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## ANALYSIS OF NON-DESTRUCTIVE METHODS FOR THE TESTING OF THE POWDER MATERIALS PHYSICAL AND MECHANICAL CHARACTERISTICS

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Today, one of the directions of powder metallurgy development is the creation of materials with predetermined physical and mechanical characteristics (PMC), as well as ensuring the stability of these parameters in the manufacture of the material according to known technology. The formation of PMC powder materials (PM) is influenced by both the composition of the starting components and the technology of their manufacture. Therefore, the current task is to develop operational testing systems that will allow assessing the PMC changes at any stage of material production and operation of the finished product with high accuracy, as well as assess the effectiveness of selected technological modes of production [1-3].

Various methods of non-destructive testing (NDT) are used when developing such systems. However, preference is given to those that allow to measure of a large amount of powder materials PMC with a less of experimental studies. They are more economical and simple at technical implementation.

This report analyzes the possibility of developing such testing systems using various existing NDT methods. Currently, almost all methods of non-destructive testing have been used to determine the PMC of parts and assemblies made from powder materials. They are traditionally used in the production, testing and operation of such products. The advantages and disadvantages of applying these methods to determining the PMC of PM in the process of products manufacture and operation are considered. Based on the analysis, it was concluded that for the implementation of operational testing systems PMC of PM rationally use of ultrasonic methods of non-destructive testing.

*Keywords:* non-destructive testing, physical and mechanical characteristics, powder materials, operational control systems.

### **Reference**

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- [2] Р. М. Галаган, Г. А. Богдан, “Исследование упругих и микроструктурных характеристик порошковых конструкционных материалов с использованием ультразвуковых методов неразрушающего контроля” на *7 Міжнар. наук.-техн. конф. Сучасні прилади, матеріали і технології для неруйнівного контролю і технічної діагностики машинобудівного і нафтогазопромислового обладнання*, Івано-Франківськ, 2014, с. 81-85.