

## Lignin sulfonate in architectural ceramics Applications

Currently in building ceramic body used in the formulation additives are mainly two: one is body enhancer, mainly used to increase the strength of the body, is mainly used in low viscosity carboxymethylcellulose is CMC; a coagulant solution species are primarily used to reduce the viscosity of the mud, reducing the moisture content of the mud to reduce the spray drying tower granulation step water slurry fuel consumption, is used in ceramic manufacturers coagulant solution of sodium silicate and the three main sodium tripolyphosphate.

Analysis of the above additives difficult to find: an organic polymer carboxymethylcellulose, adding the formulation from the body to increase green strength of the effect, but its molecular weight is larger structures chain is longer, in the mud will each kind of fine raw material particles together to form a network structure in the mud wrap free water, the slurry flow variation, adding more worse flowability of mud. To solve the above problems in production only additional water in the mud, the mud weight that reduces the water content increases, the spray granulation step is also increased burnup, the carboxymethyl cellulose added to the formulations in fact contrary to the the purpose of reducing the moisture content of the mud. The STPP is an inorganic coagulant solution, add in the formula can only play a role in reducing discharge slurry flow rate while no effect on the intensity of the green body.

Lignin sulfonate and organic additives are not long molecular chain, it is added to the formulation not only beneficial to reduce the mud flow, and because it has some adhesive properties, can achieve the purpose of increasing green strength. Lignosulfonate can be dissolved in water, Na<sup>+</sup> ions ionized and lignin sulfonate ion, lignin sulfonate ions and adsorption on the surface of the raw material particles from the reaction of Ca<sup>2+</sup> + Ca- lignin, dissolved in water Na<sup>+</sup> instead of Ca<sup>2+</sup> + adsorbed on the surface of raw material particles, adsorbed on the particle surface portion of bound water is released, the slurry thus increased mobility. Also instead of Na<sup>+</sup> + Ca<sup>2+</sup> + adsorbed on the surface of the raw material grains  $\xi$  - potential of the particles increases, the repulsive force between the particles increases, face to face with the formation of particles, the slurry to increase the number of free water, the slurry will be increased mobility.