

Acetone Encyclopedia Article

Acetone

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Acetone

Acetone is a colorless, flammable, and volatile liquid with a characteristic odor that can be detected at very low concentrations. It is used in consumer goods such as nail polish remover, model airplane glue, lacquers, and paints. Industrially, it is used mainly as a solvent and an ingredient to make other chemicals.

Acetone is the common name for the simplest of the **ketones**. The formula of acetone is CH_3COCH_3 .

The International Union of Pure and Applied Chemistry's (IUPAC) systematic name for acetone is 2-propanone; it is also called dimethyl ketone. The **molecular weight** is 58.08. Its **boiling point** is 133°F (56°C) and the melting point is -139.63°F (-95.4°C). The specific gravity is .7899.

Acetone is the simplest and most important of the ketones. It is a polar organic solvent and therefore dissolves a wide variety of substances. It has low chemical **reactivity**. These traits, and its relatively low cost, make it the solvent of choice for many processes. About 25% of the acetone produced is used directly as a solvent.

About 20% is used in the manufacture of methyl methacrylate to make **plastics** such as acrylic plastic, which can be used in place of **glass**. Another 20% is used to manufacture methyl isobutyl ketone, which serves as a solvent in surface coatings. Acetone is important in the manufacture of artificial fibers, explosives, and polycarbonate resins.

Because of its importance as a solvent and as a starting material for so many chemical processes, acetone is produced in the United States in great quantities. In 1999, the worldwide acetone market reached 9.4 billion lb (4.27 billion kg) at a steady growth rate of 2-3% per year. Acetone is prepared by several routes, from petrochemical sources. The methods of its synthesis include **oxidation** of 2-propanol (isopropyl alcohol), the hydration of propene, and as a co-product (with phenol) of the O_2 -oxidation of cumene.

Acetone is normally present in low concentrations in human blood and urine. Diabetic patients produce it in larger amounts. Sometimes "acetone breath" is detected on the breath of diabetics by others and wrongly attributed to the drinking of liquor. If acetone is splashed in the eyes, irritation or damage to the cornea will result. Excessive breathing of fumes causes headache, weariness, and irritation of the nose and throat. Drying results from contact with the skin.