

Effect of Welding parameters on Corrosion behavior of Dissimilar weld joints of Al5052 and Galvanized mild steel

Shaik Shajahan^{1*}, Bhargavi Rani Anne²

¹PhD scholar, Department of Metallurgical & Materials Engineering, NIT Rourkela, Rourkela, India, 769008.

²Department of materials Sci. & Eng. Kyushu University, 744 Motooka Fukuoka, Japan, 819-0395.

Abstract : The current study investigated the effect of intermetallic formation on the corrosion behavior of dissimilar alloy welds of Al 5052 and Galvanized mild steel. Al 5052 alloy and galvanized mild steel plates welded in the form of lap joint by Cold Metal Transfer (CMT) welding process and Pulsed Arc Metal Inert Gas (PAMIG) welding process using 4043 Aluminum alloy filler. Welding conducted at different welding parameters viz., welding speed (0.8 m/min and 1.0 m/min) and wire feed rate (5.5 m/min and 6.5 m/min). The microstructure and phase determination of the weld joints analyzed by Field Emission Scanning electron microscopy and X-Ray Diffraction respectively. Resistance of galvanic, crevice and intergranular corrosion of the welds were studied as a function of different welding parameters as per ASTM G67-Al-alloys. The effect of welding parameters on the corrosion resistance of the joints and correlation of microstructural features such as formation of intermetallics at the interfaces etc. throughout specimens studied in detail.

Keywords : Al5052, Galvanized mild steel, intermetallic phases, dissimilar weld joints, welding parameters, Microstructure, Corrosion.

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