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Corrosion Characterization of ZA-27 Metal Matrix Composites

Authors : H. V. Jayaprakash, P. V. Krupakara

Abstract : This paper deals with the high corrosion resistance developed by the metal matrix composites when compared with that of matrix alloy by open circuit potential test. Matrix selected is ZA-27 and reinforcement selected is red mud particulates, which is a ceramic material. The composites are prepared using liquid melt metallurgy technique using vortex method. Preheated but uncoated red mud particulates are added to the melt. Metal matrix composites containing 2, 4 and 6 weight percentage of red mud are casted. Matrix was also casted in the same way for comparison. Specimen are fabricated according to ASTM standards. The corrodents used for the tests were 0.025, 0.05 and 0.1 molar sodium hydroxide solutions. They are subjected to Open Circuit Potential studies and weight loss corrosion tests. Corrosion rate was found to be decreased with increase in exposure time in both experiments. Effect of exposure time and presence of increased percentage of reinforcement red mud is discussed in detail.

Keywords : composites, vortex, particulates, red mud
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