Product Safety Assessment

PD Quat


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Names
• CAS No. 34004-36-9
• PD Quat
• 2,3 dihydroxypropyl trimethylammonium chloride

Product Overview
• PD Quat is an aqueous solution of a quaternary ammonium diol, 2,3 dihydroxypropyl trimethylammonium chloride. This product is a colorless to yellow liquid with a mild odor and is completely miscible in water and largely insoluble in hydrocarbons. For further details, see Product Description.
• PD Quat is incorporated into natural and synthetic polymers to promote the retention of moisture (serves as a humectant) in personal care products. For further details, see Product Uses.
• Exposure to PD Quat can occur either in facilities that manufacture the product or in the various facilities that use or formulate this product. This product is not sold directly to consumers; however, it is used in the manufacture of personal care products. For further details, see Exposure Potential.
• Eye contact with this product may cause slight, temporary irritation. Prolonged skin contact is not likely to cause significant irritation or result in absorption of harmful amounts. Based on testing, PD Quat has not been found to be a skin sensitizer. At room temperature, exposure to vapor is minimal due to low volatility. This product has low toxicity if swallowed. For further details, see Health Information.
• PD Quat is biodegradable, has a low potential to bioconcentrate (does not accumulate in the food chain), and is practically nontoxic to aquatic organisms on an acute basis. For further details, see Environmental Information.
• PD Quat is stable under recommended storage and normal use conditions. Avoid contact with amines or ammonia and unintended contact with strong acids and strong bases. For further details, see Physical Hazard Information.
**Product Safety Assessment: PD Quat**

**Manufacture of Product**
- **Location** – The Dow Chemical Company produces PD Quat in Freeport, Texas, U.S.A.
- **Process** – The chemical structure is shown below.

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H3C CH3
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N^+ OH
\_\_\_\_\_\_\_\_
Cl^- H3C
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**Product Description**
PD Quat is a nominally 50% aqueous solution of a quaternary ammonium diol, 2,3 dihydroxypropyl trimethylammonium chloride. This product is a colorless to yellow liquid with a mild odor and is completely miscible in water and largely insoluble in hydrocarbons.

**Product Uses**
PD Quat is incorporated into formulations to promote the retention of moisture (i.e., as a humectant) in personal care products.

**Exposure Potential**
PD Quat is used in the formulation of personal care products. Based on these uses, individuals could be exposed through:
- **Workplace exposure** – Exposure can occur either in facilities that manufacture PD Quat or in the various facilities that use or formulate this product. PD Quat is produced, transported, and stored in closed containers until time for use. Those working with PD Quat 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 exposure. See Health Information.
- **Consumer exposure to PD Quat** – These products are not sold for direct consumer use; however, PD Quat is used in the formulation of personal care products. See Health Information.
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. For small spills, clean up with an absorbent such as clay or sand. If released to the environment, PD Quat is expected to bind to soil or sediments, although some partitioning to water may also occur. PD Quat is anticipated to degrade in the environment, and is expected to be removed by wastewater treatment facilities. 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 product should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. See Environmental and Physical Hazard Information.
- **In the event of a fire** – PD Quat is not combustible until dried to a residue. The residue may be combustible. Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use water spray or fog, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Use of a direct water stream may spread the fire. During a fire, smoke may contain the original material in addition to harmful gases. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Keep fire water out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

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

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Health Information

Eye contact – Contact may cause slight, temporary eye irritation with pain disproportionate to the level of tissue irritation. Corneal injury is unlikely.

Skin contact – Prolonged contact is not likely to cause significant skin irritation or result in absorption of harmful amounts. Based on testing, PD Quat has not been found to be a skin sensitizer.

Inhalation – At room temperature, exposure to vapor is minimal due to the product’s low volatility.

Ingestion – This product 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.

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

Environmental Information

Environmental information for PD Quat is summarized on the relevant Safety Data Sheet. An overview of environmental information appears below.

PD Quat is soluble in water and is expected to exhibit low volatility. If released to water, PD Quat is anticipated to bind to sediments. If released to soil, PD Quat is expected to associate strongly with soils, resulting in low mobility. PD Quat is expected to degrade in the environment, which suggests that it will likely be removed in biological wastewater treatment facilities as well as other water and soil environments. This compound has a low potential to bioconcentrate, and is practically nontoxic to aquatic organisms (LC$_{50}$/EC$_{50}$ greater than 100 mg/L in the most sensitive species tested) on an acute basis.

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

Physical Hazard Information

PD Quat is stable under recommended storage and normal use conditions. Exposure to temperatures above 150°C (302°F) can cause the product to decompose and generate gas which can cause pressure build-up in closed systems. Decomposition products can include chloroacetone, hydrogen chloride, methyl chloride, and trimethylamine.

Avoid contact with amines or ammonia and unintended contact with strong acids and strong bases.

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

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of PD Quat. 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.

Additional Information

- Request the relevant Safety Data Sheet from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)

For more business information about PD Quat, please contact the Dow Customer Information Group through www.dow.com/assistance/dowcig.htm.
References


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