Titanium-Aluminium Oxide Coating on Aluminized Steel

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Abstract : In this study, a plasma electrolytic oxidation (PEO) process was used to form titanium-aluminium oxide coating on aluminized steel. The present work was mainly to study the effects of treatment time of PEO process on properties of the titanium coating. A potentiodynamic polarization corrosion test was employed to investigate the corrosion resistance of the coating. The friction coefficient and wear resistance of the coating were studied by using pin-on-disc test. The thermal transfer behaviours of uncoated and PEO-coated aluminized steels were also studied. It could be seen that treatment time of PEO process significantly influenced the properties of the titanium oxide coating. Samples with a longer treatment time had a better performance for corrosion and wear protection. This paper demonstrated different treatment time could alter the surface behaviour of the coating material.

Keywords : titanium-aluminum oxide, plasma electrolytic oxidation, corrosion, wear, thermal property

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