

ABSTRACT

The work contains 116 p., 39 fig., 45 tabl., 35 sources.

In the thesis paper presents an overview of the current state of literary theory and practice of modern state of the theory of obtaining of compact powder material system iron-aluminum.

Object of research: compact powder material system iron-aluminum.

Subject of research: the impact of material on the method of obtaining.

Methods and apparatus: samples were obtained on a hydraulic press with subsequent sintering in a furnace in a hydrogen atmosphere and studying the structure of materials at scanning electron microscope Selmi PЭM 106. Phase composition was investigated on Rigaku Ultima IV

Scientific novelty of the results:

a) established quality mixing takes place when added to the starting mixture of oil and 1.5% of spending in furthering mixing 2.5-3.0 hours at two conical mixer speed of 50-60 rpm. / min .;

b) it is shown that the interaction with the sintering of iron and aluminum to form intermetallic Fe_3Al , FeAl , FeAl_3 with greater specific volume than the initial components that cause the destruction of the samples during the first sintering;

c) to optimize the pressing process can be used its analytical description using the Balshyn equation.

d) it is shown that during sintering forming new phase formation in the interaction of iron and aluminum intermetallic different composition - FeAl_3 , FeAl_2 , FeAl , Fe_2Al_5 , Fe_3Al , Al_5Fe_4 , Al_5Fe_2 . In addition intermetallic compounds formed silumin.

Keywords: IRON, ALUMINUM, SEALS, Fe_3Al , MICROSTRUCTURE, PHASE COMPOSITION, MICROHARDNESS.