Influence of the Heat Treatment on Corrosion Behaviour and Mechanical Properties of the AA 7075 Alloy

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Al-Zn-Mg-Cu alloys possess excellent mechanical properties, and therefore are used in aerospace and automotive industry. However, they are susceptible to localized corrosion such as pitting, intergranular and exfoliation corrosion, which is closely related to the precipitate size and distribution. Because the size and distribution of the precipitates are controlled by heat treatment, we investigated the influence of the heat treatment on corrosion behaviour and mechanical properties of the AA 7075 alloy. Audi test, internal Audi standard PV 11 13 for automotive industry, was chosen to evaluate the corrosion behaviour of the as-cast, T5 and T6 heat treated aluminium alloy 7075. Mechanical properties were studied through the tensile test and hardness measurements. The highest corrosion rate and the depth of corrosion attack penetration were observed for the T5 state, while the T6 state evinced the best resistance to localized corrosion and the highest mechanical properties.

Keywords: AA 7075, Intergranular corrosion, Exfoliation, Heat treatment, Audi test

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