L in the species tested.)

Additional environmental information for ethylene glycol monohexyl ether is available in the Ecological and Toxicological Data of Dow Glycol Ethers brochure.

For more information, see the relevant Safety Data Sheet.

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**Physical Hazard Information**

Diethylene glycol butyl ether acetate is stable at normal storage and use temperatures. Avoid contact with acids and strong oxidizing agents. This material can decompose (oxidize) at elevated temperatures, especially in the presence of strong bases, acids, or strong oxidizing agents. Strongly exothermic decompositions may occur under such conditions, and gas generation during decomposition can result in pressure build-up in closed systems.

Spills of glycol ethers on hot fibrous insulations may reduce the autoignition temperature, increasing the potential for spontaneous combustion.

For more information, see the relevant Safety Data Sheet.

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**Regulatory Information**

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of diethylene glycol butyl ether acetate. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.

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**Additional Information**

- Contact Us ([http://www.dow.com/oxysolvents/contact/index.htm](http://www.dow.com/oxysolvents/contact/index.htm))
- Butyl CARBITOL™ Acetate Solvent Technical Data Sheet, The Dow Chemical Company, Form No. 110-00973-0812

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For more information about diethylene glycol butyl ether acetate (Butyl CARBITOL™ Acetate Solvent), visit the Dow Oxygenated Solvents web site at www.dow.com/oxysolvents.

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References

1 Butyl CARBITOL™ Acetate Safety Data Sheet for USA, The Dow Chemical Company
2 Butyl CARBITOL™ Acetate Solvent Technical Data Sheet, The Dow Chemical Company, Form No. 110-00973-00812

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