



Effect of oxide layer and activating flux on corrosion behavior of TIG welding of 304 austenitic stainless steel weldments

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Abstract: This work has been dedicated to study the influence of thin oxide layer on base material surface and the activating flux on the weld bead geometry of AISI 304 stainless steel TIG weldments. In this study, two types of base material surface condition namely natural and oxidized surface has been used. Sodium silicate paste (commercial grade) was used as an activating flux in this study. All the TIG and A-TIG welds were analyzed to study the corrosion behavior of weld bead geometry were determined by using potentiodynamic polarization test. The results indicated that the specimens welded with oxidized surface showed minimum rate of corrosion when compared to conventional TIG and A-TIG welded specimens. The corrosion rate has been clearly observed for base material is $= 9.117 \times 10^{-7}$ mm/yr and for the specimen welded with natural condition is 2.168×10^{-7} mm/yr. The corrosion rate of specimen welded with oxidized plate condition was observed as 2.091×10^{-7} mm/yr and corrosion rate of the A-TIG welded specimen was observed as 3.016×10^{-7} mm/yr.

Keywords: Activating flux; A-TIG welding; corrosion behavior; Austenitic stainless steel.

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