Influence of Multi-Pass Welding on the Microstructure Evolution and Corrosion Resistance of a Super Duplex Stainless Steel

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Different thermal simulations of multi-pass welding were performed on the 2507 duplex stainless steel. The influence of thermal cycles on microstructure and phase ratio was studied. The toughness and pitting resistance of different specimens were investigated through impact energy test and critical pitting temperature test, respectively. The results revealed that the microstructure and performance of 2507 were deteriorated significantly after single-pass welding. While welding pass increased, the restoration effect was observed.

Keywords: Duplex stainless steel; Multi-pass welding; Heat-affected zone; corrosion

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