Effect of Short Term Aging on Microstructure Evolution, Pitting and Intergranular Corrosion Behaviour of UNS31254

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Here the intergranular and pitting corrosion resistance of super austenitic stainless steel Type UNS31254 was investigated, whose performance declined obviously after aging at 900 °C for short terms. Test methods including the nitric acid immersion test and the potentiostatic pulse technique (PPT) were applied respectively, and the results showed that the samples were highly sensitive to those two types of localized corrosion after aging within 180 minutes. Then the segregation between the interior and boundaries of grains eased while the general corrosion became dominated. The transmission electron microscope (TEM) further revealed molybdenum-rich Laves-related phases formed along the boundaries for only 10 minutes and they were the main culprit for the degradation. Finally, to offer guidance for the process of UNS31254, the welding joints were also checked and the evaluation method of pitting corrosion was discussed.

Keywords: Super Austenitic Stainless steel; Pitting corrosion; Precipitation; Potentiostatic Pulse Technique

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