Product Safety Assessment
2-Octyl-2H-isothiazol-3-one (OIT)

Product Safety Assessment documents are available at: www.dow.com/productsafety/finder/.

Select a Topic:
Names
Product Overview
Manufacture of Product
Product Description
Product Uses
Exposure Potential
Health Information
Environmental Information
Physical Hazard Information
Regulatory Information
Additional Information
References

Names
- CAS No. 26530-20-1
- 2-Octyl-3(2H)isothiazolone
- OIT
- Octhilinone
- Octylisothiazolone
- 2-Octyl-2H-isothiazol-3-one
- BIOBAN™ O 5P0 antimicrobial*
- BIOBAN O 5P5 antimicrobial
- BIOBAN O 45 antimicrobial
- BIOBAN O 45LE antimicrobial
- BIOBAN O 45 MUP antimicrobial
- BIOBAN O 100 technical antimicrobial
- FILMGUARD™ OIT biocide
- KATHON™ 893F biocide
- KATHON 893MW biocide
- KATHON 893T biocide
- KATHON LM microbicide
- KATHON LM Plus mildewcide
- KORALONE™ N-105 microbicide
- SKANE™ M-8 microbicide
- VINYZENE™ IT-3025 biocide
- VINYZENE OIT 3000 DIDP antimicrobial
- VINYZENE OIT 3025 DIDP antimicrobial
- VINYZENE OIT 3025 BBP antimicrobial
- VINYZENE SB 3010 PVC antimicrobial
- VINYZENE IT-3000 biocide

Product Overview
- 2-Octyl-2H-isothiazol-3-one (OIT) is a clear, light-yellow liquid. It is the active ingredient in a series of biocide formulations marketed by The Dow Chemical Company and its global affiliates.\(^1,2\) For further details, see Product Description.
- OIT is a broad-spectrum antifungal biocide that is used in paints, coatings, inks, household-cleaning products, adhesives, building materials, polymer emulsions, leather, laundry mildewcides, plastics, textiles, paper-coating materials, wood treatment solutions, metal-working fluids, and hydraulic fluids.\(^3,4\) For further details, see Product Uses.
- Those working with OIT in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Dow does not sell OIT for direct consumer use, but it may be present at low levels in certain products used by consumers.\(^5\) For further details, see Exposure Potential.

*Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

\(^*\) Please note that the following tradenames may also be associated with products that contain active ingredients other than OIT: BIOBAN™, KATHON™, VINYZENE™ antimicrobials. Be sure to consider the full product name so as to confirm that the correct Product Safety Assessment is selected.
Eye contact with the concentrated product may cause chemical burns and severe irritation with corneal damage, which may result in permanent vision impairment, even blindness. Brief skin contact with the concentrated product may cause burns. Skin contact may result in sensitization and an allergic response. Vapor or mist may cause irritation of the upper respiratory tract and lungs. It is also harmful if swallowed.\textsuperscript{6,7} For further details, see Health Information.\\n
2-Octyl-2H-isothiazol-3-one (OIT) is not persistent and is quickly biodegraded in the environment to materials that in turn are readily biodegradable. OIT has a low risk to accumulate in the food chain and is considered highly toxic to fish and aquatic organisms on an acute basis.\textsuperscript{8,9} For further details, see Environmental Information.\\n
OIT is stable at recommended storage and use temperatures. Please refer to the specific product Safety Data Sheet for recommended storage temperatures. Avoid contact with amines, mercaptans, oxidizers, and reducing agents.\textsuperscript{10,11} For further details, see Physical Hazard Information.

**Manufacture of Product**

- **Locations** – The Dow Chemical Company and its global affiliates produce 2-octyl-2H-isothiazol-3-one (OIT) at several global sites.\\n
- **Process** – OIT is produced by a complex and proprietary series of chemical reactions and separations. The chemical structure is shown below.

![Chemical Structure of OIT](attachment:image.png)

**Product Description**\textsuperscript{12,13}

2-Octyl-2H-isothiazol-3-one (OIT) is a clear, light-yellow liquid. It is the active ingredient in a series of biocide formulations marketed by The Dow Chemical Company and its global affiliates. OIT formulations are marketed under the trade names BIOBAN™ biocides, FILMGUARD™ biocides, KATHON™ biocides, SKANE™, KORALONE™ and VINYZENE™ biocides.\textsuperscript{*}

**Product Uses**\textsuperscript{14,15}

2-Octyl-2H-isothiazol-3-one (OIT) is a broad-spectrum antifungal biocide used for the preservation of manufactured products, other than food stuffs or feeding stuffs, in containers. It controls microbial deterioration to ensure product shelf life during storage. It is also used in process systems such as metal-working tanks and wood treatment systems. The function of this product can vary from fungicide/fungistat to bactericide/bacteristat depending on the concentration. Formulated products are designed for:

- In-can preservatives for protection of household and institutional products, building materials, adhesives, latex and solvent-based paint films against bacteria, yeasts, and fungi.
- Preservatives for water-circulation and processing systems, including metal-working, wood treatment systems, etc.
- Preservatives for fibers, leather, rubber, plastics, and other polymers

\textsuperscript{*}Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow
\textsuperscript{\textcopyright} Please note that the following tradenames may also be associated with products that contain active ingredients other than OIT: BIOBAN™, KATHON™, VINYZENE™ antimicrobials. Be sure to consider the full product name so as to confirm that the correct Product Safety Assessment is selected.
**Exposure Potential**

2-Octyl-2H-isothiazol-3-one (OIT) is used in the production of industrial and consumer products. Based on the uses for OIT, individuals could be exposed through:

- **Workplace exposure** – Exposure can occur in facilities that manufacture or formulate OIT or in the various industrial facilities that use it. It is produced, distributed, stored, and consumed mainly in closed systems. Those working with OIT in manufacturing or formulating operations could be exposed during maintenance, sampling, testing, or other procedures. The greatest potential for exposure is via inhalation or skin contact. Each manufacturing facility should have a thorough training program for employees and appropriate work processes, ventilation, personal protective equipment, and safety equipment in place to limit exposure. OIT-containing biocidal product formulations are supplied for use by trained professionals only, and not for amateur use. See [Health Information](#).

- **Consumer exposure to products containing OIT** – Dow does not sell formulations of this product for direct consumer use, but they are used at very low levels in household cleaners and aqueous products such as paints, adhesives and building materials that may be used by consumers. Always read the product information before use and carefully follow label and use instructions. See [Health Information](#).

- **Environmental releases** – Small quantities of OIT may be released into the environment if products that contain it 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 sand or soil. If released into the environment, OIT would biodegrade in water or soil and would be removed by biological wastewater-treatment facilities. OIT has a low risk to accumulate in the food chain and is considered highly toxic to fish and aquatic organisms on an acute basis. 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 material should be contained, captured, collected, and reprocessed or disposed of according to all applicable governmental requirements. An approved respirator is recommended for emergency work. See [Environmental, Health, and Physical Hazard Information](#).

- **In case of fire** – Isolate the fire and deny unnecessary entry into the area. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing and avoid contact with this material during firefighting operations. Use water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam. Alcohol-based foam is preferred. Use of a direct water stream may spread the fire. If possible, contain fire-water runoff 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 products containing 2-octyl-2H-isothiazol-3-one (OIT) 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. These products may contain minor components or additives that have additional health risks. The Safety Data Sheet is the preferred source for specific health information. The health information below focuses on the active ingredient.

**Eye contact** – Contact may cause severe irritation or chemical burns with corneal damage, which may result in permanent vision impairment, even blindness. The low concentrations of OIT used in commercial applications and products are unlikely to pose a risk of serious eye injury.
Skin contact – Brief contact may cause burns with pain, severe local redness, swelling, and tissue damage. Skin contact may also result in sensitization and an allergic response. The low concentrations of OIT in commercial applications and products are unlikely to pose a risk of skin irritation or serious health effects in humans.

Inhalation – Inhalation of vapor or mist during processing may cause irritation of the upper respiratory tract (nose and throat) and lungs.

Ingestion – Swallowing large amounts of OIT may result in gastrointestinal irritation.

Repeated exposure – Not expected to cause any additional significant adverse effects.

Other – Given the lack of significant end-organ toxicity, genotoxic potential, and endocrine activity, OIT is unlikely to demonstrate a carcinogenic potential. At the conclusion of in vitro and in vivo genetic toxicity assays, the overall conclusion is that OIT does not pose a genotoxic hazard for humans.

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

Environmental Information

2-Octyl-2H-isothiazol-3-one (OIT) has low volatility and is soluble in water. Once introduced into the aquatic environment, OIT will have a tendency to remain in water. It has moderate tendency to bind to soil or sediment.

OIT is unlikely to persist in the environment. The material is rapidly biodegraded to materials that are in turn readily biodegradable. OIT will be removed from waste water by biological wastewater-treatment facilities.

OIT has a low risk to accumulate in the food chain (bioconcentrate), is highly and acutely toxic to fresh and saltwater fish, invertebrates and algae, and has moderate toxicity to plants. The material exhibits low toxicity to soil microorganisms, earthworms, and birds.

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

Physical Hazard Information

2-Octyl-2H-isothiazol-3-one (OIT) is stable under recommended storage and use conditions, but can decompose at elevated temperatures. It is combustible, but not flammable. OIT does not contain groups with significant oxidizing or explosive properties.

Avoid contact with thiols/mercaptans, amines (especially secondary and primary), oxidizing agents (such as hydrogen peroxide, hypochlorite, peroxo acids), and reducing agents (such as sodium metabisulfite or bisulfite or sodium sulfoxylate formaldehyde).

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

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of 2-octyl-2H-isothiazol-3-one (OIT). These regulations may vary by city, state, country, or geographic region. Additionally, these products may have to comply with regulations for biocides in some geographic regions. Information may be found by consulting the relevant Safety Data Sheet or Contact Us.

Back to top

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/index.htm)
- HSNO Chemical Classification Information Database, Environmental Protection Authority, New Zealand, (http://www.epa.govt.nz/search-databases/Pages/ccid-details.aspx?SubstanceID=1956)

For more business information about 2-octyl-2H-isothiazol-3-one (OIT) formulations visit the Dow Microbial Control web site at www.dow.com/microbial/about/.

Back to top

References


® Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow
19 KATHON™ 893T BIOCIDE Material Safety Data Sheet, The Dow Chemical Company, July 1, 2011, Hazards Identification and Toxicological Information.
22 Document II-A: Study Summaries–Dossier for Active Substance 2-Octyl-2H-isothiazol-3-one (OIT), Product type 6, In- can preservatives, RMS: United Kingdom, Rohm and Haas Company, September 2008, page 84.
23 Document II-B: Effects and Exposure Assessment for the Biocidal Product KATHON™ 893F Biocide, Dossier for the Inclusion of an Active Substance in the Annex 1, 2-Octyl-2H-isothiazol-3-one (OIT), Product type 9, Fibre, leather, rubber and polymerized materials preservatives, RMS: United Kingdom, Rohm and Haas Company, September 2008, page 5.

Back to top
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.

The information herein is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Dow be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information herein or the product to which that information refers. Use biocides safely. Always read the product information before use and follow the label/use instructions.

Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent, and Dow makes no representation or warranty, express or implied, that the use thereof will not infringe any patent.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Dow makes no commitment to update or correct any information that appears on the Internet or on its World-Wide Web server. The information contained in this document is supplemental to the Internet Disclaimer, http://www.dow.com/homepage/term.asp.

Back to top

Form No. 233-00794-MM-1212