CONVECTIVE DRYING OF HEAT INSULATION BASALTO-BENTONITE PRODUCTS - SCIENTIFIC AND TECHNICAL BASIS OF ENERGY-EFFICIENT MODERNIZATION OF HEAT TECHNOLOGY

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Research goal consist in the experimental study of the features of air convective drying of flat basalto-bentonite products, the study of the influence on its intensity of temperature and speed of the drying agent, and the establishment of a generalized dependence on drying time.

Work results. The study of the drying process of heat-insulation slabs was carried out on an experimental bench modeling the air convection drying of flat products in a tunnel or conveyor installation. Products are considered in the thickness of 50 and 100 mm and density from 100 to 225 kg / m cube. The effect on the intensity of the temperature and average speed of the drying agent has been studied. The temperature of the drying agent varied in the range from 100 to 180 ° C. with an average moisture content of 20-25 g moisture / kg of dry air. The average speed agent of drying was from 1 to 10 m / s. The processing of the results of the study was carried out using the Krasnikov method with the construction of a generalizing kinetics drying curve.

Conclusions

For basalto-bentonite products of different thickness and density, the dependence for the drying rate in the first period, as a function of the temperature and velocity agent of the drying agent, was obtained. Constructed generalized curves of air convective drying. The values of reduced critical moisture content and relative drying factors were established. It has been established that for basalto-bentonite heat-insulating products, periods with a constant and decreasing drying rate are observed, while in the considered thickness range, both the first and the second critical moisture content are observed. A generalized dependence for calculating the time of air convective drying of heat-insulating basalto-bentonite products of different thickness and density is obtained. It is noted that rational organization of the process allows to achieve 2-3 times the reduction of specific energy consumption per unit of evaporated moisture. The conducted research serves as the basis for the development of energy-efficient heat-engineering modes of convective drying of basalt-bentonite heat-insulating products and its hardware design.