The comparative study between the inhibitive effect of sodium molibdate and sodium vanadate on the corrosion behaviour of aluminium alloy in chloride medium

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Abstract : The effect of molybdate and vanadate inhibitor ions on the corrosion of aluminium alloy in near-neutral chloride solution has been studied using measurements of the open circuit potential and its variation with time, electrochemical impedance measurements and polarization curves. In addition, scanning electron microscopy coupled with energy dispersive spectroscopy and X-ray photoelectrons were used for surface analysis. The results show that both inhibitors present an interesting protective effect against pitting corrosion of aluminum. However the effect of molybdate is more significant than the one of vanadate. This inhibitive effect is reflected through the substantial reduction of both the rate of pit nucleation and the current rise characterizing the pit propagation progress.

Keywords : corrosion, aluminum, chlorides, inhibitors, molybdate, vanadate