

ABSTRACT

The work contains: 99 p., 15 fig., 36 tab., 50 refer.

ELECTRON-BEAM SINTERING, COPPER, MICROSTRUCTURES, MICROHARDNESS, POROSITY.

The use of electron beam sintering will significantly speed up the production cycle, increasing production volumes and reducing the cost of goods for the consumer.

The aim of this work is to investigate the influence of the kinetic parameters of the process of electron-beam sintering on the structure, physical and mechanical properties of copper. To achieve this goal, it was necessary to solve the following tasks:

- get 15 copper samples for five sintering modes with different current strength and holding time for each case;

- determine the effect of sintering parameters on the structure and properties of the material.

Research methods:

a) metallographic analysis (NEOPHOT-21);

b) determination of microhardness (PMT-3).

The subject of research: pre-obtained by centrifugal sputtering copper with a size less than 63 microns.

The object of this study is the structure and properties of copper obtained by electron beam sintering at current strengths of 1.5 mA, 2 mA, 2.5 mA, 3 mA and 3.5 mA and three exposure intervals for each case.

In this work the technology of obtaining these materials, their microstructure and properties was investigated. The influence of the kinetic parameters of the process of electron beam sintering on the microstructure and properties of metals is established.