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Effect of temperature variation on the corrosion behaviour and semiconducting properties of the passive film formed on chromium oxide coatings exposed to saline solution(Article)

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The corrosion behaviour of chromium oxide coatings and semiconducting properties of the passive film formed on the surface of the coated samples when exposed to saline solution at a temperature range 25 °C–65 °C was investigated. The cyclic polarisation results revealed that the coatings tested at a electrolyte temperature range 25 °C–35 °C possess superior resistance to pitting corrosion when compared to coatings tested at higher temperatures. Our Mott-Schottky analysis suggests that this variation in corrosion resistance can be linked to the increase in the amount of the defect density present in the films and enhanced diffusion at higher temperatures. © 2019 Elsevier Ltd