

"Kinetic Studies on Stability of Passive Layer Formed on Some Copper Alloys in Different Aqueous Media ".

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الملخص (بالغة الانجليزية)

This work aimed to study the kinetics of corrosion and passivation behaviour of two copper- iron and copper – iron – aluminium alloys in neutral sodium chloride solution and sulphuric acid solution . The effect of some inorganic additives ($\text{Na}_2\text{B}_4\text{O}_7$, Na_2MoO_4 , KIO_3 , Na_2WO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$) on the passivation of the investigated alloys was also studied . The techniques used are : open – circuit measurements , polarization measurements and impedance measurements. The results indicated that the corrosion and passivation behaviours of these alloys greatly depends on: i- the composition of the alloys , ii- corrosive media (neutral or acidic),iii- type and concentration of the inorganic additive. In most cases the investigated additives acted as passivators in the neutral media (NaCl solution).On the other hand, they acted as accelerators in the acidic medium (H_2SO_4 solution) .

The effect of some organic inhibitors on the corrosion behaviours of two copper- iron and copper – iron – aluminium alloys in H_2SO_4 solution . It was found that these compounds had an inhibitory effect, which depends on the type of alloy, molecular structure of the inhibitors and its concentration. The organic compounds form a protective film by their adsorption on the metallic surface which followed Temkin's isotherm.