Short Communication

Effect of SiC Particles on the Corrosion Behaviour of 6.5% SiC_p/Al-Cu-Mg-Zn Composites

Xiaohong Wang^{*}, Zhengwei Peng, Lai Ma, Yuanhua Lin^{**}, Gaoxu Li, Wang Hailun

College of Materials Science and Engineering, Southwest Petroleum University, Chengdu 610500, China

^{*}E-mail: xhwang3368@swpu.edu.cn

^{**}E-mail: yhlin28@163.com

doi: 10.20964/2017.10.53

Received: 3 May 2017 / Accepted: 8 August 2017 / Published: 12 October 2017

This study investigated the microstructure and phase composition of 6.5% SiC_p/Al-Cu-Mg-Zn composites and Al-Cu-Mg-Zn alloy and measured their corrosion rates, pitting densities and maximum pit depths in 3.5 wt.% NaCl solution. Additionally, the effect of SiC particles on the microstructure and corrosion behaviour of Al-Cu-Mg-Zn alloy is discussed in detail. The results showed that the corrosion rate of 6.5% SiC_p/Al-Cu-Mg-Zn composites was less than that of Al-Cu-Mg-Zn in 3.5 wt.% NaCl solution at 20 °C, 60 °C and 90 °C. The pitting density of 6.5% SiC_p/Al-Cu-Mg-Zn composites was less than that of Al-Cu-Mg-Zn alloy, and the maximum pit depth of 6.5% SiC_p/Al-Cu-Mg-Zn composites (approximately 360 μm in 3.5 wt.% NaCl solution at 120 °C) was smaller than that of Al-Cu-Mg-Zn alloy. The pitting power of the 6.5% SiC_p/Al-Cu-Mg-Zn composites was less than that of Al-Cu-Mg-Zn alloy because precipitated S(Al₂CuMg) and T(AlZnMgCu) were inhibited, and θ(CuAl₂) was refined due to the addition of SiC.

Keywords: SiC Particles, Corrosion Behaviour, Drilling Pipe, Aluminium matrix composite

[FULL TEXT](#)

© 2017 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).