MACH I®

Product Information

NANOCAT® ALUMINUM OXIDE-HYDROXIDE POWDER

PRODUCT IDENTIFICATION

Identification label: name: **ALUMINUM OXIDE-HYDROXIDE POWDER**; synonims: Aluminum hydroxide nanofibers; Trademark: NanoCeram; chemical name: aluminum oxide-hydroxide powder, chemical formulas of constituent phases: A1, AlO_3, A1OOH, $A1(OH)_3$.. This material is available in two versions such as: (1) IPC **-** with basic constituent AlOOH and (2) DTC – with basic constituent γ-Al_2O_3.

CHEMICAL COMPOSITION

IPC material: aluminum hydroxides AlOOH – 55% wt., $Al(OH)_3$ – 33% wt., alumina $A1_2O_3$ - 5% wt, metallic aluminum Al – not more 5% wt., absorbed water – about 2%, other impurities – up to 0.55% wt. **DTC** material: alumina $A1_2O_3$ – not less than 95% wt, the balance is $Al(OH)_3$.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance and color: white powder of fibrous structure – Fig.1. The isolated particles tend to agglomerate – Fig.2. BET specific area is 350 m^2/g. Electrokinetic potential of IPC material extends to –200 mV and this is evidence in favor of electrically charged groups sitting on the surfaces of nanofibers. . The bulk density of IPC material is about 0.7 g/cm^3, of DTC material – 0.6 g/cm^3. Both materials are highly hygroscopic. To avoid degradation of the material properties, do not expose it to humidity. Being heated to 400-500°C the IPC version is converted to γ-Al_2O_3 but its fibrous structure is retained in the process (DTC version). At higher temperature 1000°C, the powder transforms to α-Al_2O_3 thus forming coarse cakes. Fibrous structure is not retained. Melting temperature is 2000°C. Explosion and fire-safe. Aluminum oxide-hydroxide powder can find its application in making adsorbents for water purification from both industrial and microbiological contaminations, dental cements and materials sciences as filler for polymers matrixes.

HEALTH HAZARD

When spilled in mass quantities and inhaled, aluminum hydroxide may irritate respiratory tract and cause general toxic effect. This material is soluble in stomach acid. No delayed action effect is known.

SAFE HANDLING

Use health protection measures commonly used in working with inorganic dust. Wear respirators.

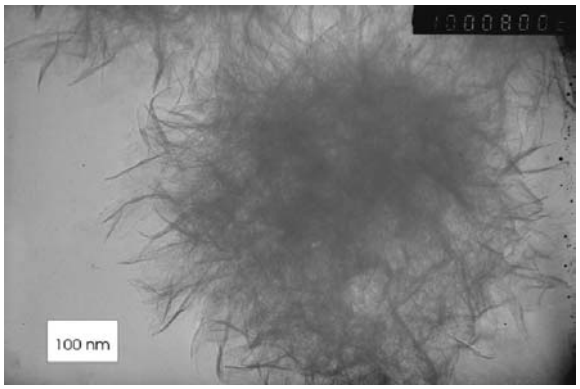

Fig. 1 Aluminum oxide-hydroxide nanofibers.

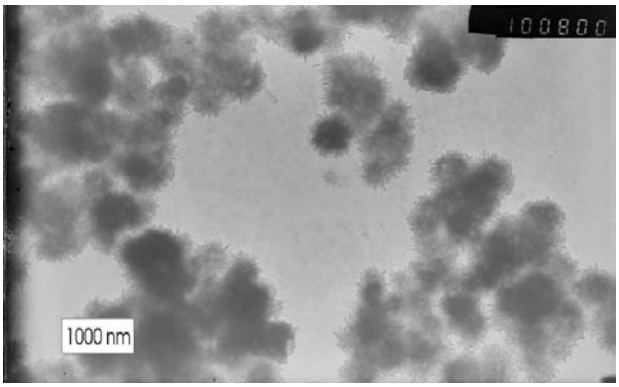

Fig. 2 Aluminum oxide-hydroxide microagglomerates.

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