Product Safety Assessment

2-Methyl-1,2-Benzisothiazol-3(2H)-one (MBIT)


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Names
• CAS No. 2527-66-4
• 2-Methyl-1,2-benzisothiazol-3(2H)-one
• 2-Methyl-1,2-benzisothiazol-3-one
• MBIT
• 1,2-Benzisothiazol-3(2H)-one,2-methyl
• 1,2-Benzisothiazol-3-one,2-methyl
• BIOBAN™ MB Antimicrobials
• N-methyl-1,2-benzisothiazol-3(2H)-one

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Product Overview
• 2-Methyl-1,2-benzisothiazol-3(2H)-one (MBIT) is an off-white to light brown solid that is the active ingredient in a series of biocide formulations marketed by The Dow Chemical Company and its global affiliates.¹ For further details, see Product Description.
• MBIT is active against bacteria, yeasts, and molds. It is used in biocide formulations for in-can preservation of aqueous technical products (or as preservatives for products during storage).² For further details, see Product Uses.
• Those working with MBIT in manufacturing or formulating operations could be exposed during maintenance, sampling, testing, or other procedures. Dow does not sell MBIT for direct consumer use, but it may be present at low residual levels in products used by consumers.¹ For further details, see Exposure Potential.
• In the industrial setting, direct contact with this product in its concentrated form may cause severe eye burns and permanent eye injury. Skin contact may be corrosive to the skin, and cause burns and sensitization. This product may be harmful if swallowed. Inhalation of vapor or mist can cause irritation of the nose, throat, and lungs.¹ For further details, see Health Information and request the relevant Safety Data Sheet from the Dow Customer Information Group.
• MBIT undergoes rapid primary biodegradation and is unlikely to accumulate in the food chain, but is highly toxic to aquatic organisms on an acute basis.¹ For further details, see Environmental Information.
• MBIT is stable under recommended storage and normal use conditions. Avoid contact with oxidizing agents, amines, reducing agents, and mercaptans.¹ For further details, see Physical Hazard Information.

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Manufacture of Product
- **Locations** – Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, and its global affiliates produce 2-methyl-1,2-benzisothiazol-3(2H)-one (MBIT) in facilities at several global sites.
- **Process** – MBIT is produced by a complex and proprietary series of chemical reactions and separations. The chemical structure is shown below.

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Product Description
2-Methyl-1,2-benzisothiazol-3(2H)-one (MBIT) is an off-white to light brown solid that is typically formulated into liquid antimicrobial products.

Product Uses
2-Methyl-1,2-benzisothiazol-3(2H)-one (MBIT) is active against bacteria, yeasts, and molds. It is used in antimicrobial formulations for in-can preservation or preservatives for products during storage such as paints, plasters, adhesives, latex emulsions, tackifiers, mineral slurries, pigment dispersions, household products and other technical, water-based products. It is also used as working or cutting fluid preservative for preventing the growth of microorganisms (bacteria, fungi).

Exposure Potential
2-Methyl-1,2-benzisothiazol-3(2H)-one (MBIT) 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 either in facilities that manufacture MBIT or in the various industrial or manufacturing facilities that use MBIT. It is produced, distributed, and stored in closed systems. Those working with MBIT in manufacturing operations could be exposed during maintenance, sampling, testing, application, or other procedures. The greatest potential for exposure is by skin contact. Handlers must wear appropriate personal protective equipment and follow label instructions carefully. Each manufacturing facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit exposure. MBIT-containing formulations are supplied for use only by trained professionals, and not for amateur use. See Health Information.
- **Consumer exposure to products containing MBIT** – Dow does not sell MBIT for direct consumer use, but it is used at low levels for in-can preservation of paints, plasters, household products and other technical products with which consumers may come into contact. Always read and follow product label instructions before use. See Health Information.
- **Environmental releases** – Small quantities of MBIT may be released into the environment if products that contain them are spilled or discarded. In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. Small spills should be absorbed with inert materials such as sand. If released into the environment, MBIT will tend to remain in water. Since MBIT is inherently biodegradable, it is expected to be removed from water or soil environments, including biological wastewater-treatment facilities. 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. This product as supplied in its concentrated form for industrial use is corrosive and a potential sensitizer. If exposed to this product during clean-up operations, immediately remove all contaminated clothing and wash exposed skin areas with soap and water. Appropriate protective equipment must be worn when handling a spill of this material. Keep spills and cleaning runoff out of municipal sewers and open bodies of water. Evacuate personnel to safe areas. Ventilate the area. The floor may be slippery; use care to avoid falling. Absorb spilled product with inert materials such as sand, silica gel, acid binder, universal binder, or sawdust. Sweep up or vacuum spillage and collect in a suitable container for disposal. Avoid breathing vapor and avoid all contact. See Environmental, Health, and Physical Hazard Information.
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- **In case of fire** – Use water spray, alcohol-resistant foam, dry-chemical, or carbon-dioxide extinguishers to fight the fire. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat. During a fire, irritating and highly toxic gases and/or fumes may be generated during combustion or decomposition. Firefighters should wear self-contained breathing apparatus (SCBA). Move containers promptly out of fire zone. If removal is impossible, cool containers with water spray. Remain upwind, avoid breathing smoke, and contain run-off. Keep fire water out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures outlined in the Safety Data Sheet carefully. See Environmental, Health, and Physical Hazard Information.

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

**Health Information**

Health information for products containing 2-methyl-1,2-benzisothiazol-3(2H)-one (MBIT) is summarized on the relevant Safety Data Sheets. These products may also contain minor components or additives that have additional health risks. 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. An overview of health information for MBIT-containing industrial products appears below.

**Eye contact** – Can be corrosive to the eyes and cause permanent eye injury.

**Skin contact** – Can be corrosive to the skin and cause burns and may result in sensitization.

**Inhalation** – Inhalation of vapor or mist can cause irritation of the nose, throat, and lungs.

**Ingestion** – May be harmful if swallowed.

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

**Environmental Information**

2-Methyl-1,2-benzisothiazolin-3(2H)-one (MBIT) is moderately soluble in water and has low volatility. Once introduced into the aquatic environment, MBIT will have a tendency to remain in water. MBIT is unlikely to persist in the environment, as it undergoes rapid primary degradation and can be considered inherently biodegradable, which suggests that it will likely be removed in biological wastewater-treatment facilities as well as other water and soil environments. MBIT is not likely to accumulate in the food chain (bioconcentration potential is low), but is highly toxic (LC50 between 0.1 and 1.0 mg/L in the most sensitive species) to aquatic organisms on an acute basis.

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

**Physical Hazard Information**

2-Methyl-1,2-benzisothiazolin-3(2H)-one (MBIT) is stable under recommended storage and normal use conditions, but can decompose at elevated temperatures. Hazardous decomposition products may include nitrogen oxides, sulphur oxides, and hydrogen chloride.

Avoid contact with oxidizing agents, reducing agents, amines, and mercaptans. Vapors can be evolved when this product is heated during processing operations.

For more information, request the relevant 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 2-methyl-1,2-benzisothiazolin-3(2H)-one (MBIT). These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety 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/microbial/contact/)
- BIOBAN™ 551S Antimicrobial In-Can Preservation for Universal Use in Aqueous Technical Products [Technical Data Sheet], Dow Microbial Control, Form No. 253-02663-0629-10PS (www.dow.com/microbial/mbit/formulations.htm)

For more business information about 2-methyl-1,2-benzisothiazolin-3(2H)-one (MBIT), visit the Dow Microbial Control web site at www.dow.com/microbial/about/.

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References
1 BIOBAN™ MB 100 Antimicrobial Material Safety Data Sheet, The Dow Chemical Company
2 BIOBAN™ 551S Antimicrobial In-Can Preservation for Universal Use in Aqueous Technical Products [Technical Data Sheet], Dow Microbial Control, Form No. 253-02663-0629-10PS
NOTICES

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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