STUDY ON THE BEHAVIOR OF SILVER RARE EARTH OXIDE CONTACT MATERIAL

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ABSTRACT

In this paper, a new silver rare earth oxide contact material was produced by powder metallurgy method. Its performances are as follows: the density is 9.71~9.96g/cm^3; the hardness is 760~970MPa, the resistivity is 2.25~2.38μΩ.cm. Then the microstructure of Ag/La_2O_3(12) has been analyzed by using SEM and EDS, the results are that rare earth oxide La_2O_3 shows two shape, that is uniform distributions of global and abnormity in Ag matrix. La_2O_3 shows fine spherules shape in the melted area of Ag after laser acting which has been used to simulate electricity arc. The results contribute to the less splash erosion of Ag. Compared with the main physical and mechanical properties of Ag/SnO_2(12) and Ag/CdO(12), the properties of Ag/La_2O_3(12) contact material is closer to those of the two, hence Ag/La_2O_3(12) may become a new contact material which is the substitute of Ag/CdO(12).

Keywords: Contact Material, Silver Rare Earth Oxide, Powder Metallurgy, Microstructure