

# INFLUENCE OF THE RARE EARTH METALS ON THE THERMOPHYSICAL PROPERTIES OF THE THERMOBARRIER COATINGS

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The last few decades have witnessed a fast technical development. In this case metal materials of the cosmo-, avia- and energy apparatus and constructions at the present days have to operate in tough working conditions (hostile environments, high temperatures). Plasma spraying methods for deposition protective, thermobARRIER coatings of different nature and properties are used to increase the lifetime of the details and sets. The thermal conductivity coefficient of the rare earth metals (Nd, Gd, La, Sm) zirconate coatings, done by plasma methods, were studied. Also, influence of the coatings thickness and porosity on coefficient of the thermal conductivity has been shown [1–3]. Investigations of the thermophysical properties of the coatings were estimated by use of impulse methods with LFA 457 analyzer. It is shown that specimen with  $Gd_2Zr_2O_7$  coating demonstrate the lowest coefficient of the thermal conductivity at the temperature of  $900^{\circ}C$  ( $0,86 W/m^{\circ}K$ ). And the specimen with lanthanum zirconia revealed the highest coefficient of the thermal conductivity. Also, it need to be noticed that correlation of the thermal conductivity coefficient depending on thickness and porosity is typical for coatings. The differences of this thermophysical parameter for Nd, Gd, La, Sm zirconate has been established. The influence of the coatings porosity and thickness on changes of thermal conductivity coefficient has been shown. \_\_\_\_\_

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