

ABSTRACT

The work consists of: 128 pages, 28 figures, 33 tables, 43 references to literature sources.

FREE HOT FORGING, MECHANICAL PROPERTIES, POWDER PELLET, DENSITY.

The object of the research is the technological parameters of free hot forging of powder obtained by compressing iron powder and mixtures based on it.

The aim of this work is to study the influence of technological regimes and carbon content on the structure and mechanical properties of the material.

The process of additional pressing of powder pellets obtained by static pressing of iron powder and mixtures based on it was investigated, and the influence of hot free forging technological modes and carbon content on the structure and mechanical properties of the material was studied.

It was found that the hot forging of powder pellets based on iron leads to increasing of hardness to 41-43 HRC, which is a result of strain hardening of the material, and reduction of fragility, as well as free hot forging leads to the increase in compression resistance up to 20-30 %. It is shown that controlling carbon content of powder pellets based on iron it is possible to adjust the ratio of materials properties after free hot forging such as: hardness, durability and wear resistance.