

Corrosion behaviour of anodised powder metallurgy aluminium-magnesium composites

Abstract

The corrosion behavior of anodized powder metallurgy Al/2wt%Mg composites reinforced with the short fibre alumina Saffil™ was studied using potentiodynamic polarization in 3.5% NaCl solutions. The materials under investigation were fabricated using powder metallurgy route. Anodising process has been done to the materials to improve their corrosion resistance. Anodising process were carried out in sulphuric acid solutions with different anodizing voltage, which are f0V, f2V, f4V, f6V and f8V and different concentration of sulphuric acid (5%, 10%, 15%, 20% and 25%). Results from Tafel plot showed that corrosion behavior of PM Al-Mg composites strongly depends on the anodizing parameters. Corrosion resistance increases with the increase in anodizing voltage and concentration of sulphuric acid. The maximum corrosion resistance was recorded by the PM Al-Mg composite anodized using 16V and in the 15% concentration of sulphuric acid.

Keywords — Anodising, corrosion behaviour, PM Al-Mg composites.