

CONCLUSIONS

1. Analysis of published data of obtaining of composite materials with iron, aluminum and silicon was carried out.. The results of the study of diagrams F-Al, Al-Si, Fe-Al-Si defined possible phase composition of alloys depending on their composition and terms of obtaining.

2. The processes of mixing powders and outgoing quality control methods of mixing was investigated. 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 number two conical mixer speed of 50-60 rpm. / Min ..

3. The processes of pressing powder mixtures of iron and aluminum was investigated. It is shown through a process of consolidation is plastic deformation of the components of the initial charge. To optimize the pressing process can use its analytical description using the equation M.Y. Balshyna.

4. The processes of sintering compacts from powder mixtures of iron and aluminum and modeling processes of interaction between them was investigated. 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 . Re-sintering samples obtained by pressing crushed material after the first sintering helps to ensure their high strength and density.

5. The processes of sintering compacts of powder mixtures with different composition of the mixture Fe-Al-Si. It is shown that the interaction of these components form intermetallic phases: FeAl_3 , FeAl_2 , FeAl , Fe_2Al_5 , Fe_3Al , Al_5Fe_4 , Al_5Fe_2 . In addition intermetallic compounds formed silumin was investigated.

6. The developed principles to ensure the necessary conditions for safety and the environment. The conditions provide the necessary requirements.