Corrosion Behavior of Ferrite-Pearlite Steel Exposed to H₂S/CO₂ Environment

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The corrosion characteristics of ferrite-pearlite steel under H₂S-CO₂-Cl⁻ environment are studied by accelerated corrosion test and electrochemical experiment. The micromorphologies and crystal structures of corrosion products are analyzed by scanning electron microscopy (SEM) and X-ray diffraction (XRD), the mass loss and potentiodynamic polarization techniques are studied on corrosion rate of the test steel. The results show that H₂S dominates the whole corrosion process and seriously affects the corrosion properties, it changes the corrosion products significant differences on structure with immersion time, ultimately stable corrosion products pyrrhotite can effectively reduce corrosion rate, and provide good protection to the steel matrix.

Keywords: ferrite-pearlite steel, corrosion behavior, H₂S-CO₂-Cl⁻ environment, mass loss, potentiodynamic polarization

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