Corrosion Behavior of Injection Molded 316L and 17-4PH Stainless Steels in a Sodium Chloride Solution

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Key words: Corrosion, Stainless steels, Powder Injection Molding, Salt Spray Test Abstract. In this study, the corrosion resistance of 316L and 17-4PH PIM stainless steels has been investigated. The corrosion performance was analysed by means of the salt spray test (according to ASTM B117), weight loss measurements and potentiodynamic polarization tests in a solution of NaCl 3 (wt%). The salt spray and weight loss results showed that both the steels had excellent corrosion resistance in sodium chloride environments. No signs of corrosion were seen on the surfaces of these steels, even after nearly 30 days of exposure to the salt spray test or after 33 days immersion in a solution of NaCl 3 (wt%). The polarization curves revealed similar corrosion behavior for both steels. The results indicated passivation of the steels at the corrosion potential. Additionally a tendency to pitting was observed.