

## عنوان مقاله:

Weldability of Dissimilar Joint of AISI 304 to CK45 by GTAW Method

## محل انتشار:

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## خلاصه مقاله:

Joint of dissimilar steels is widely used in the chemical, food, oil, water and sewage industries. In the meantime, the joint of carbon steels to austenitic stainless steels is important with the GTAW welding process. In this paper, weldability of 304 stainless steel to CK45 carbon steel by GTAW method according to the filler metal parameter has been investigated. Welding of the samples was performed via gas tungsten arc welding (GTAW) method using 3 types of ER308L, ER310, and ER316L metal filler. Tensile test was done to evaluate the joint weldability. The microstructure of the samples was also studied using OM and FE-SEM microscopes. In the tensile test, the welded sample with ER308L electrode was fractured from HAZ area close to Ck45 base metal. Microstructure investigations showed that the best structural quality in this joint is the achievement of the stable austenite with a low amount of ferrite when using ER308L metal filler, and the worst structure was related to the use of ER310L metal filler that completely austenite structure with crack in the weld metal area was created. The results of tensile test showed that the maximum yield strength and tensile strength is achieved 382 MPa and 675 MPa using ER308L metal filler, respectively.

## کلمات کلیدی:

Welding of Dissimilar Steels, 304 Stainless Steel, Ck45 Carbon Steel, GTAW

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