

Different concentration of $\text{Al}(\text{NO}_3)_3$ In $\text{ZrO}_2/\text{Al}_2\text{O}_3$ Double layer coating steel prepared by electrolytic method

Abstract

Stainless steels, such as 440C steel are commonly used for engineering applications. The high carbon contents of this steel have significantly been attributed to low corrosion resistance properties. Surface modification such as electrolytic double layer coating with $\text{ZrO}_2/\text{Al}_2\text{O}_3$ was carried out to control the performance. Samples were deposited in $\text{ZrO}(\text{NO}_3)_2$ and $\text{Al}(\text{NO}_3)_3$ aqueous solution respectively. Potentiodynamic examination (Tafel Extrapolation test) was conducted to measure the corrosion resistance of coated steel. The results showed improvements in hardness properties and corrosion rate as the Al_2O_3 concentration had been increased.

Keywords; 440 Stainless Steel, Electrolytic Coating, Tafel Extrapolation Method