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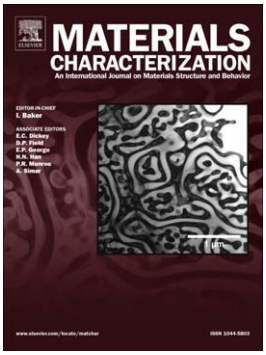

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Understanding the relation between phase fraction and pitting corrosion resistance of UNS 32750 stainless steel

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Abstract

The relation among overall pitting corrosion resistance, galvanic corrosion rate between ferrite and austenite phases, and phase fraction (42-67 vol% ferrite phase) of UNS S32750 alloy was investigated. The highest pitting potential was obtained in the sample comprising 56 vol% ferrite. The measured resistance against the pitting corrosion was closely related to the galvanic corrosion rate between the two constituent phases rather than the individual pitting corrosion equivalent numbers of the two phases. This observation inferred that the resistance to the stable pitting corrosion was determined by the pit growth rate rather than the pit initiation probability.

Keywords

Duplex stainless steel; Phase fraction; Pitting corrosion; Galvanic corrosion; Surface profiler

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