

Investigation of mirror bright metal coatings and electrolytically produced copper powders on turn of the century at Department of Electrochemistry, ICTM

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Abstract

Some fundamental and applied aspects of formation of mirror bright metal coatings and copper powder production by electrolysis are presented. These investigations are performed in a period between 1995 and 2000, at University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Department of Electrochemistry, partly under supervisor of Prof. Dr. Miomir G. Pavlović, long-standing president of Serbian Society of Corrosion and Materials Protection (UISKOZAM). The coatings of chrome, copper and zinc are explored and the working conditions (the current density, temperature, the types of electroplating bath and cathode, addition agents for levelling and brightness, ...) which enable their mirror bright appearance were defined. The electrolytic production of copper powders desired the apparent density, as well as their stabilisation to prevent corrosion were widely investigated, too. Some of these investigations were conducted for companies in the Republic of Serbia (mirror bright chrome coatings - Župa, Kruševac, and copper powder - RTB Bor, d.d. "Topionica i rafinacija", Bor).

Keywords: metal coatings; powder; electrolysis; chrome; copper; zinc

Izvod

Predstavljani su neki fundamentalni i primenjeni aspekti formiranja ogledalasto sjajnih metalnih prevlaka i proizvodnje bakarnog praha elektrolizom. Ova istraživanja su izvedena u periodu između 1995. i 2000. godine na Univerzitetu u Beogradu, Institutu za hemiju, tehnologiju i metalurgiju, Centru za elektrohemiju, delimično pod rukovodstvom prof. dr Miomira G. Pavlovića, dugogodišnjeg predsednika Udruženja inženjera Srbije za koroziju i zaštitu materijala (UISKOZAM). Istraživane su prevlake hroma, bakra i cinka i radni uslovi (gustina struje, temperatura, vrste kupatila za galvanizaciju i katode, dodaci za poravnavanje i sjajnost površina, ...) koji omogućavaju njihov ogledalasti sjaj su definisani. Takođe je široko istraživana elektrolitička proizvodnja bakarnih prahova željene nasipne mase, kao i njihova stabilizacija u cilju zaštite od korozije. Neka od ovih istraživanja su vršena za preduzeća u Republici Srbiji (ogledalasto sjajne prevlake hroma - Župa, Kruševac, i bakarni prah - RTB Bor, d.d. "Topionica i rafinacija", Bor).

Ključne reči: metalne prevlake; prah; elektroliza; hrom; bakar; cink