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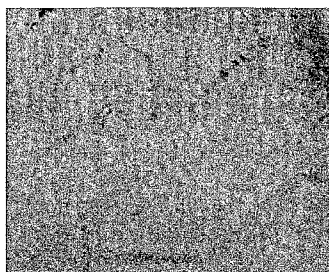
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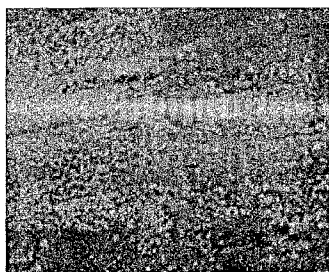
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(54) Title: CHROMIUM-FREE ANTITARNISH ADHESION PROMOTING TREATMENT COMPOSITION



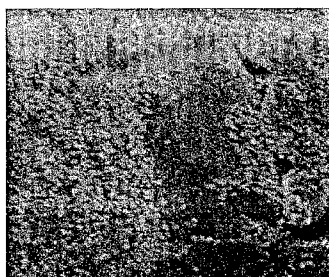
(a)

10000x — 1 um



(b)

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(c)

10000x — 1 um

(57) Abstract: The present invention is directed to an aqueous, antitarnish and adhesion promoting treatment composition, comprising: zinc ions; metal ions selected from the group consisting of tungsten ions, molybdenum ions, cobalt ions, nickel ions, zirconium ions, titanium ions, manganese ions, vanadium ions, iron ions, tin ions, indium ions, silver ions, and combinations thereof; and optionally, an electrolyte that does not contain potassium or sodium ions; wherein the treatment composition is substantially free of chromium, and wherein the treatment composition forms a coating on a substrate or material that enhances adhesion of a polymer to the material. The present invention is also directed to materials coated with the above treatment composition, and methods of coating materials using the above composition.



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