

CONCLUSIONS

In this bachelor research work, the ceramics of the $\text{Al}_2\text{O}_3\text{-SiO}_2\text{-MgO-TiO}_2$ system with different TiO_2 content (from 1 to 8%) were obtained at a sintering temperature of 1400°C , and its main properties were studied: the effect of compression pressure on the density, porosity and shrinkage of the composite. And also studied its structural and phase composition, microhardness.

From the previous research results, the temperature range of sintering of such a composite was determined – $1400\text{-}1500^\circ\text{C}$.

It was revealed that samples of composite containing 4% TiO_2 are sintered at 1400°C with a 2 hour stand-out for the best density and porosity indexes. According to hydrostatic weighing, the best porosity indices have samples containing 4% TiO_2 , which reaches a value of 4.5% (corresponding to a density of 3.5 g / cm^3). At the same time, the results indicate that with increasing TiO_2 content shrinkage decreases.

Trial results were obtained for samples of a 1% TiO_2 composite with a sintering temperature of 1500°C . It can be argued that the addition of TiO_2 significantly affects the temperature of sintering of the material - reduces it, with similar properties.

The microstructural analysis revealed that the obtained ceramics has a granular structure with the presence of some porosity. As the content of TiO_2 grows more than 4%, the growth in grain size is observed.

X-ray phase studies have established the presence of different phases - corundum, spinel and aluminum titanate.

Have achieved the goal - got a composite with satisfactory properties and a lowered temperature of sintering.

There were determined the scientific and technical relevance of the research work, calculated the planned cost of the spent research work and conducted an

economic analysis of the feasibility of this research, and found that this study was feasible from an economic point of view.

An analysis of the parameters of the microclimate in the premises, lighting, noise level, dirt dust zone, electrical safety and fire safety was made and found that all indicators correspond to the optimal or allowable values of the norms according to the Law of Ukraine "On Occupational Safety".