

Research Journal of Pharmaceutical, Biological and Chemical Sciences, 2016, vol.7, N4, pages 795-802

Study of effects of redispersable latex powders on hardening kinetics of cement-sand composites

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Abstract

Redispersable polymer powders act as boosters of the physical and mechanical properties in the cement-sand composite. For the studies the most typical redispersable polymer powders were used - Rhoximat PAV 22 and Rhoximat PAV 23 latex powders, by Rhodia. The analysis of the micrographs showed that the new formations of the cement rock had a pronounced needle-like form, and the cements with the additives were partially covered with the polymer film of the redispersable particles. The resulting polymer bridges and cords in the structure prevented growth of the cracks which were formed due to shrinkage and applied external force. Film-forming latex of redispersable powder can increase fracture energy of the cement-sand composite significantly. In view of this, of great significance is strength of the polymer itself. The higher strength polymer has, the greater force one should apply to fracture modified mixture. The basic components of Rhoximat PAV 22 and Rhoximat PAV 23 are vinyl acetate and vinyl versatate. Vinyl resins in the cement composites are known to develop a lattice which penetrates the structure formed by the cement gel, and, thus, act as an additional binder in the material.

Keywords

Cement-sand composites, Redispersable latex powders