Product Safety Assessment

**DL-2-Aminobutanol (DL-AB)**

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### Names

- CAS No. 96-20-8
- DL-2-aminobutanol
- DL-AB
- 2-AB
- 2-Amino, 1-butanol
- AB™ 95 DL-2-amino-1-butanol
- 2-Aminobutanol
- AB DL-2-Amino-1-butanol
- CORRGUARD G Corrosion Inhibitor

### Product Overview

- DL-2-aminobutanol (DL-AB) products are colorless to yellow liquids with an amine odor. DL-2-aminobutanol is a primary amino alcohol with an equal mixture of the D and L isomers and is marketed under the trade names AB™ 95 DL-2-amino-1-butanol and CORRGUARD™ products.¹ ² For further details, see **Product Description**.
- DL-2-aminobutanol is used in the production of pharmaceutical and agricultural intermediates, biological-buffer applications, biochemicals, and metalworking fluids.³ For further details, see **Product Uses**.
- Exposure to DL-2-aminobutanol could occur at a manufacturing facility or a facility using this product. Dow does not sell DL-2-aminobutanol for consumer use, so direct consumer contact is unlikely.⁴ For further details, see **Exposure Potential**.
- Eye contact may cause severe irritation, with corneal injury that could result in permanent vision impairment, even blindness. Brief skin contact may cause burns with pain, severe local redness, and tissue damage. This product has low toxicity if swallowed, but may cause irritation or burns of the mouth, throat, and gastrointestinal tract. Repeated exposures have been shown to cause adverse effects on the liver in laboratory animals.⁵ ⁶ For further details, see **Health Information**.
- DL-2-aminobutanol is readily biodegradable, unlikely to accumulate in the food chain (bioconcentration potential is low), and is very toxic to aquatic organisms on an acute basis.⁷ For further details, see **Environmental Information**.
- DL-2-aminobutanol is stable under recommended storage and normal use conditions. However, exposure to elevated temperatures can cause the product to decompose. Avoid contact with strong acids, strong oxidizers, halogenated hydrocarbons, and metals such as aluminum, zinc, brass, copper, copper alloys, and galvanized metals.⁸ For further details, see **Physical Hazard Information**.

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Manufacture of Product
- **Location** – ANGUS Chemical Company, a wholly owned subsidiary of The Dow Chemical Company, and its global affiliates manufacture DL-2-aminobutanol at facilities in Ibbenburen, Germany, and Sterlington, Louisiana, United States.
- **Process** – DL-2-aminobutanol is a mixture of isomers derived from 1-nitropropane through nitrobutanol.

**Product Description**
DL-2-aminobutanol (DL-AB) products are primary amino alcohols that are colorless to yellow liquids with an amine odor. DL-2-aminobutanol (also known as RS) is an equal mixture of the D and L isomers with the structures shown below.

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\begin{align*}
S-2\text{-aminoo-1-butanol} & : \quad H_3CCH_2OHCH_2NH_2 \\
R-2\text{-aminoo-1-butanol} & : \quad H_3CCH_2OHCH_2NH_2
\end{align*}
\]

Dow products containing DL-2-aminobutanol include:
- **AB™-95 DL-2-amino-1-butanol**
- **CORRGUARD™ G corrosion inhibitor**
- **AB™ DL-2-Amino-1-butanol**

**Product Uses**
DL-2-aminobutanol products are used in the production of various pharmaceutical and agricultural intermediates. They are also used in biological-buffer applications, biochemicals for the life-sciences industry, and in metalworking fluids.

**Exposure Potential**
DL-2-aminobutanol is used in the production of industrial and consumer products. Based on the uses for this product, individuals could be exposed through:
- **Workplace exposure** – Exposure can occur in facilities that manufacture DL-2-aminobutanol or in the various industrial or manufacturing facilities that use these products. They are produced, distributed, stored, and consumed in closed systems. Those working with DL-2-aminobutanol in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. DL-2-aminobutanol is used as a component in metalworking fluids, where misting may present the potential for inhalation exposure. 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 DL-2-aminobutanol** – Dow does not sell DL-2-aminobutanol for consumer use. However, it is formulated into various pharmaceutical and agricultural intermediates. DL-2-aminobutanol is consumed in the reaction to produce these products and is not considered a risk to consumers. See **Health Information**.
- **Environmental releases** – DL-2-aminobutanol may be released into the environment during use. Due to its high water solubility, the compound will partition to water. Since the compound

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is readily biodegradable, it will likely be removed in biological wastewater treatment facilities as well as other water and soil environments. In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. Respiratory protection is necessary for cleaning up spills and leaks. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, the product should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. An approved air-purifying respirator is recommended for emergency work. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – DL-2-aminobutanol is combustible. 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. Use of a direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Keep fire water out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

### Health Information

Health information for DL-2-aminobutanol products is summarized on the relevant Safety Data Sheets. It is important to note that health risks associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific health information. These products may also contain minor components or additives that have additional health risks. An overview of health information for DL-2-aminobutanol products appears below.

**Eye contact** – Contact may cause severe eye irritation, with corneal injury that could result in permanent vision impairment, even blindness. Exposure to vapor from heated product or mist may cause eye irritation.

**Skin contact** – Brief contact may cause skin burns with pain, severe local redness, and tissue damage.

**Inhalation** – Exposure from inhalation is unlikely at room temperature due to the low volatility of the products. Exposure to vapor from heated product or mist may cause respiratory irritation.

**Ingestion** – This product has low toxicity if swallowed. Small amounts swallowed incidental to normal handling are not likely to cause injury. However, swallowing larger amounts may cause serious injury, even death. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract.

**Repeated exposure** – Repeated exposures have been shown to cause adverse effects on the liver in laboratory animals.

**Other** – In animal testing, 2-aminobutanol hydrochloride salt has been shown to result in maternal toxicity resulting in embryo death when fed to pregnant animals.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.
Environmental Information\(^6\)

DL-2-aminobutanol is water soluble and nonvolatile. If released to the environment, the compound will have a tendency to remain in water with minimal tendency to bind to soil or sediment.

DL-2-aminobutanol is unlikely to persist in the environment. The compound is readily biodegradable, which suggests that it will likely be removed in biological wastewater treatment facilities as well as other water and soil environments.

DL-2-aminobutanol is not likely to accumulate in the food chain (bioconcentration potential is low) and is very toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1.0 mg/L in the most sensitive species tested).

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

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Physical Hazard Information\(^7,^8\)

DL-2-aminobutanol is stable under recommended storage and normal use conditions. However, exposure to elevated temperatures can cause the product to decompose. Avoid contact with strong acids, strong oxidizers, halogenated hydrocarbons, and metals such as aluminum, zinc, brass, copper, copper alloys, and galvanized metals.

DL-2-aminobutanol is combustible. This product absorbs carbon dioxide from the air and may form carbonate salts.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

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Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of DL-2-aminobutanol. 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

- Request the Safety Data Sheet from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/angus/contact/)
- ANGUS Chemical Company website: Products, Applications, and Chemistry (www.dow.com/angus/prod/ab.htm)
- CORRGUARD\(^TM\) M Amino Alcohol for Metalworking Fluids, Technical Data Sheet, ANGUS Chemical Company, Form No. 319-00328, February 1, 2002 (www.dow.com/PublishedLiterature/dh_003a/0901b8038003a8c7.pdf?filepath=angus/pdfs/no_reg/319-00328.pdf&fromPage=GetDoc)

For more business information about DL-2-aminobutanol products, visit the ANGUS Chemical Company web site at www.dow.com/angus/.

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References

12. Estimates by ANGUS™ Chemical Company.
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