

EN EVALUATION OF COMMERCIAL EPOXY COATINGS SUBMITTED TO MULTIPLE THERMAL IMMERSION AGEING.

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Due the importance of prediction life service of anticorrosive paints, a fast ageing thermal cycle for commercial epoxy coatings recommended for immersion in similar conditions to artificial sea water has been proposed. Films applied on low carbon steel and free films have been evaluated. The commercial epoxy coatings have two types of pigments: Iron oxide and zinc chromate. Both films have been continuously immersed in a 3% wt sodium chloride solution, and aged "in situ" at four temperatures: 25, 45, 65 and 85 °C (24 hours each temperature), sampling free films each 24 hours and carrying out electrochemical measurements on painted samples, when temperature increased out and after 24 hours too (Fig. 1). The degradation of protective properties of coatings, making a correlation between electrochemical behavior (EIS and EN) (Figs. 2 and 3) and scanning electronic microscopy analysis has been discussed, because the formation of micro fractures in free films can be observed (Fig. 4).

References

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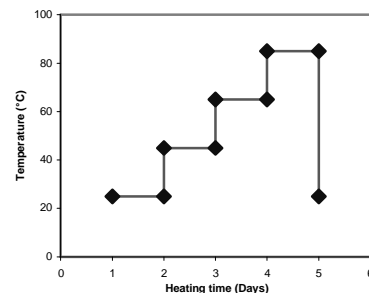


Fig. 1. Immersion-heating cycles.

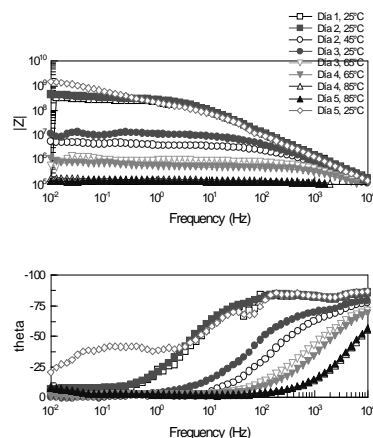


Fig 2. Bode graph of yellow coating after an immersion-heating cycle.

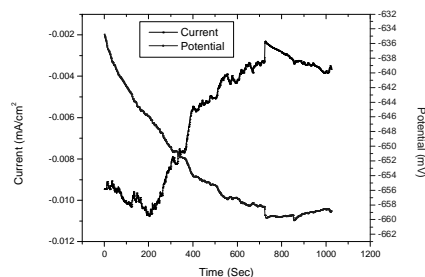


Fig 3. EN measurement of yellow coating after an immersion-heating cycle.

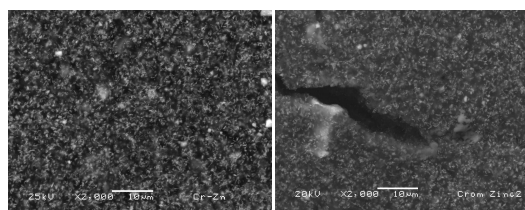


Fig 8. SEM photograph made to original yellow coating film and after two immersion-heating cycles.