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PRODUCT STEWARDSHIP SUMMARY: TREATED FUMED AND COLLOIDAL SILICA

Overview

This Product Stewardship Summary refers to Cabot Corporation's CAB-O-SIL® Treated Fumed and CAB-O-SIL™ Colloidal Silica products. Cabot Corporation's treated fumed and colloidal silica products are created by chemically treating the surface of fumed (also called pyrogenic) and colloidal silica particles. Cabot Corporation's treated fumed and colloidal silica products are used in a wide variety of industrial applications as reinforcement, flow control and thickening agents.

Chemical Identity

Cabot Corporation's treated fumed and colloidal silica products include treatments with hexamethyldisilazane, dichlorodimethylsilane, hexamethyldisilazane and cyclic silazane, octyltrimethoxysilane, and polydimethylsiloxanes. The treated product is a form of synthetic amorphous silica (SAS); also known as silicon dioxide (SiO₂).

Physical and Chemical Properties

CAB-O-SIL® Treated Fumed and CAB-O-SIL™ Colloidal Silica products are white, inert, non-crystalline powders. The surface treatment renders the silica hydrophobic, thus resulting in reduced moisture uptake compared to untreated fumed silica.

Uses

CAB-O-SIL® Treated Fumed and CAB-O-SIL™ Colloidal Silica products are currently used in a wide variety of industrial applications and a limited number of consumer applications. The main use of these fumed and colloidal silica products is as a reinforcement, thickening and flow agent in various systems. The surface treatment of fumed and colloidal silica results in a wide variety of hydrophobic fumed and colloidal silica grades with performance benefits including reduced moisture adsorption, better flow control in certain systems, and increased compatibility with organic systems. Industrial applications include uses such as: powder coatings to reduce blocking or caking of powders during storage in humid environments; reinforcing filler for adhesives and sealants; flow agent for xerographic toners; and component of composite materials. A small percentage of CAB-O-SIL® Treated Fumed Silica products are used in consumer applications, such as cosmetics and personal care products.



Health Effects

Short-term animal toxicity tests on certain treated fumed silica grades all showed low toxicity. Since the surface treatment of fumed and colloidal silica is only a small fraction of the base silica particle, the health effects of treated fumed and colloidal silica are likely to be similar to untreated fumed and colloidal silica. Untreated fumed and colloidal silica (a form of SAS) has not been associated with any significant health effects to workers or end users. These findings on untreated SAS were stated in reports by the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC, 2006) and the OECD SIDS Initial Assessment Report (OECD, 2004). In addition, the International Agency for Research on Cancer (IARC) did not identify amorphous silica as either an animal or human carcinogen (IARC, 1997).

Environmental Effects

Short-term ecological tests on a limited number of treated fumed silica grades showed low toxicity. These findings are similar to extensive studies on untreated SAS, which have shown low toxicity to both aquatic and terrestrial organisms in the environment. The European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC, 2006) concludes that “[untreated] SAS presents a low risk of adverse effects in the environment.”

Exposure Potential

Workplace exposures to treated fumed and colloidal silica products are appropriately controlled with engineering controls and personal protective equipment. Specific occupational exposure limits have not been developed for treated silica products. In its facilities globally, Cabot Corporation manages to the German workplace limit of 4 mg/m³ (inhalable dust). This value is the most stringent occupational exposure limit for untreated silica for the countries in which Cabot operates. Cabot Corporation’s treated fumed and colloidal silica products have limited consumer applications, therefore there is low potential for consumer exposure.

Risk Management

Risk is measured as a function of both hazard and exposure. If the hazard and/or exposure are low, the potential for risk is low. Treated fumed and colloidal silica have low hazard for both humans and the environment. While there is some potential for exposure to workers, there have been no reported instances of adverse health effects. Treated silica in finished products is bound in a matrix and expected to be unavailable for exposure to consumers. SAS (the main component of treated fumed and colloidal silica) has been studied extensively by various international regulatory agencies, and is considered to pose a low risk to humans and the environment.

Cabot Corporation Contacts

We appreciate your interest in our CAB-O-SIL[®] Treated Fumed and CAB-O-SIL[™] Colloidal Silica products. If you need additional information, please feel free to contact Cabot’s Product Support and Toxicology Group at regulatory.inquiries@cabotcorp.com



References

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Disclaimer

This Product Safety Summary is intended to provide the general public with an overview of this chemical substance. It is not intended to provide emergency response, medical or treatment information. In-depth safety and health information can be found on the current Safety Data Sheet (SDS) for the product.

This information is being provided as of the date hereof. Please visit cabotcorp.com/certifications for any updates to this information.

The CAB-O-SIL® name is a registered trademark of Cabot Corporation.

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