Acetone
Product Stewardship Summary
(CAS number 67-64-1)

Chemical Formula for Acetone
CH3COCH3

What is Acetone?
Acetone, also sometimes known as 2-propanone or dimethyl ketone (DMK), is a clear, low-boiling, flammable, volatile liquid that is completely miscible in water.

Acetone is manufactured by Shell Chemicals via two different routes. In the first, it is derived from the basic raw materials of benzene and propylene. These materials are first used to produce cumene, which is then oxidised to become cumene hydroperoxide, before being split into phenol and its co-product, acetone.

In the second route, acetone HP (high purity) is manufactured from isopropyl alcohol (IPA). Shell Chemicals manufactures acetone HP at two locations in Europe and sell it into the European market.

How is Acetone Used?
Acetone is widely used as a chemical intermediate in the production of other chemicals and a valuable solvent.

Acetone is used primarily in the production of commercial products such as acrylic plastics, which are used for glazing, signs, lighting fixtures and displays. Acetone is also used in the production of Bisphenol A (BPA) which is manufactured from acetone and phenol. BPA is, in turn, used to manufacture polycarbonate and epoxy resins.

As a solvent, it is found in many everyday products, including paints, cleaning fluids, nail polish remover, and adhesives. In these applications, use is often made of acetone’s combination of high solvency with a high rate of evaporation.

Health, Safety and Environmental Considerations
Acetone has been shown to have a low potential for toxicity and does not pose a neurotoxic or reproductive health hazard at normal environmental concentrations. Prolonged skin contact can cause drying of the skin, which could result in a burning sensation or cracking. Immediate washing with water (and soap if available) will diminish its effects. Exposure to high vapour concentrations can cause eye irritation and those exposed should flush their eyes with water. Inhalation of high vapour concentrations can cause dizziness or nausea and lung damage. If acetone is ingested and then vomited, it can enter the lungs and cause lung damage. As a first aid measure, vomiting should not be induced and medical attention should be sought immediately.
The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that acetone is not classifiable as a human carcinogen. Also in the US, the National Toxicology Program (NTP) has recommended against the testing of acetone in cancer studies because of the absence of any evidence to support its carcinogenic potential.

Globally, occupational exposure levels for acetone range from 125 – 1000 ppm TWA (8-hour Time Weighted Average). Acetone has low toxicity to aquatic organisms. It is readily biodegradable and has a low potential to bioaccumulate.

Acetone is an extremely flammable liquid whose vapours are heavier than air and can travel across terrain to remote ignition sources. In certain circumstances product can ignite due to static electricity.

Acetone is naturally present in many fruits and vegetables, including grapes, onions and beans. Acetone is also “Generally Recognized as Safe” (GRAS) by the FDA when present in beverages, baked goods and desserts in concentrations from 5-8 mg/L.

**Storing and Transporting Acetone**

Acetone is stored in carbon steel tanks, properly grounded. Acetone is extremely flammable and must be handled carefully when transferring to and from storage tanks and transportation vehicles. Acetone is transported by tank truck, rail car and vessel/barge. This product may be transported under nitrogen blanketing.

**Risk Characterization Summary**

Risks associated with exposure to these products have been evaluated for the following “chain-of-commerce” activities: manufacture, storage, product transfer, transportation, and customers/markets. It is manufactured, stored and transported to customers in closed systems. Depending on the customer, end uses may vary from use as an intermediate for the manufacture other chemicals, commercial products, or certain formulated consumer products. Proper equipment design and handling procedures maintain low risk from exposure to acetone where the product is used as a chemical intermediate. Exposures may be higher in commercial and consumer applications. To minimize risk, additional controls, such as special handling procedures and protective packaging, are implemented.

This product stewardship summary 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 chemical’s applicable Safety Data Sheet, which should be consulted before use of the chemical. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.
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