

Fe-Cr-Ni 鋼(ASTM A 447)의 Sigma 相 生成과 바나듐 침식

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Vanadium Attack with Sigma Phase Occurrence in Fe-Cr-Ni Alloy (ASTM A 447)

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Abstract

The vanadium attack of sigma phase occurrence in high chromium-nickel steel (ASTM A447) has been studied in fuel oil combustion environment. 80mole% V_2O_5 -20mole% Na_2SO_4 was used as corrosive synthetic ash. Using metallograph and scanning electron microscope, various changes of microstructure of the specimen were observed in the corrosion process. The vanadium attack was affected by carbide rather than sigma phase in initial period of the test, but in the later period, sigma phase occurrence was more related for the attack. Vanadium attack seemed to be propagated along the boundary of matrix and sigma phase. Finally, sigma phase itself might be flaked out from grain boundary. However, stress corrosion cracking might be propagated through sigma phase which is brittle.

箔型 알루미늄 固體蓄電器의 製造 및 評價

—陽極酸化皮膜의 임피던스 特性에 關하여—

張 賢 球

Impedance Properties of Solid Aluminum Capacitors

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Abstract

The frequency dependences of equivalent series capacitance and resistance were analyzed to determine the impedance properties of anodic oxide films on aluminum. Dielectric oxide film was formed by anodizing in a aqueous solution of 3% ammonium borate galvanostatically and potentiostatically. The solid electrolyte was applied on anodic oxide films by pyrolysis of manganese nitrate. The impedance properties of anodic oxide films on aluminum well coincided with the dielectric theory of barrier oxide layers. Heat treatment of the oxide films in hydrogen and argon atmosphere reduced capacitance and dissipation factor. It is attributed to the reduced resistance of outmost oxygen excess layer in γ - Al_2O_3 film. During heat treatment in air and pyrolysis, however, increased the resistance and dissipation factor.