

钙作为合金元素对铝在碱溶液中的缓蚀作用及其与酒石酸盐的协同效应

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 通过集气法、极化曲线和电化学阻抗谱研究了在铝中添加合金元素钙对其在碱溶液中的缓蚀作用及其与酒石酸盐的协同效应。实验结果表明,铝电极的腐蚀速率随钙含量的增加而减小。溶液中不含酒石酸盐时,钙对电极反应的阴极过程有显著的抑制作用,对阳极过程作用不明显;而当溶液中含有酒石酸盐时,阴极过程和阳极过程均被显著抑制。阻抗谱的解析结果还表明,钙离子或酒石酸钙络离子是通过减小反应物在活性位上的反应速率而起缓蚀作用的,它们可能属于界面型缓蚀剂而非成相型缓蚀剂。

关键词 [铝](#) [钙](#) [酒石酸](#) [缓蚀剂](#) [协同效应](#) [阻抗](#)

分类号 [0646](#)

Inhibition Effect of Calcium as an Alloy Element of Aluminum and Its Cooperative Effect with Tartrate in an Alkaline Solution

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Abstract The inhibition effect of calcium as an alloy element of aluminum and its cooperative effect with tartrate in an alkaline solution were systematically investigated by hydrogen collection, polarization curve and EIS. The experimental results show that the corrosion rate decreases with the increase of calcium content. When the electrolyte contains no tartrate, the inhibition effect of calcium on the cathodic process is much stronger than that on the anodic process. However, when the electrolyte contains tartrate (0.05 mol·L⁻¹), both the anodic and cathodic process is greatly inhibited. The analysis on the EIS reveals that the calcium ion or calcium tartrate complex ion takes its effect by reducing the reaction rates on the active sites, which indicates that they probably belong to interface inhibitor rather than interphase one.

Key words [ALUMINIUM](#) [CALCIUM](#) [TARTARIC ACID](#) [CORROSION INHIBITORS](#) [COOPERATIVITY](#) [IMPEDANCE](#)

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