

Syringe cell method to study the corrosion resistance of the UNS S32101 lean duplex stainless steel welded by the gas tungsten arc welding double fusion (GTAW-DF)

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This work aims to investigate the corrosion performance of the UNS S32101 lean duplex stainless steel (LDSS) welded by the gas tungsten arc welding double fusion (GTAW-DF). In the study, six welded samples were manufactured with different welding parameters. A Syringe cell was used to characterize the electrochemical behavior of the different welded zones by potentiodynamic polarization tests in NaCl 3,5 % (w. t.) and in a solution of citric acid with addition of NaCl to simulate the food industry. The results showed that the welding parameters tested significantly affected the corrosion resistance of the LDSS UNS S32101. Besides, a correlation was established between microstructure and electrochemical behavior of fusion line (FL), heat affected zone (HAZ) and fusion zone (FZ).