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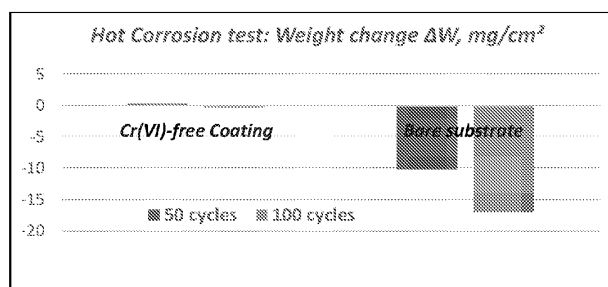
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(54) Title: CHROMATE-FREE CERAMIC COATING COMPOSITIONS FOR HOT CORROSION PROTECTION OF SUPERALLOY SUBSTRATES

Fig. 8 Thermal Cycling Test in the presence of Mixture A deposit of corrosive sulfates at 1310°F(710°C): Bare substrates vs. substrates coated with the Coating System of the invention



(57) Abstract: Hexavalent chromium-free slurry formulations which are suitable in the production of ceramic overlay coating systems are described. The formulations provide superior hot corrosion and heat oxidation protection for superalloy substrates. A basecoat slurry and topcoat slurry are provided. The basecoat slurry includes an aluminum phosphate based aqueous solution having a molar ratio of Al:PO₄ higher than about 1:3 with the incorporation of metal oxide particles. The topcoat slurry includes an aluminum phosphate based aqueous solution having a molar ratio of Al:PO₄ higher than about 1:3. Both of the basecoat slurry and the topcoat slurry are hexavalent chromium-free.

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