

THE CORROSION AND ELECTROCHEMICAL DISSOLUTION OF ALLOYS OF ALUMINIUM AND IRON IN BATH OF ELECTROLYTES B HYDRODYNAMIC MODE

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The purpose of researches is establishment of regularities of dissolution of metals in the conditions of an intensive mass transfer of reagents and products in an interphase layer and a role of these processes on the speed of chemical dissolution of alloys. Results of experimental studies:

1. In solutions H_2SO_4 of various concentration, with addition in these solutions NaCl, NaAc, $Pb(Ac)_2$, in the range $\omega = 0 - 1500$ rpm of dissolution of AD-0 and AMZ it isn't established.

2. In alkaline solution (NaOH) with additives NaCl, $Na_2S_2O_8$, NaAc, process of spontaneous ionization is carried out in a wide interval of values ω that is connected with acceleration of process of a complex formation soluble drop-shape - $[Al(OH)_4]^-$ particles. In all experiments with AD-0 and AMZ in various alkaline environments it isn't established even partial transition of system to the HDRS mode. It is quite possible that the speed of delivery of an oxidizer is connected with its small mass which increased by transition to research of reactions of a contact exchange on the basis of Fe/CuSO₄, H₂SO₄, H₂O system.

3. For Steel type 45 in 0,1M HCl solutions, with additives NaCl, $Na_2S_2O_8$, $(CH_2)_2(OH)_2$, (EG) is established that in all solutions dissolution speed (V) with increase ω in a sample increases. In 0,51M NaCl solution value V, on the contrary, isn't enough in all range ω and is close to zero. At introduction in solution 0,1M HCl of additives 0,51M NaCl + 0,1M $Na_2S_2O_8$ the speed of etching of steel 45, with increase ω , increases much.

4. Research of Steel45/CuSO₄, H₂SO₄, H₂O systems showed that with increase in concentration Cu^{2+} - ions with 0,1 to 0,5M dependence (V – ω) passes through a maximum, then decreases and comes to a plateau. It follows from this that processes of a chemical contact exchange on a Fe-alloy in sour environments, in the conditions of strengthening of hydrodynamic impact on an interphase zone, are accompanied by the effect of partial manifestation of effect of hydrodynamic restriction of speed (HDRS-effect).