Short Communication

The Effect of Temperature on the Hydrogen Permeation of Pipeline Steel in Wet Hydrogen Sulfide Environments

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In this study, the effect of temperature on the hydrogen permeation of pipeline steel in wet H₂S environments was studied. The steady-state permeation current density, steady-state flux, and the permeation rate increased with increasing temperature. The corrosion rate increased at 35°C and was confirmed by the electrochemical tests. The result of this study indicated that the corrosion process was controlled by the cathodic reaction. The hydrogen permeation behavior in under wet H₂S condition was affected by the corrosion rate and the corrosion product.

Keywords: pipeline steel, hydrogen sulfide, temperature, hydrogen permeation

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