Electrochemical Corrosion Behaviour of Different Cu-Base Alloys in Concentrated LiBr Solutions: Part II- Brass (Cu/30 Zn) Alloy

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The corrosion behaviour of brass (Cu/30Zn) alloy in 4M LiBr solution was investigated by the cyclic potentiodynamic polarization and current-time measurements. The work was complemented by the use of scanning electron microscopy (SEM) and the energy dispersive X-ray (EDX) analysis techniques. Cyclic potentiodynamic polarization indicated that the current of the Cu/30Zn alloy increases linearly and a plateau area was appearing with increasing the applied potential. The oxide film formed on the surface of the alloy was not passive or protective and the dissolution of Cu/30Zn alloy occurred via general corrosion. The pitting attack was not recognized as there was no hysteresis loop observed at all conditions. The results obtained from the SEM micrographs and EDX profile analyses confirmed that the ratio of Cu to Zn on the surface was found higher than that detected from matrix of the alloy. The mechanism of corrosion of the Cu/30Zn alloy via the dezincification of the surface was found to occur by a simultaneous dissolution.

Keywords: brass alloy; chronoamperometry; corrosion; dezincification; surface analysis

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