INFLUENCE REACTIVE COMPONENTS ENVIRONMENTAL CONTACT RESISTANCE AND CORROSION RESISTANCE OF CONTACT MATERIALS

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Estimated transfer resistance and corrosion resistance of electric contact materials in chemically active media for mass change, and contact resistance. It is found that the gaseous medium significantly affects the properties of the working surfaces of the contacts due to the formation on the surface of products of primary and secondary chemical reactions.

The purpose of research - to determine the possibility of using the developed contact materials based on copper in the low-voltage equipment instead of the cost of silver at their operation in chemically active environments.

Materials and methods of research. We studied the corrosion resistance of the samples of materials from copper and its alloys. For alloys impurities are divided into three groups: metals with an unlimited solubility in copper (N i) metals with limited solubility (Nb, Ti, Cr, Zr) metals that do not interact with copper (Mo). Impurities were 1, 5 and 10 wt**.**%.

The results of research. Experiments have shown that the gas korozivno environment significantly influences the properties of the electric contact materials.

It is established that most affect on environment korozivno contacts which operate in a mixture of hydrogen sulfide and ammonia, particularly in the presence of moisture.

Among ammonia under air on the surface of copper and its alloys occurs complex hydroxide [Cu $(NH_3)_4$] (OH_2) $3H_2O$, which dissolves in water. As a result, the contact resistance of the samples varies little ($R_k \leq 50$ milliohms). Petrographic analysis of the products of the interaction on the surface of the samples revealed accumulation of small anisotropic grains hydroxide bluish-greenish color with a refractive index n = 1,70.

Exhibit satisfactory anticorrosive properties almost all materials in the medium and the carbon dioxide (CO_2). It should be noted that the reaction product

is less than in the ammonia environment. As you know, in dry air, copper is almost unchanged, because its surface is formed by a very thin film of oxide Cu_2O, and CuO darker color, which is a good protection from further oxidation.

In the case of the mixture H_2S + NH_3 contact resistance is increased to 300 mOhm or more. Here, the corrosion resistance of contacts lowest compared with other special corrosive environments, and the weight gain of sample after the experiment is about 10 g / m2.

Corrosion interaction electrocontact materials with a mixture of aggressive components H2S + NH3, more intense than in the above environments.

Findings

Studies have shown high corrosion resistance developed contact materials based on copper in the medium of NH3 and CO2 and is much less satisfactory in environments H2S and H2S + NH3. Films that are created on samples of contact materials are almost homogeneous composition, the nature and the thickness increases with increasing duration of exposure.