

ABSTRACT

The work contains: 89 pages, 27 tables, 28 figures, 27 references to literary sources, 2 applications.

In our time the creation and research of new multi-component alloys with properties for the needs of aerospace and transport engineering is very important. These alloys contain components that are very different in physical properties, such as: melting point, specific gravity. When they are manufactured, ligatures are used to introduce into the alloys components that can not be introduced in the usual way. Therefore, the topic of this work, which is devoted to the determination of the regularities of the formation of ligatures in the Al-Mo system in order to optimize the technology of ligatures, is relevant.

The object of research are alloys of the Al-Mo system, with different Mo content, namely: Al-5Mo, Al-60Mo and gradient Al-Mo alloy.

The purpose of the work is to investigate the patterns of microstructure and phase composition of the Al-Mo ligature.

Research methods and equipment: melting of samples in an electric arc furnace VDP-1M with a protective atmosphere. The microstructure, phase and chemical composition of the samples: Al-5Mo, Al-60Mo and a gradient alloy in the form of an aluminum matrix with a fused plate of molybdenum were investigated using a set of highly informative methods of physical material science (electronic and light microscopy, X-ray and chemical analysis).

The phase composition of the obtained samples is determined, namely: Al-5Mo and Al-60Mo alloy. As a result, the phase composition of the Al-5Mo sample was obtained with a ratio of phases of 84% Al and 16% $Al_{17}Mo_4$. A sample Al-60Mo - phase has ratio 92% Al_8Mo_3 and 8% $AlMo_3$.

The research results can be used in the development of the technology of industrial Al-Mo ligature.

Keywords: LIGATURE, MULTIPLE COMPONENT ALLOYS, MICROSTRUCTURE, PHASE COMPOSITION, ELECTRIC MELTING.