

CrO<sub>3</sub>

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## **Effect of Strontium Sulfate as Catalyst on Cathodic Current Efficiency and Determination of Brightness Region Produced by Hard Chromium Bath**

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### **Abstract**

Chromium plating with different concentrations of CrO<sub>3</sub> can be done for surface hardening and decorative purposes. In hard chromium plating the aim is to get an adhesive surface, resistant to wear, and corrosion. However the best coating from the view of physical and mechanical points is the brightness of layer. The cathodic efficiency in standard chromium bath is about 10 to 12%. Many studies have shown that by changing the kind of catalyst in the bath, it is possible to increase the cathodic efficiency. In this study the region of brightness in baths with strontium sulfate catalyst and also in standard bath of hard chromium were determined, and then the effect of strontium sulfate as a catalyst on the efficiency of bath was studied. The results show that for producing a bright coating, the current efficiency and also the region of current density and temperature in a bath with a catalyst of strontium sulfate increase in comparison with standard bath of hard chromium.

**Key words:** Hard chromium, Catalyst, Strontium sulfate, Hullcel, Cathodic efficiency.

(Self Regulated High Speed) S.R.H.S

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$Cr^{3+}$   $Cr^{6+}$

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$MgCl$   $NaCl$   $KI$   $KCl$

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CrO <sub>3</sub> / SO <sub>4</sub> <sup>2-</sup>	Sr <sup>2+</sup> (g/l)	SO <sub>4</sub> <sup>2-</sup> (g/l)	CrO <sub>3</sub> (g/l)	
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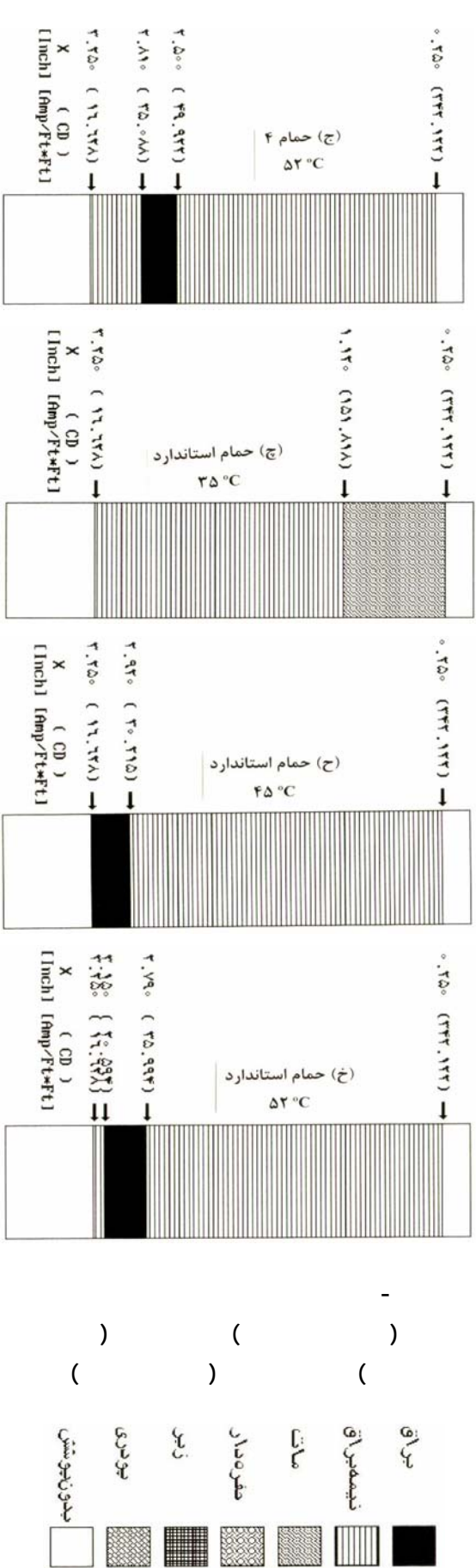
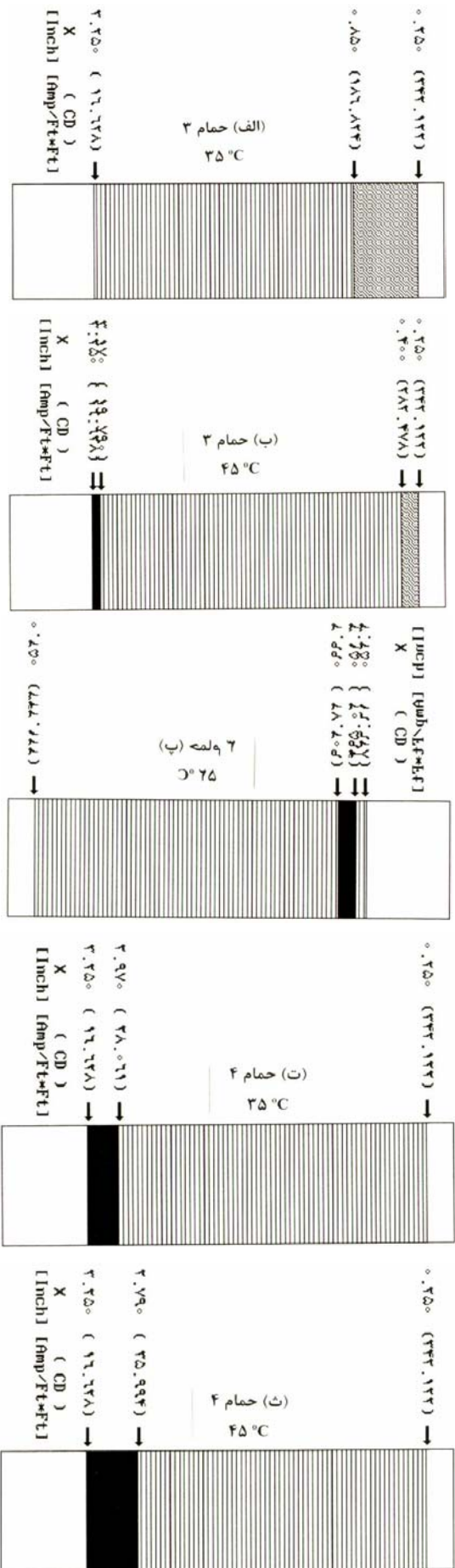
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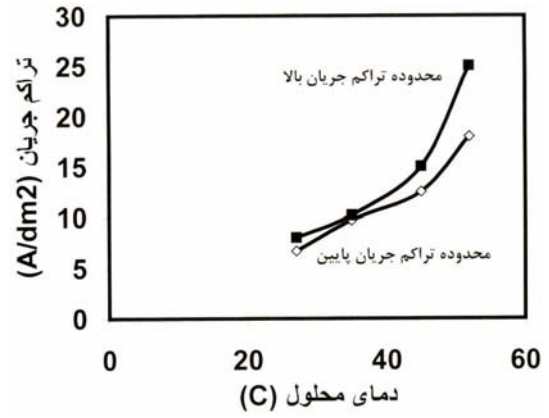
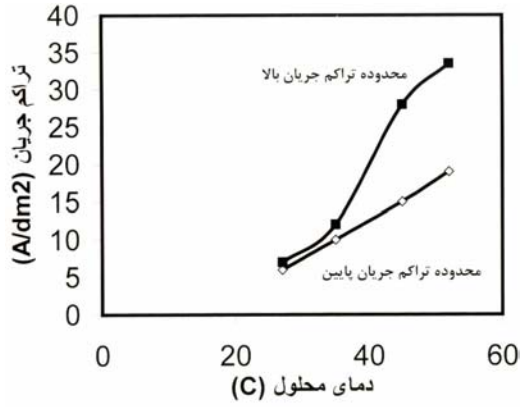
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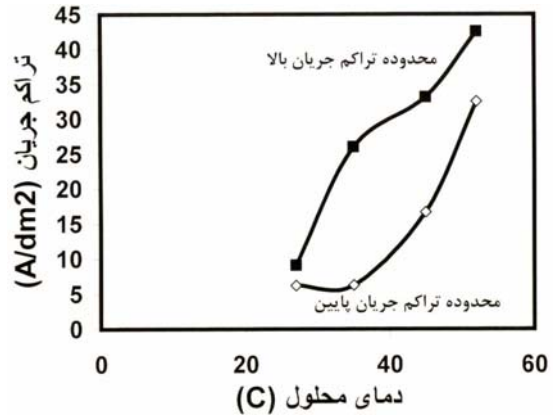
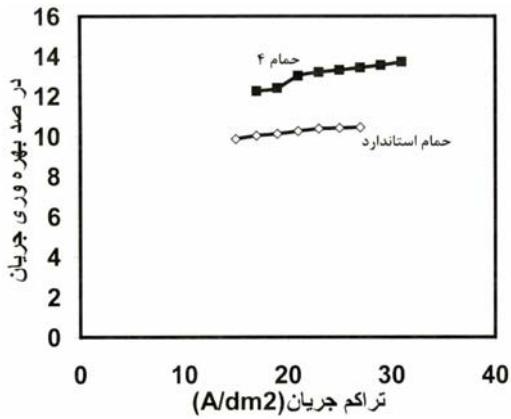


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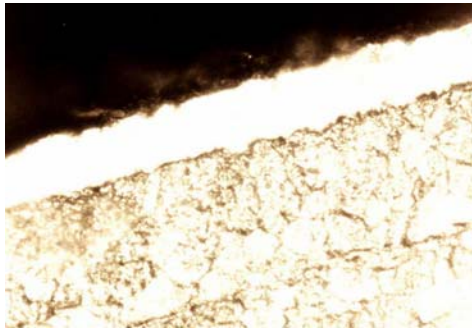
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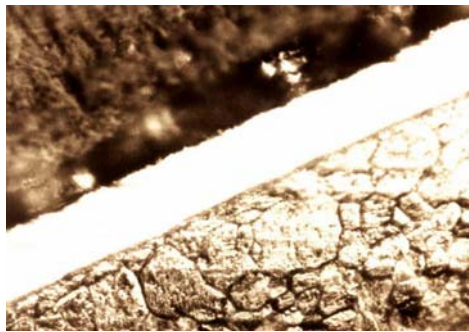


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Cr<sup>6+</sup>

$$C = ( l ) / ( \times l ) = l$$



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 °C: (x )  
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- A/dm<sup>2</sup>

- A/dm<sup>2</sup>

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A/dm<sup>2</sup>

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