World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Study the Effect of Sensitization on the Microstructure and Mechanical Properties of Gas Tungsten Arc Welded AISI 304 Stainless Steel Joints

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Abstract : SS 304 is Austenitic stainless steel with Chromium and Nickel as basic constituents. It has excellent corrosion resistance properties and very good weldability. Austenitic stainless steels have superior mechanical properties at high temperatures and are used extensively in a range of applications. SS 304L has wide applications in various industries viz. Nuclear, Pharmaceutical, marine, chemical etc. due to its excellent applications and ease of joining this material has become very popular for fabrication as well as weld surfacing. Austenitic stainless steels have a tendency to form chromium depleted zones at the grain boundaries during welding and heat treatment, where chromium combines with available carbon in the vicinity of the grain boundaries, to produce an area depleted in chromium, and thus becomes susceptible to intergranular corrosion. This phenomenon is known as sensitization.

Keywords : sensitization, SS 304, GTAW, mechanical properties, carbideprecipitationHAZ, microstructure, micro hardness, tensile strength
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020