

PROPERTIES AND STRUCTURE OF "TRIVALENT" CHROMIUM COATINGS, DEPOSITED WITH NANOPARTICLES OF METAL OXIDES

©2009 R. K. Salakhova, A. D. Zhirnov, V. A. Ilyin, V. V. Semionychev, E. V. Tiurikov

USTC branch FSUE «AIAM»

Physical-mechanical properties of chromium coatings, deposited from oxalic-sulphatic solution containing nanoparticles Al_2O_3 & ZrO_2 , are investigated. Results of accelerated corrosion test in the salt spray chamber by the cluster "trivalent" coatings with additional processing are represented. Structure & morphology of Cr(III)-coatings, deposited from solution containing nanoparticles Al_2O_3 , are fixed by the methods of X-ray photoelectron & Auger electron spectroscopies (XPS & AES).

"Trivalent" chromium plating, nanoparticles, morphology of chromium coating, corrosion resistance

Salakhova Rozalia Kabirovna, chief of sector of USTC branch FSUE «AIAM». Phone: (8422) 52-04-98. E-mail: lab2viam@mail.ru. Area of research: physical chemistry, materiology, aircraft construction.

Zhirnov Alexander Dmitrievich, Candidate of Technical Science, assistant to the general director of FSUE «AIAM», Moscow. Phone: (499) 261-93-81. E-mail: admin@viam.ru. Area of research: corrosion protection of metals.

Ilyin Viacheslav Alexandrovich, Candidate of Technical Science, chief of the USTC branch FSUE «AIAM». Phone: (8422) 52-45-22. E-mail: viam@mv.ru. Area of research: technology pyrolytic deposition of coatings.

Semyonychev Valentin Vladimirovich, Candidate of Technical Science, chief of laboratory the USTC branch FSUE «AIAM». Phone: (8422) 52-04-98. E-mail: lab2viam@mail.ru. Area of research: technology deposition of protective and functional coatings.

Tiurikov Eugene Vladimirovich, Candidate of Technical Science, chief of sector the USTC branch FSUE «AIAM». Phone: (8422) 52-04-98. E-mail: lab2viam@mail.ru. Area of research: technology cluster deposition chrome coating.

References

1. Molchanov V.F. Restoring & Hardening Autoparts by Chromium Plating. M.: Transport, 1981, p. 174.

2. Vashenko S.V., Solodkova L.N., Kudryavtsev V.N. On Certain Physico-chemical Properties of Chromium Coatings Deposited from Chromic Acid Solutions Containing Organic Additives. Electroplating & Surface Treatment, 2000, vol. 8, №3, p. 25-28.

3. Molchanov V.F. Efficiency & Quality of Chromium Plating. Kiev: Technica, 1979, p. 109.

4. Kudryavtsev V.N., Vinokurov E.G., Kuznetsov V.W. Thick Chromium Electroplating from Cr(III) Bath. Electroplating & Surface Treatment. 1998, vol. 6, №1, p. 24-30.

5. Edigaryan A.A., Polukarov Yu.M. Electroplating of Chromium & Its Alloys from Cr(III) Sulfate Solutions. Electroplating & Surface Treatment. 2001, vol. 9, № 3, p. 17-18.

6. Shluger M.A. Acceleration & Improvement of Chromium Plating on Details of Machines. M.: Mashgiz, 1961, p. 58-62.