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Corrosion Behaviour of as Cast β-$Mg_{17}Al_{12}$ Phase in 3.5 wt% NaCl Solution

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E. Koç*

Karabuk University, Department of Metallurgy and Materials Engineering, Karabuk, Turkey

In this study, corrosion behaviour of β-$Mg_{17}Al_{12}$ phase was studied as comparing pure magnesium. The corrosion tests were carried out by potentiodynamic polarisation measurements and immersion tests in 3.5 wt% NaCl solution. Compared to pure Mg, β-$Mg_{17}Al_{12}$ phase has 2.7 times and 2.1 times lower corrosion resistance according the potentiodynamic polarization and immersion test results, respectively. Deep corrosion pits were formed on the surface of the β phase.

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PACS/topics: $Mg_{17}Al_{12}$, pure magnesium, corrosion, intermetallic

This article was originally published on May 2019 without Ref. [9]. The first paragraph of Sect. 3 (where the reference is cited) and Ref. [9] can be found below.

SEM image and EDS analysis points of the β-phase are shown in Fig. 1a and b, respectively. It was observed that the microstructure of the matrix β-phase had continuous network and partially and fully divorced structure. EDS analysis at the points indicated in Fig. 1 shows that the Al content of the fully divorced β-phase is about 18%–19% (marks 1, 2 and 6) whereas the Al content of the partially divorced β-phase is about 32% (see Table II). According to the literature [6, 8, 9], partially divorced β-morphologies are formed in the AZ91 Mg alloy at low cooling rates and in higher Al content, while β-morphology is completely divorced in die-casting or lower Al contents.

[9] S. Candan, M. Unal, E. Koc, Y. Turen, E. Candan, *J. Alloys Compd.* **509**, (2011)

Editors apologize for this error.

*e-mail: ekoc@karabuk.edu.tr