



2023

PRODUCT STEWARDSHIP SUMMARY:

CABOT'S AEROGEL PRODUCTS INCLUDING AEROGEL PARTICLES, OPACIFIED AEROGEL PARTICLES, ENOVA[®] AEROGEL, LUMIRA[®] AEROGEL, WHICH INCLUDE THE P, IC, LA, AX, AND MT GRADES, AND ENTERA[®] EV AEROGEL

Overview

This Product Stewardship Summary refers to Cabot Corporation's aerogel products. Cabot Corporation's aerogel products are produced by chemically treating in situ the silica hydrogel (obtained by neutralization of colloidal silica or sodium silicate solution) before drying. Cabot Corporation's aerogel products are used in a variety of industrial applications such as insulation and absorbance.

Chemical Identity

Cabot Corporation's aerogel products include treatments with hexamethyldisilazane. The treated product is a form of synthetic amorphous silica (SAS); also known as silicon dioxide (SiO₂).

Physical and Chemical Properties

Cabot's aerogel products are white, inert, non-crystalline powders. The surface treatment renders the silica hydrophobic, thus resulting in reduced moisture uptake compared to untreated silica.

Uses

Cabot's Aerogel products are currently used in a variety of industrial applications and limited personal care applications (eg, cosmetics). The surface treatment of aerogel particles results in a variety of hydrophobic grades with performance benefits including insulation, absorbance, lightweighting, light scattering and sag resistance. Industrial applications include uses such as: thermal insulation in buildings, apparel and industrial insulation where it is a thin product that can be easily cut, rolled and shaped on the job site; absorbing various oils, for example oil slicks on the surface of bodies of water; lightweighting concrete and other construction materials; cosmetics formulations to reduce skin gloss and to absorb oils from the skin; increasing film build in coatings and preventing droop in spray applied construction insulation systems.



Health Effects

Aerogel is chemically similar to treated fumed silica. Short-term animal toxicity tests on certain treated fumed silica grades all showed low toxicity. Since the surface treatment aerogel is only a small fraction of the base silica, the health effects of aerogel 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

Aerogel is chemically similar to treated fumed silica. 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 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 aerogel 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. Aerogel products 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. Aerogel in finished products is bound in a matrix and expected to be unavailable for exposure to consumers. SAS (the main component of aerogel) 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 aerogel products. If you need additional information, please feel free to contact Cabot’s Product Support and Toxicology Group at (978) 670-6961.



References

ECETOC. 2006. European Centre for Ecotoxicology and Toxicology of Chemicals. Synthetic Amorphous Silica (CAS No. 7631-86-9). ECETOC JACC Report No. 51. Brussels, Belgium. [<http://www.ecetoc.org/jacc-reports>]

FDA. 2010. Agency Response Letter GRAS Notice No. GRN 000321. CFSAN/Office of Food Additive Safety [<http://www.fda.gov/Food/FoodIngredientsPackaging/GenerallyRecognizedasSafeGRAS/GRASListings/ucm225016.htm>].

IARC. 1997. International Agency for Research on Cancer. Silica. IARC, Monograph 68, 1997 [<http://monographs.iarc.fr/ENG/Monographs/vol68/volume68.pdf>].

OECD. 2004. Organisation for Economic Co-operation and Development . SIDS Initial Assessment Report: Synthetic Amorphous Silica and Silicates. UNEP Publication. Berlin, Germany [<http://www.chem.unep.ch/irptc/sids/oecdsids/Silicates.pdf>].

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.

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