

Effect of Scandium Addition on the Properties of AA5083-H111 Alloy Friction Stir Welded Joints

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Friction Stir Welding on AA5083-H111 aluminium alloy plates were done using Scandium as Insert and the results were compared with another combination of FS welded AA5083 plates without scandium insert. The medium strength 5000 series non-heat-treatable aluminium alloy plates are used in the construction of marine transportation industry vehicle bodies. The Welding Institute (TWI) in UK has invented a new solid state welding process, viz., Friction Stir Welding (FSW) process in 1991. This FSW process is better than the conventional fusion welding processes, such as Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) techniques. An Al-2 wt. % Sc master alloy is used as an insert in between the two Al plates to be joined. After micro structural and mechanical characterization of the welded joints, it has been observed that the properties of FSW joint of Scandium added AA5083-H111 are inferior to the scandium insert free FSW joints. The chemical compositional analysis of both welded joints has lead to some important conclusions and directions for future research in the combinations of materials.

Biography:

Dr. K. Subbaiah is serving as a Professor in Mechanical Engineering Department of SSN College of Engineering in Chennai, India. He is having 34 years of Teaching and 12 years of Research experience. His areas of Research are Metal Joining Techniques, Scandium Addition in Tungsten Inert Gas and Friction Stir Welding Processes. He is currently guiding 12 Ph.D Research Scholars. He has presented and published more than 50 Papers in Conferences and Journals. Miss. B. Rajam Varshini is currently doing her third year in Mechanical Engineering at SSN College of Engineering in Chennai, INDIA. Her field of interest is Research in welding.