

1. PRODUCT DESCRIPTION

Metakaolin is a product with highly pozzolanic properties obtained by thermal activation of kaolin clays (calcining at controlled temperature in a rotative kiln) and subsequent micronising or ultrafine grinding process of the obtained product.

Metakaolin is a dehydroxylated aluminium silicate. Its general formula is $2\text{SiO}_2 \cdot \text{Al}_2\text{O}_3$, with an amorphous non-crystallised structure, constituted of lamellar particles.

2. PRODUCT USE

Metakaolin is mainly used as **pozzolanic additive for concretes, mortars and coatings made from Portland cement or lime.**

Metakaolin chemically combines with water and calcium hydroxide, a normal cement hydration by-product, to produce silicates, aluminosilicates and additional cementitious compounds that result in a denser, higher strength concrete. The rapid pozzolanic reaction of metakaolin stabilises the calcium hydroxide as a cementitious product which reduces porosity and permeability. Concrete density is also increase by the small, finely divided particles of metakaolin which act as micro aggregates.

Metakaolin improves the properties of concrete and cement products considerably by increasing their compressive and flexural strength while resisting chemical attack, reducing permeability, efflorescence and shrinkage, preventing alkali-silica reactions and corrosion and improving durability.

Typical dosage: Generally Metakaolin is used at 5 – 25 % replacements levels by weight of cement.

3. PHYSICO-CHEMICALS PROPERTIES AND SIZE DISTRIBUTION

Physical properties

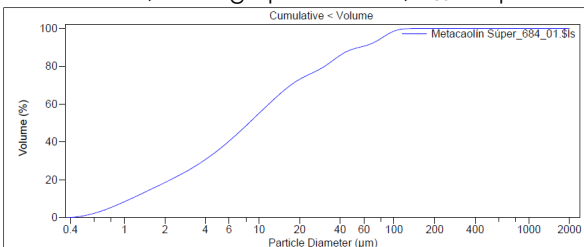
Appearance/Color.....	White to light beige powder
Loss on ignition.....	< 2 %
Pozzolanic Index (Chapelle test)...	988 mg Ca(OH) ₂ /g
Bulk density:	
– Loose.....	439 kg/m ³
– Tamped.....	706 kg/m ³
Specific gravity.....	2,55 g/cm ³

Chemical Analysis

% SiO ₂ + Al ₂ O ₃	94.69
% CaO libre.....	< 0.1
% MgO.....	0.11
% Na ₂ O + K ₂ O.....	< 1.6

Particle size distribution

Ultrafine, average particle size, $d_{50} = 8 \mu\text{m}$



4. Packaging

- Big – bags: 500 kg and 1.000 kg.
- Sacos de papel, de 20 kg, en pallets de 5 sacos en 10 alturas con un peso de 1.000 kg.

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