عنوان مقاله:

Study of microstructure effects and corrosion resistance of dissimilar joints of stainless steel ۳۰۴ to carbon steel St۳۷ by friction stir welding

محل انتشار:

مجله علوم و مهندسی خوردگی, دوره 5, شماره 18 (سال: 1394)

تعداد صفحات اصل مقاله: 12

نویسنده:

خلاصه مقاله:

In this study, plates of ۳۰۴ stainless steel and st۳۷ steel were welded together by friction stir welding which has been set at a welding speed of ۵۰ and ۱۰۰ mm/min and tool rotational speed of ۴۰۰, ۶۰۰ and ۸۰۰ rpm in order to study the effect of parameter variations on micro structure and corrosion resistance. Samples were cut from the cross section of the joint and metallographic imaging was performed after etching. For the corrosion resistance evaluation, samples were immersed in Ferric Chloride and acetic acid ۲M and then were studied by macroscopic imaging and stereograms also Tafel polarization and electrochemical impedance spectroscopy (EIS) tests have been performed in ۳.۵% NaCl solution in order to verify weight loss results. The results showed that the corrosion rate of the St۳۷ base metal is more than other parts of the joint. On the other hand, all parts of stainless steel ۳۰۴ was galvanically protected. The best corrosion resistance among all the weld areas were determined for the weld at the tools rotational speed of ۸۰۰ rpm due to minimum grain growth by heating.

کلمات کلیدی:

Friction stir welding, Corrosion behavior, Immersion testing, Tafel Polarization, Electroche mical Impedance Spectroscopy, Carbon steel st۳۷, Stainless steel ۳۰۴,

جوشکاری اصطکاکی اغتشاشی, رفتار خوردگی, تست غوطه وری, پلاریزاسیون تافل, طیف سنجی امپدانس الکتروشیمیایی, ۳۰۴؛ فولاد زنگ
نزن
st۳۷ فولاد ساده

لینک ثابت مقاله در پایگاه سیویلیکا: