EH P 4

Analiza prisustva inhibitora u alkalnom rastvoru natrijum-karbonata na elektrohemijsko ponašanje hladno deformisane bakarne zice

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U ovom radu je ispitivan uticaj 1M vodenog rastvora Na_2CO_3, sa i bez dodataka inhibitora, želatina i kalijum-etil-ksantata u različitim koncentracijama na koroziono ponašanje hladno deformisane bakarne žice (ε=87, 95 i 99 %). Merene su vrednosti potencijala otvorenog (POK) kola i primenjena je metoda ciklične voltametrije (CV). Merenja POK pokazuju stalni porast pre uspostavljanja konstantne vrednosti. Na voltamogramima zapažaju se dva anodna pika, koji pokazuju da postoji oksidacija bakra do Cu_2O i CuO. Rezultati ukazuju da stepen deformacije između 87 i 99 % nema bitan uticaj na vrednosti POK. Pokazan je pozitivan uticaj želatina u zaštiti od korozije. Međutim, povećanje koncentracije želatina ponovo dovodi do ubrzanja korozionih procesa. Kalijum-etil-ksantat u rastvoru 1M Na_2CO_3 menja mehanizam procesa pri anodnoj polarizaciji. Složeni procesi adsorpcije i desorpcije kalijum-etil-ksantata na površini bakra dovode do formiranja zaštitnog oksidacionog sloja na površini electrode.

Analysis of the presence of inhibitors in the alkaline sodium carbonate solution on the electrochemical behavior of cold-deformed copper wire

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In this paper the influence of 1M aqueous Na_2CO_3 solution with and without additional inhibitors, gelatin and potassium ethyl xanthate at different concentrations, on the corrosion behavior of cold worked copper wire (ε=87, 95 i 99 %) was tested. The values of the open circuit potential (OCP) were measured and a cyclic voltammetry (CV) method was used. OCP measurements show steady increase before establishing a constant value. The voltammograms indicated two anode peaks, showing that oxidation of copper to Cu_2O and CuO occurs. The results indicated that the degree of deformation between 87 and 99 % does not have a significant effect on the OCP value . A positive effect of the gelatin on the corrosion protection was shown. However, increasing gelatin concentrations again leads to acceleration of the corrosion processes. Potassium ethyl xanthate in 1M Na_2CO_3 solution changes the mechanism during the anode polarization. Complex processes of adsorption and desorption of potassium ethyl xanthate on the copper surface lead to the formation of a protective oxidation layer at the electrode surface.