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An Investigation of Passivation Technology in Stainless Steel Alloy

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Abstract : Passivation is a kind of surface treatment for material to reinforce the corrosion resistance specially the stainless alloy. Passive film, is to getting more potential compared to their status before passivation. An oxidation film can be formed on the surface of stainless steel, which has a strong corrosion resistance ability after passivation treatment. In this research, a new passivation technology is proposed for a special stainless alloy which contains a 12-14% Chromium. This method includes the A-A-A (alkaline-acid-alkaline) process basically, which was developed by Carpenter that can neutralize trapped acid. Besides, a corrosion resistant coating layer was obtained by immersing the parts in a water bath of mineral oil at high temperature. Salt spray test ASTM B368 was conducted to investigated performance of corrosion resistant of the passivated stainless steel alloy parts. Results show much better corrosion resistant that followed a coating process after A-A-A Passivation process, than only using A-A-A process. The passivation time is with more than 380 hours of salt spray test ASTM B368, which is equal to 3000 hours of Salt spray test ASTM B117. Proposed passivation method of stainless steel can be completed in about 3 hours.

Keywords : passivation, alkaline-acid-alkaline, stainless steel, salt spray test
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