

ABSTRACT

Research work contains: 78 pages, 32 figures, 14 tabl., 32 refer.

Objective: To obtain a composite material with high density based on Al_2O_3 with a sintering temperature below 1500°C for construction purpose. This paper presents an overview of the current state, theory and technology of obtaining composite materials based on Al_2O_3 with various oxide additives is presented.

Methods of research: studying of the patterns of structure formation of Al_2O_3 based composite, microstructure, phase composition and microhardness.

Object of research: the influence of compaction pressure, temperature of sintering, percentage of titanium oxide, disperse magnesium oxide powder on formation of structure and properties of materials of $\text{Al}_2\text{O}_3\text{-SiO}_2\text{-MgO-TiO}_2$ system is investigated.

Scientific novelty: a composite with an appropriate composition was developed, which makes it possible to boil it at a temperature of 1400°C with sufficiently high physico-mechanical properties.

The method of X-ray diffraction analysis shown that the optimal phase composition of the composite for the TiO_2 content is about 4%.

Keywords: OXIDE POWDER, COMPOSITE, ALUMINUM CERAMICS, PRESSURE, MICROHARDNESS, SINTERING, REDUCED SPEED TEMPERATURE.