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Ahmed Sundus Mohammed Noori Ahmed¹, O. V. Akimov², K. O. Kostyk² ¹The

University of Technology, Iraq

²National Technical University

«Kharkiv Polytechnic Institute»

PECULIARITIES OF PRODUCTION OF THE ALLOY WITH SHAPE MEMORY EFFECT

One of the special properties of alloys is the shape memory effect, which is widely used in various fields of engineering (special machine building, instrument making, aerospace engineering, home appliances, etc.). Iron-based alloys with a high level of performance and special properties are interesting for metallurgy and mechanical engineering today. In this regard, relevant research is devoted to the search and development of new alloys.

The purpose of this work is to produce an iron-based alloy with shape memory effect.

The material of the study is a new iron-based alloy with shape memory effect, which contains iron, manganese, silicon, carbon, chromium, nickel, cobalt, copper, vanadium, niobium and molybdenum. The selected chemical composition ensured the dispersion hardening of the alloy during subsequent heat treatment.

Melting of this alloy should be carried out in a vacuum to prevent the occurrence of casting defects. It is experimentally established that the alloy has sufficient mechanical characteristics. The results of the studies have shown that the surface oxidation does not occur when the samples are heated up to 1000 °C on the open air. During the experiment on the corrosion resistance of the alloy, it was found, that the alloy is corrosion resistant and is not prone to change its mass in a 10% solution of sulfuric acid.

The results of the studies showed that the degree of shape recovery of the proposed alloy is up to 95%.

Thus, the proposed alloy has a high degree of shape recovery while maintaining such important properties as strength, corrosion and scale resistance.