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## The role of Chromium Oxide in suppressing filiform corrosion on Cr metal / Cr Oxide coatings for steel used in packaging applications

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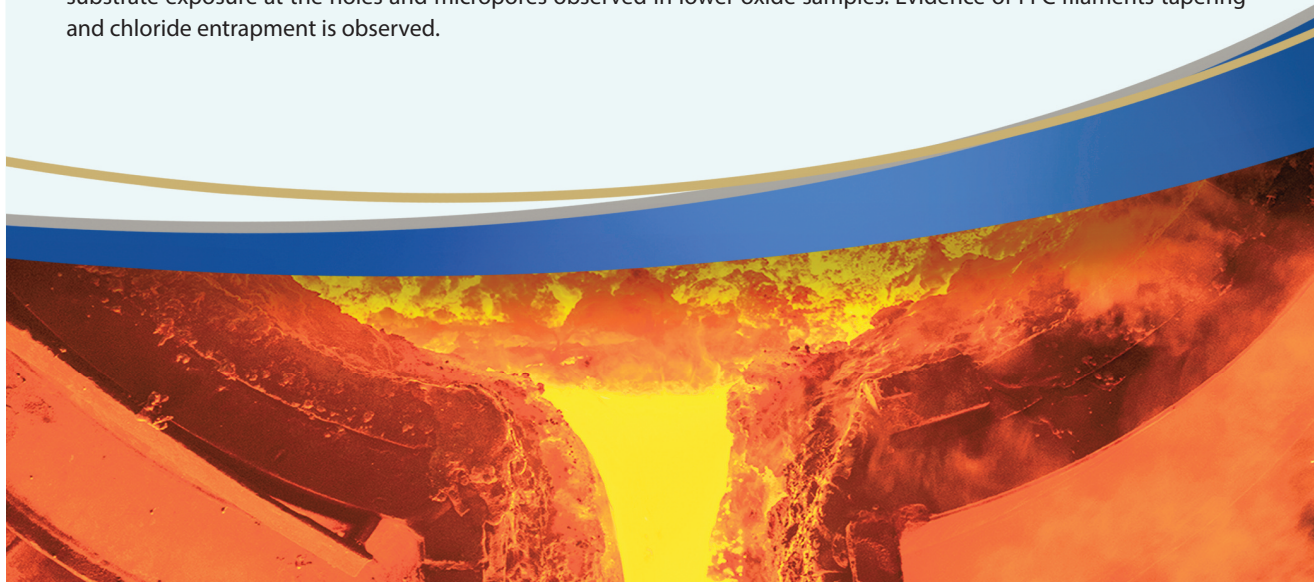
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**ABSTRACT:**

This paper describes a study into the filiform corrosion (FFC) of Cr(III) electroplated steel used for packaging applications. A bilayer Cr metal/Cr oxide coating is applied to low carbon steel via an electroplating process.

The coating weight of the Cr layer is kept constant whilst the Cr oxide layer is varied in coating weight between samples. FFC is initiated by introducing an artificial scribe into a model organic coating, polyvinyl butyral. The scribe defect is filled with 2µl 0.005M FeCl<sub>2</sub> and the sample placed into a humidity chamber. Samples were removed to obtain photographs and carry out computerized image analysis to calculate the area of FFC.

The rate of FFC is shown to increase with decreased Cr oxide coating weight. This may be caused by an increase in substrate exposure at the holes and micropores observed in lower oxide samples. Evidence of FFC filaments tapering and chloride entrapment is observed.



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