Aluminium magnesium silicate (Aluminii magnesii silicas)

Chemical name. Magnesium aluminosilicate; aluminium magnesium silicate; CAS Reg. No. 1327-43-1.

Other name. Aluminum magnesium silicate.

Description. A creamy white or greyish white powder or flakes; odourless or almost odourless.

Solubility. Practically insoluble in water and most organic solvents; when added to water it swells to form a colloidal suspension.

Category. Suspending agent; viscosity-increasing agent; tabletting aid.

Storage. Aluminium magnesium silicate should be kept in a well-closed container.

Additional information. Several types of aluminium magnesium silicate occur, of which the powder or flakes vary in shape and size.

Requirements

Definition. Aluminium magnesium silicate is a natural, colloidal hydrated aluminium magnesium silicate, a saponite, freed from gritty particles.

Identity tests

A. In a metal crucible fuse 1 g with 2 g of anhydrous sodium carbonate R. To the fused mass, add hot water and filter. (Keep the filtrate for test B.) To the residue remaining on the filter, add 5 mL of hydrochloric acid (~70 g/l) TS and 10 mL of water, and filter. To the filtrate add 2 mL of ammonia (~100 g/l) TS; a white, gelatinous precipitate is produced. Centrifuge (keep the precipitate for test C), neutralize 2 mL of the supernatant liquid, add 0.2 mL of titan yellow TS and 0.5 mL of sodium hydroxide (0.1 mol/l) VS; a bright red turbidity is formed which gradually settles to give a bright red precipitate.

B. Acidify the filtrate from test A with hydrochloric acid (~420 g/l) TS and evaporate to dryness. Heat the residue with a mixture of 10 mg of calcium fluoride R and a few drops of sulfuric acid (~1760 g/l) TS; a gas is evolved. Add a few mL of water; it gives a white precipitate.

C. Dissolve the precipitate from test A in 2 mL of hydrochloric acid (~70 g/l) TS and add 0.5 mL of alkaline thioacetamide TS; no precipitate is produced. Add, drop by drop, sodium hydroxide (~80 g/l) TS; a white, gelatinous precipitate appears that redissolves on addition of more sodium hydroxide. Add slowly ammonium chloride (100 g/l) TS; the white, gelatinous precipitate reappears.

Heavy metals. Shake 1.0 g with 5 mL of hydrochloric acid (~70 g/l) TS for 5 minutes and centrifuge. Dilute the supernatant liquid to 10 mL with water, adjust the pH, and determine the heavy metals content as described under 2.2.3 Limit test for heavy metals, Method A; not more than 40 µg/g.

Acid-insoluble impurities. To 1.0 g add 25 mL of hydrochloric acid (~70 g/l) TS and shake for 5 minutes. Filter through a tared sintered-glass filter, wash the residue with water, dry to constant mass at 105 °C, and weigh; the residue weighs not more than 20 mg.

Alkalinity. Suspend 1 g in 50 mL of water and titrate with hydrochloric acid (0.1 mol/l) VS to pH 4; not more than 10 mL is required.