
Notes on Treatment of Fibers

There are two methods of processing Zeomic into fiber products: kneading Zeomic into fiber products, or post-treating the fiber products with Zeomic.

1. Kneading Zeomic into the Fibers

A way of strengthening functionality to synthetic fibers (such as PET, polyamides, or PP) is to knead various performance agents into the threads during the spinning process, and, in the same manner, Zeomic can be added by kneading. (Please consult with our sales specialists regarding treatment details and precautionary points).

2. Post-treatment over the Fibers

Unlike synthetic fibers, natural fibers (cotton, hemp, silk, etc.) are not suitable for kneading. However, Zeomic can be added by a post-treatment process coupled with a binder. Representative post-treatment examples include, pad-drying or spray applications of water or various dispersion solutions, into which Zeomic has been evenly dispersed. (Precaution details for post-treatment are listed below).

Notes on Dispersion

* Precautions for Post-treatment

The antimicrobial mechanism in Zeomic comes from the antimicrobial action caused by direct contact between the Zeomic particles and bacteria.

Thus, when Zeomic particles are evenly distributed on the surface of the fiber, [a good antimicrobial effect is obtained](#). Zeomic is a fine particle averaging 2 - 3 μm in size. If Zeomic clumps together, it may be poorly dispersed. Therefore, precaution is required during processing so that an even dispersion is obtained without any aggregation.

To obtain an even dispersion, please refer to the following two methods:

(1) Serial Dilution

Disperse Zeomic in a low viscosity liquid (water or various solvents, etc.) that can be used for treating processed fiber in advance, and then add this disperse solution to the target treatment material so as to attain a prescribed concentration level.

(2) Physical Dispersion

Zeomic can be dispersed with physical force by using a kneading machine with a high shear force, a Banbury mixer, or a roll-mixer.

* Please consult with our sales specialists for Zeomic pre-dispersed in water products.

The pre-dispersed Zeomic water suspension has 20 wt% Zeomic powder suspended in water which has undergone anti-sedimentation treatment and first-order dispersion.

Sedimentation

With a specific gravity of 2, Zeomic is a relatively heavy substance in comparison with water and various solvents. Sedimentation occurs in low viscosity liquids and will accumulate in the bottom of a container when stored undisturbed. If the Zeomic solution with its sedimentation undisturbed is applied directly to a surface, the distribution of the Zeomic application will be uneven. To prevent sedimentation, please refer to the following two recommended methods:

(1) Remixing Prior to Use

(2) Adding a Thickener or Dispersant
