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Effect of Heat Treatment on the Corrosion Behavior of Stainless Steel

Authors : Altoumi Alndalusi

Abstract : The work examines the aqueous corrosion behavior of grades of stain less steel which are used as corrosion resistant castings for applications such as valve and pump bodies. The corrosion behavior of steels in the as-cast condition has been examined using potentiostatic studies to illustrate the need for correct thermal treatment. A metallurgical examination and chemical analysis were carried out to establish the morphology of the steel structure. Heat treatment was carried out in order to compare damage in relation to microstructure. Optical and scanning electron microscopy examinations confirmed that the austenitic steels suffers from severe localized inter-dendritic pitting attack, while non homogenized castings highly alloyed duplex steels gave inferior corrosion resistance. Through the heat treatment conditions a significant of phase transformation of the duplex steel C were occurred (from ferrite to austenite and sigma plus carbides) and were gave reduction resistance.

Keywords : cast, corrosion, duplex stainless, heat treatment, material, steel
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