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The subject of the research is features of synthesis of alumina cements on the basis of compositions of system CaO – CoO – Al_2O_3 – MoO_3 with use of cobalt-molybdenum-containing waste for reception of refractory materials with a complex of the set properties. The processes of phase formation in raw mixtures have been investigated. X-ray phase studies of clinkers fired at different temperatures and holding times proved that as a result of the interaction of the raw materials of the mixture in the material synthesizes a mixture of hydraulically active calcium mono- and dialuminate and refractory cobalt spinel, which provides the resulting complex high strength, accelerated curing time, fire resistance. The absence of phases corresponding to molybdenum compounds is explained by the fact that they are part of hydraulically active aluminates as limited solid solutions, deforming the crystal lattice and increasing hydraulic activity. Thus, it was found that the high strength of cement is due to the presence of calcium hydroaluminates such as C_2AH_8, aluminum hydroxide, as well as unhydrated grains of calcium aluminates, which will contribute to further long-term strength. It is this coexistence of phases in both the crystalline and colloidal states provide high strength cement stone.

Key words: alumina cements, cobalt-molybdenum-containing waste, phase formation, calcium monoaluminate, calcium dealuminate, cobalt spinel, strength, fire resistance