

Microstructural and Corrosion Behavior of MAO Coated 5052 Aluminum Alloy

S. Sunilraj¹, B. Blessto², K. Sivaprasad³ and V. Muthupandi⁴

Advanced Materials Processing Laboratory, Department of Metallurgical and Materials Engineering, National Institute of Technology, Tiruchirappalli, Tamil Nadu, 620015, India

¹sunrajerc@gmail.com, ²bblessto@gmail.com, ³ksp@nitt.edu, ⁴vmuthu@nitt.edu

Abstract:

In this paper, the morphology, phase composition and corrosion behavior of micro-arc oxidated 5052 aluminum alloy were analyzed. A uniform Micro Arc Oxidation (MAO) coating was performed on 5052 aluminium alloy in different electrolytes (with and without Borax additives) for 30minutes. The MAO coating thickness was measured around 30 - 50 μm and nanocrystalline γ - Al_2O_3 were identified in the MAO coating using X-ray diffraction analysis. The coating thickness was measured using eddy current technique and morphology of the coating were analyzed using SEM. The coating formed in electrolyte with borax showed reduced porosity compared to the sample coated without borax. The corrosion behavior is analyzed by Potentiodynamic polarization. The MAO coated sample offers higher corrosion resistance compared to the uncoated specimen due to higher corrosion potential.