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**PRECONDITIONS AND FEATURES OF DIFFUSIVE NICKEL PLATING OF ALLOYS OF EP202 TYPE IN LITHIUM MELT**

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***Research methodology.*** *The interaction of the reagents with alloys and the kinetics of formation of diffusive layers was evaluated from the results of gravimetric, metallographic, micro X-ray analyses as well as profiles and the numerical values of the microhardness through the thickness of the coatings.*

*Trial coatings on heat resistance in air was carried out by differential thermal analysis on derivatograph of the trademark «Q» of the company «Paulik» with automatic recording of thermal and gravity data, speed of their changes during the hea­ting pro­cess.*

*The surface roughness of the samples was analyzed on the basis of profilograms received on the upgraded Profiler-profilometer «Caliber 201» before and after different modes of chemical heat treatment using an analog-to-digital converter USB3000, software PowerGraph 3.3.*

***Results.***

*• One of the main factors that contributes to the burning of high nickel alloys is the energy released by the oxidation of the ingredients and low thermal conductivity.*

 *• It has been found that alloys of ЕП202 type are inherent of the thermal conductivity 7 times smaller than for nickel-based alloying element. This was the reason that it can be the basis of protective coatings and alternative to expensive palladium.*

*• It was established experimentally that chemical heat treatment in lithium-nickel environment allows to obtain nickel coating on the surface, the thickness of which is determined by the temperature and time parameters of the process, and the surface concentration of nickel is close to 100%.*

*• In the process of samples testing with nickel coating by heating in air, the oxidation process has no signs of spontaneous ignition or explosion, and its parameters are typical for nickel.*

*• The effect of the studied chemical heat treatment on the mechanical properties and the quality of the machine-processed surface of the alloy is insignificant.*

***Novelty.*** *The expediency of diffusive nickel plating of heat-resistant alloys of KHN67MVTJU (ЕП202) type in lithium melt has been grounded for the operation in conditions of high-speed, high-temperature oxidative gas flows.*

*The features of formation of diffusive nickel coatings and their influence on physic-mechanical properties and the resistance to the alloy oxidation have been studied. The diffusive area is formed under optimal temperature and time parameters with a thickness of about 100 µm, sometimes double layered. Nickel concentration on the surface reaches 98 and 100%.*

*It is shown that the effect of diffusive nickel plating in lithium on the mechanical properties and the quality of the machine-processed surfaces is insignificant.*

***Practical significance.*** *The main factors that can lead to the ignition of the alloy and possibilities to minimize them have been analyzed.*

*The practical use: the diffusive nickel coatings for products from construction materials of KHN67MVTYU type for items of gas turbine equipment and rocket engines and alternative palladium coatings.*

 *of rocket engines, which are made of alloys of the type ЕП202 (KHN67MVTJU) and plated with Nickel which is an alternative of costly palladium coating.*