

CONCLUSIONS

Over the course of completing this diploma design, there have been researched the technological parameters of the free hot powder forging obtained by pressing iron powder and mixtures based on it.

The influence of technological regimes and the content of carbon on the structure and durometric properties of the material have also been studied. According to the research, the following conclusions can be made:

- it has been found that the addition of graphite significantly affects the porosity samples based on iron. When the graphite content is below 1.5% the porosity range is 13-17%. By increasing the graphite content up to 4% or over, the porosity reduces to 8-9%. Second compaction after annealing reduces the porosity up to 3-4%;

- it has been found that the hot forging of powder briquettes based on iron causes increase in hardness up to 92-94 HRB, which is the result of the material strain hardening.

It has been shown that increasing of carbon content in the powder pellets composition leads to processes which reduce hardening during forging deformation, providing for reducing of hardness up to 70-80 HRB;

- it has been established that the hot forging of pellets containing 11% of carbon causes formation of conglomerate eutectoid, which provides for the fragility reduction amid 95-96 HRB high hardness;

- it has been proved perspectiveness of hot forging application technology in order to generate antifriction powder materials which are able to work under high dynamic tensions and abrasive wear;

- it has been explained the scientific and technical relevance and economic feasibility of the work done.

There have been developed measures to ensure healthy working environment and principles of safety in an emergency situation.