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Analysis of ceramic wall materials based on fusible clays with the addition of zeolite-containing rocks

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Abstract

© 2016, International Journal of Pharmacy and Technology. All rights reserved.At present day a high level of power consumption of manufacturing says an actual problem of Russian economic and industry in general. Furthermore, in residential construction, along with requirements of power effectiveness of ceramic items, are mandatory stated requirements for high values of their strength characteristics. Combination of such properties anticipates the application of fusible clays as a basis for production of energy-effective ceramic bricks with addition of modifiers creating pore space. In this article the impact of ZCR of Tatar-Shatrashanskoe deposit on fusible clay of Sakharovskoe deposit is researched. The following methods were applied in course of research: roentgen-phase analysis (diffractometer XRD-7000S (Shimadzu, Japan); diffractometer D2 Phaser (Brucker, Germany)), electronic-microscopical analysis (microscope EVO-50XVP), thermal analysis (derivatograph Q-1500D), measuring of physical characteristics (press ПМГ – 500 МГК 4 СКБ, Stroypribor, Russia, etc.) Behavior of fusible clay of Sakharovskoe deposit with increase of burning temperature up to 1050°C was researched. At burning temperature of 1050°C was observed growth of share of quartz, hematite and significant increase of share of amorphous phase from 35 to 45% in burned samples. According to thermal researches on derivatograph Q-1500D is established that in temperature interval of 25 - 200°C, the loss of mass of ZCR of Tatar-Shatrashanskoe deposit is 2.9 %, in temperature interval of 200 - 600°C – 2.88 %, in temperature interval of 600 - 850°C – 12.0 %, general mass loss in temperature interval of 50 - 100°C is 17.86 %. For samples received on basis of clay of Sakharovskoe deposit with addition of ZCR of Tatar-Shatrashanskoe deposit is detected that at burning temperature of 1050°C the 5% addition of SCR causes a slight growth of strength by comparison with a pure clay sample at comparatively low density. At studying of phase composition of samples burned at temperature of 1050°C was recorded a 2 times growth of share of amorphous phase with increasing of addition of ZCR of Tatar-Shatrashanskoe deposit from 5 to 10%. Correlation of strength characteristic from composition of mineral phases formed in result of burning is established. The received data can be used in production of energy effective ceramic items.

Keywords

Ceramic, Clay, Highly effective ceramic materials, Strength, Zeolite-containing rock