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THE USE OF SILICATE CONCRETE IN CONSTRUCTION

Annotation: The composition of silicate concrete, production technology, technical characteristics and areas of use are described in the article.

Keywords:preparation of silicate concrete mixture, new densifying products, load-bearing external wall blocks, panels, interfloor plates

In the preparation of silicate concrete, a mixture of air lime and powdered quartz (silica) is used as a binder. Powdered blast furnace slag or ashes can be used instead of powdered quartz. The strength of lime-silica binder depends on the activity of lime-SaO SiO_2 ratio, the dispersion of quartz sand and the mode of autoclaving. When the dispersion of quartz sand and the ratio of SaO👍SiO2 are optimal, small order calcium hydrosilicates based on SaO and SiO2 are completely formed.

Silicate concrete production technology is as follows: preparation of lime-silica binder, preparation and homogenization of silicate concrete mixture, molding of the product and processing in an autoclave.

When silicate concrete is treated in an autoclave, chemical reactions occur between all components of the concrete, and new products can be formed that strengthen the structure (especially with quartz sand). Silicate concretes, like cement concretes, are heavy, light and cellular. The average density of heavy silicate concrete products is 1800-2500 kgm3. Its compressive strength depends on the composition of silicate concrete, the mode of processing in the autoclave and other factors, and varies widely. The strength of silicate concrete of normal composition (lime 8-11% by mass) is 15-30 MPa. If 15-30% of dispersed silica is added to its composition, the strength increases to 40-60 MPa. Thanks to special technological methods, the strength of heavy silicate concrete can be increased to 80 MPa. The water resistance of heavy silicate concrete is satisfactory, it does not lose more than 25% strength in water. The

brand of frost resistance is /25 and /35, it can be increased to /100 by adding portland cement. Load-bearing outer wall blocks, panels, inter-floor plates and panels, columns, beams, stair treads and marches, plinth blocks and other reinforced concrete structures are made of heavy silicate concrete. In the production of lightweight silicate concretes, expanded clay, agloporite, camphorite, granular slag, slag pumice and other crushed natural and artificial porous stones are used as pore fillers. Light silicate concrete with an average density of 1400-1800 kgm^3 structural, an average density of 500-1400 kgm^3 structural-thermal insulation and an average density of 500 kgm^3, thermal conductivity thermal insulation with a coefficient of 0.5-0.7 W (m^0C) is divided into types. The compressive strength of light silicate concrete is 3.5-20 MPa. Their water absorption is 12-30% by volume, cold resistance is in /15, /25, /35 and /50 brands. Exterior wall panels, blocks and other concrete and reinforced concrete constructions are made from lightweight silicate concrete based on cavity filler.

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