

INVESTIGATION OF INFLUENCE OF HEAT TECHNOLOGY PARAMETERS OF PRODUCTION ON THE QUALITY OF BASALT DIRECT-ROVING

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Research goal is to study the influence of thermal and technological parameters of production on the properties of basalt continuous fiber (direct-roving).

Work results. In the conditions of long-term controlled exploitation of pilot-industrial model of the innovative modular plant of basalt continuous fiber, the influence of process parameters - fiber winding speed, melt level, current strength on feeders, temperature in the bath of the melting furnace, speed of the oiled roll - on the properties of the finished products - the diameter of elemental fiber, linear density, specific breaking load, the mass fraction of substances removed during ignition bath, hygroscopic humidity. Used 200-spinneret feeder. Properties of basalt direct-roving were determined for a range of average diameters of elemental fibers 8-20 microns. The methods of system intensification of heat-mass-exchange processes of multi-stage heat technology of basalt continuous fiber production, aimed at significant reduction of natural gas consumption and the increase of the quality of direct-roving, and innovative devices for their hardware design, have been developed, constitute the fundamental scientific and technical basis of a new modular installation.

Conclusions

The correlation of the linear direct-roving density from the average elemental diameter of the fiber has been established.

The correlation between the average elemental diameter of the fiber and the winding speed is established.

The correlation of the specific burst load of direct-roving from the average elemental diameter of the fiber is established.

For the innovative modular installation, the results obtained for first-generation installations were confirmed regarding the influence of the direct-roving level properties of the melt, the current strength on the feeders.