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## **РОЛЬ СИЛИКАТНОГО КИРПИЧА В ПРОМЫШЛЕННОСТИ СТРОИТЕЛЬНЫХ МАТЕРИАЛОВ**

**Аннотация:** В статье описаны виды искусственных каменных материалов и изделий, в том числе сырье для силикатного кирпича, технология производства силикатного кирпича, его значение в строительстве.

**Ключевые слова:** искусственные каменные материалы, бетон на основе портландцемента, железобетон, коэффициент теплопроводности

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## **ROLE OF SILICATE BRICK IN THE BUILDING MATERIALS INDUSTRY**

**Abstract:** The article describes the types of artificial stone materials and products, including raw materials for sand-lime brick, the production technology of sand-lime brick, and its importance in construction.

**Key words:** artificial stone materials, concrete based on Portland cement, reinforced concrete, thermal conductivity coefficient

Artificial stone materials and products include concrete made on the basis of portland cement, reinforced concrete, composites made using gypsum, lime (silicate binder) and magnesium binders. In the production of artificial stone materials, quartz sand, slag, ash, pumice wood chips and fiber, paper industry waste, etc. are used as fillers. The general technology of production of these materials consists of the main processes such as mixing binders and fillers, preparing a mixture, molding and accelerating solidification. On the basis of lime

(silicate) binder, silicate, lime-slag and lime-ash bricks, silicate and foam silicate and other dense and cellular silicate concrete and reinforced concrete are prepared. On the basis of gypsum, curtain wall plates, gypsum concrete stones, coating sheets, architectural parts and other composite products are obtained.

The main reason for the development of composite materials and products based on lime and gypsum is the abundance of quartz sand and other fillers, the incommensibility of mineral-binding raw materials, low energy requirements in the production process, and the possibility of full automation and mechanization.

### **Silicate brick**

Silicate brick is made by pressing a mixture of quartz sand (92-94%), lime (6-8%, based on active  $\text{CaO}$ ) and water (7-9%) under a pressure of 15-20 MPa, and then processing in an autoclave. Silicate brick is produced in two types: regular 250x120x65 mm and modular 250x120x88 mm.

Modular bricks are made hollow, and the mass of one brick should not exceed 4.3 kg. According to the limit of strength in compression and bending, silicate brick has the following brands: 100, 125, 150, 200 and 250.

The average density of silicate brick is 1800-1900  $\text{kg/m}^3$ , heat transfer coefficient 0.70-0.75  $\text{W/m}^2\text{K}$ , water absorption (by mass) 14-16%, cold resistance /15, /25, /35 and / It will be in 50 stamps. Silicate brick is light gray in color and can be any color if alkali-resistant pigments are included.

Due to the absence of drying and high-temperature baking processes in the production of silicate bricks, energy consumption is reduced, and the cost of bricks is 30-40% cheaper than ceramic bricks.

The technological scheme of silicate brick production is given in Figure 9.2. In order to remove unripe and overripe lime, the cut lime is sorted, crushed and powdered. In this process, very fine particles are separated by means of a separator. Due to the fact that powdered lime binder has a high activity, its consumption in product preparation is reduced.

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