Product Safety Assessment

DOW™ Diisobutyl Ketone

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Names
• CAS No. 108-83-8
• Diisobutyl ketone
• DOW™ diisobutyl ketone
• Isovalerone
• Valerone

• EC No. 203-620-1
• 2,6 Dimethyl-4-heptanone
• Isobutyl ketone
• s-Diisopropylacetone
• DIBK

Product Overview
• DOW™ diisobutyl ketone (DIBK) is a colorless, combustible, stable liquid with a mild, sweet odor.¹ See Product Description.
• DOW diisobutyl ketone is used to reduce viscosity and surface tension in high-solids coating applications.¹ See Product Uses.
• Short, single skin exposures to diisobutyl ketone are not likely to cause significant skin irritation; however, prolonged exposure may cause slight irritation and may cause drying the flaking of the skin. DIBK exposure may cause slight eye irritation or slight corneal injury. This material has low toxicity if swallowed. Excessive exposure to vapors may cause irritation to the upper respiratory tract. Signs and symptoms of excessive exposure may be anesthetic or narcotic effects, such as dizziness and drowsiness.² See Health Information.
• DOW diisobutyl ketone is not sold for direct consumer use, but can be used as a solvent in coatings that could be used by consumers. See Exposure Potential.
• DOW diisobutyl ketone is stable at recommended storage conditions. Keep away from heat and ignition sources in storage.² See Physical Hazard Information.
• DOW diisobutyl ketone is readily biodegradable³, unlikely to accumulate in the food chain, and is considered slightly toxic to fish and aquatic.²

Manufacture of Product
• Location³ – DOW™ diisobutyl ketone is produced at facilities in Institute, West Virginia (USA).
• Process⁴ – DOW diisobutyl ketone is produced by first dehydrogenating isopropyl alcohol to acetone and then, through a series of condensations and hydrogenations, diisobutyl ketone,
methyl isobutyl ketone (MIBK, CAS No. 108-10-1), and acetone (CAS No. 67-64-1) are produced in a mixed ketones process. The products are then separated and purified.

Product Description

DOW™ diisobutyl ketone is a colorless, combustible, stable liquid with a mild, sweet odor. It is miscible with most organic solvents but has limited solubility with water. It is a high-boiling point, slow-evaporating solvent.

Product Uses

DOW™ diisobutyl ketone is sold for use in:
- Coatings – as a solvent
- Industrial applications – as a solvent, additive, formulation ingredient, and in leather treatments as well as other miscellaneous uses

DOW diisobutyl ketone has a low density, which is particularly useful in formulating low volatile organic compounds (VOC) and coatings that are free of hazardous air pollutants (HAP). The low surface tension of DOW diisobutyl ketone provides excellent wetting, and it exhibits much-needed "bite" for many plastic substrates to promote good coating adhesion.

DOW diisobutyl ketone has many characteristics that make it useful as a retarder solvent for coatings, such as good solvency, low surface tension, low density, slow evaporation rate, and non-HAP status. DOW diisobutyl ketone can be used in nitrocellulose lacquer emulsions for leather because of its low water solubility, slow evaporation rate, low surface tension, and good solvency for the resin. It is also used as a viscosity modifier for some PVC organosols because it has limited solvency for these resins at room temperature.

Exposure Potential

DOW™ diisobutyl ketone can be 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 diisobutyl ketone manufacturing facility or in the various industrial or manufacturing facilities that use this material. Those working with this product in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing 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 diisobutyl ketone** – DOW diisobutyl ketone is not sold for direct consumer use, but can be used as a solvent in operations in which the final products may be in contact with consumers. Manufacturers must adhere to strict regulations regarding residual solvent levels in the final product, therefore the potential for consumer exposure should be low. See Health Information.

- **Environmental releases** – Diisobutyl ketone has moderate volatility, and may evaporate from products containing it. The substance has a low solubility in water, and when introduced, will have a tendency to evaporate from water. Because diisobutyl ketone is readily biodegradable, it will be treated 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. Respiratory protection is necessary for cleaning up spills and leaks. Eliminate all sources of
ignition immediately. For small spills, wash the spill site with large quantities of water. 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 captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Positive-pressure, self-contained breathing apparatus (SCBA) with an approved full-face mask is recommended for emergency work. Eliminate all sources of ignition immediately. Use only explosion-proof equipment. Ground and bond all containers and handling equipment. See Health and Physical Hazard Information.

- **In case of fire** – Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use of a direct water stream may spread fire. Alcohol-resistant foams (ATC type) are preferred for fighting the fire. The public should be warned of downwind vapor explosion hazards. Vapors are heavier than air and may travel long distances and accumulate in low-lying areas. Keep vapors out of sewers. Follow emergency procedures carefully. See Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

**Eye and skin contact** – May cause slight eye irritation or slight corneal injury. Vapor or mist may cause eye irritation. Short, single skin exposures to diisobutyl ketone are not likely to cause significant skin irritation. A single prolonged exposure or repeated contact may cause drying or flaking of the skin but is unlikely to result in the material being absorbed in harmful amounts.

**Ingestion** – Diisobutyl ketone has low toxicity if swallowed. Harmful effects are not anticipated from swallowing small amounts. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia. The decision of whether to induce vomiting or not should be made by a physician.

**Inhalation** – Excessive exposure to diisobutyl ketone vapors may cause irritation to the upper respiratory tract (nose and throat). Signs and symptoms of excessive exposure may be anesthetic or narcotic effects, such as dizziness and drowsiness.

**Other** – In animals, excessive exposure to diisobutyl ketone has resulted in effects in the kidney, liver, and lungs. Diisobutyl ketone did not interfere with reproduction nor cause birth defects or any other fetal effects in laboratory animals. In vitro genetic toxicity studies were negative.

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

Diisobutyl ketone is moderately volatile and may evaporate from products containing it. The substance has limited solubility in water, and when introduced, will have a tendency to evaporate from water. Based on its physical chemical properties, it will have a slight tendency to bind to soil or sediment.

Diisobutyl ketone is not likely to persist in the environment. In the air, rapid photodegradation is expected to occur. In addition, the substance is readily biodegradable, which suggests the chemical will be rapidly and completely removed from water and soil environments, including biological wastewater treatment plants.
Diisobutyl ketone is not likely to accumulate in the food chain (bioconcentration potential is low) and is considered slightly toxic to aquatic organisms on an acute basis.

The Organisation for Economic Co-operation and Development (OECD) SIDS Initial Assessment Report for diisobutyl ketone concluded that, based on the known properties and exposure patterns, the chemical is currently considered of low potential risk to the environment, and low priority for further work. (Link to the report: www.inchem.org/documents/sids/sids/108-83-8.pdf)

For more information, see the relevant Safety Data Sheet.

**Physical Hazard Information**

DOW™ diisobutyl ketone is stable under recommended storage and use conditions. However, it can decompose at elevated temperatures. Liquid and vapor are combustible. Keep heat, sparks, and flame away from storage areas.

Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

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 DOW™ diisobutyl ketone. 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**

- Contact Us ([http://www.dow.com/oxysolvents/contact](http://www.dow.com/oxysolvents/contact))
• *Dow Oxygenated Solvents: Volatile Organic Content Compliance*, The Dow Chemical Company, Form No. 110-01141 1207 AMS, December 2007

For more business information about DOW™ diisobutyl ketone and other acetone derivatives, visit the Dow Oxygenated Solvents web site at [www.dowsolvents.com](http://www.dowsolvents.com).

**References**

1. *Diisobutyl Ketone Technical Data Sheet*, The Dow Chemical Company, Form No. 327-00029-0812
5. Estimates by The Dow Chemical Company.

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