

Corrosion Characterization of Al6061, Quartz Metal Matrix Composites in Alkali Medium

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Abstract : Metal matrix composites are attracting today's manufacturers of many automobile parts so that they last longer and their properties can be tailored according to the requirement. In this paper an attempt has been made to study the corrosion characteristics of Aluminium 6061 / quartz metal matrix composites in alkali medium like sodium hydroxide solutions. Metal matrix composites are heterogeneous mixtures of a matrix and reinforcement. In this work the matrix selected is Aluminium 6061 alloy which is commercially available and the reinforcement selected is quartz particulates of 50-80 micron size which is available in plenty in and around Bangalore district, India. Composites containing Aluminium 6061 with 2, 4 and 6 weight percent of quartz are manufactured by liquid melt metallurgy technique using vortex method. Corrosion tests like static weight loss and open circuit potential tests are conducted in different concentrated solutions of sodium hydroxide. To compare the results the matrix Aluminium 6061 is also casted in the same way. Specimens for the test are prepared according to ASTM standards. In all the tests the metal matrix composites showed better corrosion resistance than matrix alloy.

Keywords : aluminium 6061, corrosion, quartz, vortex

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