

ASSESSMENT OF CORROSION RESISTANCE OF ZN-AL-MG ALLOY WITH VARIOUS AMOUNT OF SN

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Zinc and Zn-alloys maintain their importance in corrosion protection of steel substrates. Increased protection is achieved by physical barrier between substrate and environment and by effect of sacrificial anode. In both ways dissolution of coating takes place. Increased corrosion performance can be achieved by suitable alloying. The aim of the work was to observe the influence of various amount of Sn (0, 0.5, 1, 2 and 3 wt. %) on corrosion resistance of alloy Zn1.6Al1.6Mg suitable for hot dip galvanizing. Alloys were prepared in electric resistance furnace. Solidification of all alloys was performed on air. Dimensions of samples for SST were $\Phi 30 \times 8$ mm. One side of sample was metallographically prepared and exposed to a 5% water solution of NaCl in corrosion box. Exposure time was set to 250h and 500h. Qualitative and quantitative analysis of corrosion products was executed by x-ray diffraction. Samples were cleaned from corrosion products and weighted for determination of weight changes after SST. Topography of exposed surface was observed using laser scanning confocal microscope. Process of corrosion invasion was observed on cross-sections by light microscopy. It was found out than the addition of Sn causes weight gain of exposed samples observed even after cleaning from corrosion products.

Keywords: Zn-based alloys, corrosion resistance, salt spray test (SST), X-ray diffraction, laser scanning confocal microscopy

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