Short Communication

Electrochemical behaviour of API 5L X52 Steel Samples Immersed in Sulphate Aqueous Solutions with Different pH

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Formation of anodic films was induced through application of potential pulses on the surface of API 5L X52 steel samples immersed in a 0.1 M H₂SO₄ aqueous solution with different pH set by adding NaOH. The formation mechanism was studied using the step potential technique to produce *j-t* plots, and the morphology and composition of the resulting films was characterized through SEM and EDX, respectively, and their passivating capacity was also electrochemically evaluated. It is shown that the anodic film was formed, in all cases, by means of nucleation and growth phenomena and that it cannot passivate the corrosion process. Furthermore, the nature of the films formed was also validated from a thermodynamic analysis based on the predominance zones diagram.

Keywords: Steel; Anodic films; pH; Potentiostatic current transients

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