Product Safety Assessment

**UCAR™ Filmer IBT**

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. 25265-77-4
- EC. No. 246-771-9
- UCAR™ Filmer IBT
- TMB
- Isobutyric acid, ester with 2,2,4-trimethyl-1,3-pentanediol
- 2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate

### Product Overview
- UCAR™ Filmer IBT is not listed as a Hazardous Air Pollutant (HAP) by the United States Environmental Protection Agency (U.S. EPA). It is a clear, colorless liquid with a mild odor. Due to its slow evaporation rate and very low water solubility, UCAR Filmer IBT is an excellent coalescing agent; it helps in the formation of polymer films.\(^1\),\(^2\) For further details, see Product Description.
- UCAR Filmer IBT is used as a coalescing agent in coatings (latex paints), printing inks, plasticizers, cosmetics, and personal-care products. It is also used as a chemical intermediate.\(^1\) For further details, see Product Uses.
- Eye or skin contact with this material may cause slight irritation. Prolonged skin contact is not likely to result in absorption of harmful amounts. Prolonged inhalation is not expected to cause adverse effects.\(^2\) For further details, see Health Information or Physical Hazard Information.
- Worker exposure to this material is possible during manufacturing. Engineering controls and personal protection equipment greatly reduce the potential for occupational exposure. This material is not sold for direct consumer use; however, it is used at levels of 0.5–10% in latex paints, cosmetics, nail care, and other personal-care formulations.\(^3\) For further details, see Exposure Potential.
- UCAR Filmer IBT is stable at typical storage and use temperatures. Exposure to elevated temperatures can cause this product to decompose. Avoid contact with oxidizers.\(^2\) For further details, see Physical Hazard Information.
- UCAR Filmer IBT is readily biodegradable, unlikely to accumulate in the food chain, and slightly toxic to fish and aquatic organisms. For further details, see Environmental Information.
Manufacture of Product

- **Capacity** – 2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (TMB) is marketed by Dow under the trade name UCAR™ Filmer IBT.
- **Process** – UCAR™ Filmer IBT is manufactured in a closed, continuous process by aldehyde condensation to generate butyraldehyde and isobutyraldehyde. These are separated and the isobutyraldehyde is trimerized with a catalyst.

Product Description

UCAR™ Filmer IBT is a clear, colorless liquid with a mild odor. UCAR Filmer IBT has many properties that make it a useful coalescing agent: very low water solubility, slow evaporation rate, excellent hydrolytic stability (stable in water), does not increase viscosity, does not impact synthetic thickeners, and does not adversely impact gloss (paint formulations). UCAR Filmer IBT is not classified as a Hazardous Air Pollutant (HAP) by the U.S. Environmental Protection Agency. Testing of ozone-formation potential for UCAR Filmer IBT results in a comparatively low Maximum Incremental Reactivity (MIR) score. Therefore, UCAR Filmer IBT does not contribute to lower-level smog formation.

Product Uses

UCAR™ Filmer IBT is mainly used as a coalescing agent in latex emulsion paints to aid film formation. It is especially useful in maintaining film integrity during high humidity or low temperature use. Additional applications include:
- Chemical intermediates
- Plasticizers
- Printing inks
- Nail care (nail polish)
- Cosmetics and personal-care products

Exposure Potential

UCAR™ Filmer IBT is used in the production of industrial and consumer products. Based on the uses for this material, the public could be exposed through:
- **Workplace exposure** – Exposure can occur either in a UCAR Filmer IBT manufacturing facility or in the various industrial or manufacturing facilities that use this material. It is produced, distributed, and stored in closed systems. Those working with this material in manufacturing operations could 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 unnecessary exposure. See Health Information.
- **Consumer exposure to products containing UCAR Filmer IBT** – UCAR Filmer IBT is not sold for direct consumer use. However, because it is may be an ingredient in latex paint, nail polish, cosmetics, and other personal-care products at levels of 0.5–10%, consumer exposure is likely. UCAR™ Filmer IBT evaporates slowly and is not present when the product film has dried. Use adequate ventilation when using products that may contain this material. See Health Information.
Environmental releases – Releases to the environment are expected to be minimal. UCAR Filmer IBT will evaporate slowly from products containing it. Although the compound is poorly soluble, once it is dissolved in water, the chemical will tend to remain in water. Because it is highly biodegradable, the compound will be removed by sewage treatment plants. In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. This material is slightly toxic to fish and other aquatic organisms. See Environmental, Health, and Physical Hazard Information.

Large release – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, dike the area to contain the spill. Collect the material in suitable and properly labeled containers. Use appropriate safety equipment. See Environmental, Health, and Physical Hazard Information.

In case of fire – Keep people away. Extinguish fires with water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam. 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. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

Health Information

Eye and skin contact – Eye contact with this material may cause slight irritation, although corneal injury is unlikely. Brief skin contact may cause slight irritation with local redness and drying or flaking of the skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation – Prolonged excessive inhalation is not expected to cause adverse effects.

Ingestion – This material has low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Other – In laboratory testing, kidney effects or tumors have been observed in male rats. These effects are thought to be species-specific and unlikely to occur in humans. This material did not cause birth defects or any other fetal effects in animal studies and did not interfere with reproduction or fertility. This material was negative in in vitro and animal genetic toxicity studies.

For more information, see the relevant Safety Data Sheet.

Environmental Information

UCAR™ Filmer IBT has low volatility and is poorly soluble in water. Once dissolved in water, the compound will tend to remain in water. It has minimal tendency to bind to soil or sediment.

UCAR Filmer IBT is unlikely to persist in the environment. The compound is highly biodegradable, which suggests the chemical will be removed from water and soil environments, including biological wastewater treatment plants.
UCAR™ Filmer IBT has a low potential to accumulate in the food chain and is toxic to fish and other aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information

UCAR™ Filmer IBT is thermally stable at typical storage and use temperatures. Store this material in the original container. Exposure to elevated temperatures can cause this product to decompose.

Avoid contact with oxidizers.

For more information, see the relevant Safety Data Sheet.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of UCAR Filmer IBT. 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.

Additional Information

- Safety Data Sheet (http://www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (http://www.dow.com/oxysolvents/contact/index.htm)

References

1. **UCAR™ Filmer IBT**, Technical Data Sheet, The Dow Chemical Company, Form No. 327-00010-0812
2. UCAR Filmer IBT Safety Data Sheet for the US, The Dow Chemical Company, ID No. 1886/1001

*Back to top*
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Back to top

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