Product Safety Assessment

**METATIN™ Dibutyltin Catalysts**


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**Names**

- METATIN™ Katalysator 702
- METATIN™ Katalysator 712 ES

**Product Overview**

- METATIN™ dibutyltin catalysts are organotin compounds based on dibutyltin dilaurate and dibutyltin diacetate. These products are light yellow, oily liquids with a mild odor. METATIN catalysts are manufactured by Acima AG für Chemische Industrie, a foreign affiliated company of Rohm and Haas Company, and marketed by the Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company.¹ For further details, see Product Description.
- METATIN dibutyltin catalysts are commercial products used as industrial chemical intermediates and catalysts for the production of polyurethanes, silicones, and polyester systems. For further details, see Product Uses.
- Worker exposure to METATIN dibutyltin catalysts is possible during manufacture, transport, or use. Consumer contact with these industrial chemicals is unlikely.² For further details, see Exposure Potential.
- Eye or skin contact with these products should be avoided due to the corrosive properties of these substances. Excessive inhalation of product vapor or mist may irritate the nose, throat, and lungs; headache, nausea, and dizziness are also possible.³,⁴ For further details, see Health Information.
- METATIN dibutyltin catalysts are unlikely to persist in the environment. While not considered ready biodegradable, they are susceptible to biodegradation and hydrolysis in water. These materials are unlikely to accumulate in the food chain (bioaccumulation is low), and they are classified as very toxic to aquatic life with long lasting effects.⁵,⁶ For further details, see Environmental Information.
- METATIN dibutyltin catalysts are stable under recommended storage and use conditions. Avoid contact with strong acids and oxidizing agents.⁷ For further details, see Physical Hazard Information.

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Manufacture of Product\textsuperscript{8,9}

- **Locations** – Acima AG für Chemische Industrie, a foreign affiliated company of Rohm and Haas Company, manufactures METATIN™ dibutyltin catalysts and other organotin compounds at facilities in Buchs, Switzerland.
- **Process** – Dibutyltin diacetate is manufactured by reacting dibutyltin oxide with acetic acid. Dibutyltin dilaurate is manufactured by reacting dibutyltin oxide with a naturally occurring plant oil as a source of lauric moieties to produce a technical grade of dibutyltin dilaurate. The structures of dibutyltin diacetate and dibutyltin dilaurate are shown below.

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\begin{align*}
\text{Dibutyltin diacetate} & : \text{H}_3\text{C} & \text{O} & \text{Sn} & \text{O} & \text{CH}_3 \\
\text{Dibutyltin dilaurate} & : \text{H}_3\text{C} & \text{O} & \text{O} & \text{Sn} & \text{O} & \text{O} & \text{CH}_3 & \text{CH}_3 \\
\end{align*}
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Product Description\textsuperscript{10,11,12}

METATIN™ dibutyltin catalysts are organotin compounds based on dibutyltin dilaurate and dibutyltin diacetate. METATIN catalysts are manufactured by Acima AG für Chemische Industrie, a foreign affiliated company of Rohm and Haas Company, and marketed by the Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company. A catalyst is a compound that increases the rate of a chemical reaction without being consumed (or changed) in the reaction. METATIN dibutyltin catalysts are light yellow, oily liquids with a mild odor. These materials are insoluble in water.

Product Uses\textsuperscript{13,14}

METATIN™ dibutyltin catalysts are used as industrial intermediates and catalysts for the production of polyurethanes, silicones, and polyesters. METATIN dibutyltin catalysts are used in the production of:
- High-resiliency polyurethane foam for automotive seating
- Silicone “room-temperature vulcanized” (RTV) sealants
- Flexible silicone rubbers for sealing compounds, insulators, and a variety of other applications

Exposure Potential\textsuperscript{15,16,17}

METATIN™ dibutyltin catalysts are used in the production of industrial products. Based on the uses for these products, the public could be exposed through:
- **Workplace exposure** – METATIN dibutyltin catalysts are formulated in closed systems using engineering controls that prevent the escape of liquid or vapors and minimize release to the

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environment. The potential for exposure is further reduced by proper use of personal protective equipment (PPE). Workers may be exposed during maintenance, sampling, testing, or other procedures. Each 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 METATIN™ dibutyltin catalysts** – Dow does not sell METATIN dibutyltin catalysts for consumer use. Catalysts are expended in the chemical reaction or encapsulated at very low levels in the final product, so consumer exposure to METATIN dibutyltin catalysts is highly unlikely.

- **Environmental releases** – METATIN catalysts are used in carefully-controlled closed systems. Dibutyltin catalysts have low water solubility and are likely to be highly adsorptive to particulates, soils and sediments. Consequently, the dibutyltin catalysts will be removed from the environment via adsorption by wastewater-treatment facilities. These organotin compounds are toxic to aquatic organisms. In the event of a spill, the focus is on immediate containment to prevent contamination of soil and surface or ground water. Keep spills and cleaning runoff out of municipal sewers and open bodies of water. Contain spills immediately with inert materials (e.g. sand). Transfer liquids and solid diking material to separate suitable containers for disposal. 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 focus is on the immediate containment to prevent contamination of soil and surface or ground water. Prevent material from entering drains, sewers, or bodies of water. Evacuate personnel to safe areas. Wear personal protective equipment (PPE). The Safety Data Sheet contains specific PPE recommendations and exposure limit information. Spilled material may be slippery. Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – During a fire, irritating and highly toxic gases may be generated. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Fight the fire with dry-chemical or carbon-dioxide (CO₂) extinguishers or foam. 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**

- **Eye contact** – Dibutyltin diacetate and dibutyltin dilaurate are corrosive substances. Contact with product liquid or mist should be avoided by wearing personal protective equipment (PPE).

- **Skin contact** – Dibutyltin diacetate and Dibutyltin dilaurate are corrosive substances. Moreover, Dibutyltin diacetate and Dibutyltin dilaurate are sensitizers. Contact with product liquid or mist should be avoided by wearing personal protective equipment (PPE).

- **Inhalation** – Inhalation of product vapor or mist can cause irritation of the nose, throat, and lungs. Headache and nausea are also possible.

- **Ingestion** – These products may be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

- **Chronic exposure** – Based on animal studies, prolonged or repeated overexposure to dibutyltin esters may affect the developing fetus, blood, and thymus. Overexposure to dibutyltin acetate may also cause central nervous system effects.

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Genetic toxicity – Dibutyltin diacetate and dibutyltin dilaurate are classified as mutagenic (category 2 as per CLP criteria). CLP is the European Regulation on Classification, Labelling and Packaging of chemical substances and mixtures, which provides throughout the European Union a uniform classifying and labelling system for chemicals based on the United Nations’ Globally Harmonised System (UN GHS).

Toxic to reproduction – Dibutyltin diacetate and dibutyltin dilaurate are reprotoxic (category 1B according to CLP criteria).

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

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Environmental Information

Dibutyltin dilaurate and dibutyltin diacetate are poorly soluble in water and are non-volatile. These organotin catalysts are likely to be highly adsorptive to suspended particulates, sediment or soil.

Dibutyltin dilaurate and dibutyltin diacetate are unlikely to be persistent in the environment. While they cannot be characterized as readily biodegradable, they are susceptible to biodegradation and hydrolysis in water.

Dibutyltin diacetate and dibutyltin dilaurate are unlikely to accumulate in the food chain (bioaccumulation potential is low), and they are characterized as highly toxic to aquatic organisms.

Dibutyltin diacetate and dibutyltin dilaurate are very toxic to aquatic organisms.

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

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Physical Hazard Information

METATIN™ dibutyltin catalysts are stable under recommended storage and use conditions. Avoid contact with strong acids and oxidizing agents.

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 METATIN™ dibutyltin catalysts. 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 relevant Safety Data Sheet from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/assistance/thoughts.htm)
- “Dibutyltin Diacetate CASRN: 1067-33-0,” Hazardous Substances Data Bank (HSDB), U.S. National Library of Medicine, TOXNET website (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB enter dibutyltin diacetate or 1067-33-0 in the search field, then click the <search> button)
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- “Dibutyltin Dilaurate CASRN: 77-58-7,” Hazardous Substances Data Bank (HSDB), U.S. National Library of Medicine, TOXNET, website (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) enter dibutyltin dilaurate or 77-58-7 in the search field, then click the <search> button

For more business information about METATIN™ dibutyltin catalysts, contact the Dow Customer Information Group at www.dow.com/assistance/dowcig.htm.

References

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24 “Acetic Acid CASRN: 64-19-7,” Hazardous Substances Data Bank (HSDB), U.S. National Library of Medicine, TOXNET, Environmental Fate & Exposure section.
25 “Dodecanoic Acid CASRN: 143-07-7,” Hazardous Substances Data Bank (HSDB), U.S. National Library of Medicine, TOXNET, Environmental Fate & Exposure section.

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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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