Short Communication

Investigation of AlMgCu Alloy Corrosion in 0.5M NaCl: Polarization and EIS studies

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Analyzing the production and consumption of non-ferrous metals in the world, it can be stated that aluminum and its alloys are in the first place in the term of a growth rate. The accelerated rate of non-ferrous metals consumption, demands for high-quality castings, as well as the economic aspect, certainly have influenced some changes, certain improvements and innovations in casting technologies and their application in corrosive environments. In this sense the aluminum alloys with copper and magnesium occupy a significant place. Stability corrosion tests often use the Tafel's method of potentiodynamic polarization, as well as the electrochemical impedance measurements. Also, a certain corrosion stability enhancements and reducing the metal corrosion rates can be achieved with the addition of small quantities of inhibitors in the aggressive corrosion ambience.

A proper selection of inhibitors is very important for effective enhancement of the corrosion protection, bearing in mind that some types of the inhibitors slow down the corrosion only in a particular solution/metal system. Inhibitors are mainly used to improve the corrosion protection of metal parts in solvents and spaces of limited volume, such as: chemical devices, steam boilers, storage and etching equipment and similar devices. The inhibitors used in this study belong to anodic corrosion inhibitors whose role is to slow down the anodic process of metal dissolution, through creating an insoluble protective layer with the primary corrosion products that firmly adheres to the metal surface and thereby reduces the anodic surface.

Keywords: AlMgCu-alloys, corrosion rate, corrosion inhibition, polarization resistance, current density, aqueous solutions

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