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电参数对镁合金微弧氧化膜厚度的影响

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摘要: 在自行研制的电解液中, 采用四因素三水平正交实验, 系统研究频率、占空比、电流密度和终电压对AZ91HP镁合金氧化膜厚度的影响。结果表明, 各因素的主次顺序为终电压>电流密度>占空比>频率。终电压对氧化膜厚度影响显著, 电流密度对氧化膜厚度有影响但不显著, 占空比和频率对氧化膜厚度无显著影响。氧化膜层的耐蚀性并不是仅仅由厚度决定, 而是由多种因素综合作用的结果。

关键字: 镁合金; 微弧氧化; 电参数; 厚度

Effects of electric parameters on anodic coating thickness of micro arc oxidation on magnesium alloys

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Abstract: The effects of four factors (frequency, duty cycle, current density and final voltage) with three levels on coating thickness formed on AZ91HP magnesium alloys were systematically studied by the orthogonal experiment in a process developed by the authors. The result of intuitionistic analysis showed that the order of affecting coating thickness was ranked as final voltage > current density > duty cycle > frequency. Variance analysis indicated that final voltage and current density separately affected the coating thickness significantly and to a less remarkable extent, but duty cycle and frequency had no obvious effects on it, respectively. The corrosion resistance of anodic coatings was not just determined by their thickness but by the integrated effect resulted from several factors.

Key words: magnesium alloy; micro arc oxidation; electric parameter; thickness

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