

Effect of Heat Treatment on Microstructure and Corrosion Behavior of 2507 Super Duplex Stainless Steel

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ABSTRACT

Duplex stainless steels (DSS) are being used for chloride containing environments due to their higher pitting and stress corrosion cracking resistance. They show improved corrosion resistance over the austenitic stainless steels. Duplex stainless steels also provide higher mechanical properties and are available in various wrought and cast forms. The objective is to study the overall corrosion behavior of 2507 super duplex stainless steel by suitable heat treatment temperature and suitable cooling rate. Intermetallic phases precipitation in duplex stainless steels is a widely known weakness of modern highly alloyed steel grades. Even comparatively small amounts of Intermetallic phases can severely deteriorate the mechanical and corrosion properties, the properties the duplex stainless steels are known for. The problem can be handled by a suitable heat treatment.

In this work, we have done a corrosion test of two samples i.e. original sample of 2507 duplex steel and the annealed sample at 1050°C, and corrosion rate of both the samples were calculated and it was observed that the corrosion rate of the annealed sample reduces.

Keywords: Duplex stainless steel; Corrosion; Heat treatment

