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INTEGRATED STUDY OF DOLOMITE OF THE GULMAMASAY DEPOSIT

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All over the world, the development of the mineral fiber composition for the production of thermal insulation materials, the expansion of the raw material base through the development of new deposits and secondary resources, as well as the creation of a scientific basis for improving the quality of the fiber, are of particular importance. On a global scale, the following scientific solutions have been substantiated to improve modern energy-saving technologies in the production of fibers for heat-insulating materials with the addition of modifying additives to basaltic andesite raw materials [1].

Based on this, we conducted a study of the natural raw and secondary materials used as modifying additives. In the course of research work on the development of compositions, we studied the dolomite of the Gulmamasay deposit, which is located in the southwestern end of the Chatkal ridge in the Akhangaran district of the Tashkent region, 10 km northeast of the city of Akhangaran, 6.5–7 km north of the settlements of Tut and Aktepa and 8 km from the settlements of Karakhtay. The chemical composition of the raw materials was determined by chemical analysis. The table shows the results of the chemical analysis of the Gulmamasay dolomite.

Table 1. – Results of chemical analysis of dolomite

Name of raw materials	Content of oxides per air dry matter, wt %									LC
	SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	SO_3	
Gulma-masay dolomite	1,80	2,11	1,61	–	17,52	30,12	0,99	0,45	0,49	44,91

The results of X-ray spectral analysis showed that in the samples of dolomite of the Gulmamasay deposit, the presence of 19 chemical elements was determined, of which calcium, magnesium, aluminum, silicon, iron, as well as sodium and potassium are rock-forming, and the remaining elements in the rock are in small quantities.The data of X-ray phase analysis confirm the results of chemical analysis of the high content of calcium and magnesium carbonates in the raw dolomite sample. The results of X-ray diffraction analysis showed that the X-ray diffraction pattern of the samples of the Gulmamasay dolomite deposit mainly revealed the presence of a line of diffraction maxima related to the dolomite mineral (d = 0.403, 0.369, 0.288, 0.267, 0.254, 0.240, 0.219, 0.206, 0.201, 0.180, 0.156, 0.154, 0.146, 0.144, 0.138, 0.133 nm), low-intensity diffraction peaks associated with the β-quartz mineral (d = = 0.426, 0.334, 0.245, 0.212 nm), also weak lines of diffraction peaks associated with the mineral calcite (d = 0.302, 0.228 nm).

Results of differential thermal analysis of samples of dolomite sample from the Gulmamasay deposit. On the heating curve of a sample of dolomite from the Gulmamasay deposit, four endothermic effects were found at temperatures of 150, 310, 410, and 890 °C and two exothermic effects at temperatures of 711 and 770 °C. The first three endothermic effects occur in the temperature ranges of 70–160, 160–350, 350–522 °C and the weight loss is 0.77, 1.59, 0.40 %, respectively. The next two exothermic effects are also accompanied by a decrease in mass. In the temperature range 522–742; 742–820 °C, the weight loss is 3.57 % and 6.59 %, respectively. The nature of the last endothermic effect is due to the intensive decomposition of carbonates with the formation of calcium and magnesium oxide. The decrease in weight in the temperature range of 820–918 °C according to the TG curve is 32.54 %. The total weight loss in the temperature range of 70–918 °C is 46.48 % [2].

References

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