

SiO₂ (Sorbent)

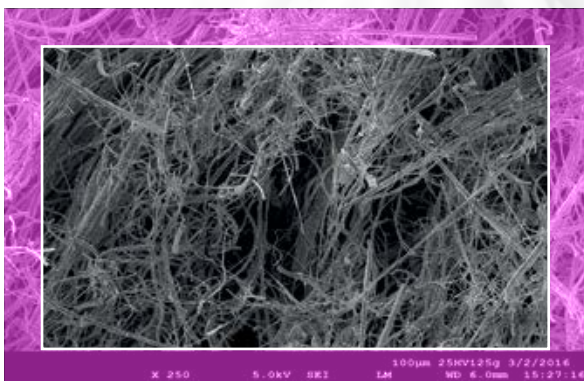
NnF CERAM[®] – SiO₂ (Sorbent)

Product description

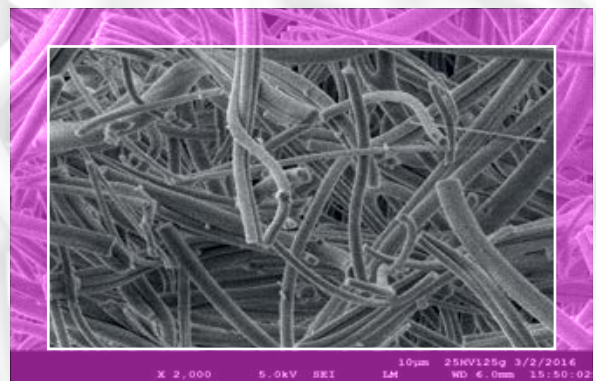
Silicon dioxide fibrous material is a special functional material with unique properties represented by amorphous fiber structure. This very fine material is produced by Centrifugal Spinning technology which enables to produce fibers with diameters between 800-1200 nm. Fibers can be delivered either as COTTON or POWDER (after milling that leads to fiber shortening).

High specific surface area and mesoporosity are the main advantages of these fibers compared to other silica fibers and make them especially suitable for sorption and catalytic applications. These fibers can be produced in large volumes with easy and fast upscaling capacity. SiO₂ fibers can be also used as a support material for different catalytic nanoparticles (Pt, Pd, Ag, Fe..) which are embedded in the mesoporous fiber structure within one production step (no additional coating).

Images



SEM image, magnification: 250x



SEM image after milling, magnification: 2000x

Physical properties

■ Physical form – POWDER



■ Physical form – 3D COTTON



Material characteristics

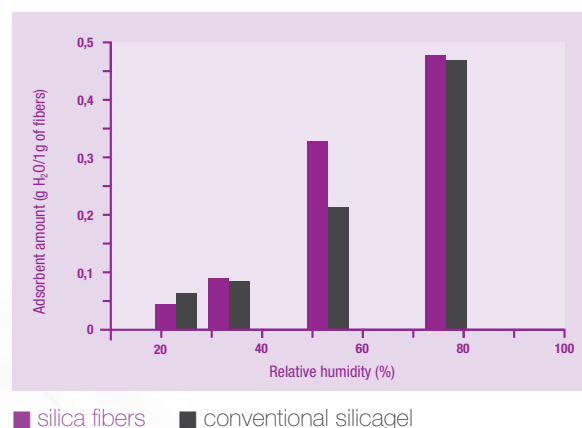
fiber structure	amorphous
typical fiber diameter	800 – 1200 nm
fiber length	continuous fibers*
specific surface area	600 – 900 m²/g
volume of 1 kg fibers in cotton	55 – 60 l
physical form	3D cotton or powder

* Fibers can be milled down to several microns.

If you need any material modification, please feel free to contact us.

Silica fibers can adsorb significantly more water than commercially available silicagel of the same mesoporous character. As shown in the graph above, this feature is especially apparent in the range of medium relative humidities (30-70 % RH), which is industrially the most important range for adsorption (in electronics, food, chemical industries, and many others). Fibers can capture up to 40% more water than classic silicagel. In addition, owing to its porosity the fibrous sorbent can be desorbed for its next use at significantly lower temperature (at least 20°C lower), which has positive effect on the cost figure of the process.

H₂O adsorption, 25°C, different relative humidities



Applications

Adsorbent of water and other polar sorbents | Catalyst carrier | Filtration | Separation | Li-ion battery separators | Sensors

This product was developed in cooperation with University of Pardubice using financial support from the Technology Agency of the Czech Republic (nr. TA04011557).

Important notice for purchaser

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