Corrosion Inhibition of N80 Steel with the Presence of Asymmetric Gemini in a CO₂-saturated Brine Solution

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Corrosion inhibition effects of asymmetric gemini corrosion inhibitor on N80 steel in a CO₂-saturated brine solution had been investigated by weight loss and electrochemical measurements. The synergistic effects of gemini with thiourea (TU), thiazole (TZ) and pyridine (PD) were also studied with weight loss and electrochemical measurements. The results revealed that asymmetric gemini corrosion inhibitor displayed excellent corrosion inhibition performance at 70°C in CO₂-saturated brine solution. The inhibitor was anodic type in nature. There existed apparent synergistic effect between asymmetric gemini inhibitor and other ingredients. The mixture inhibitors can provide excellent protection to N80 steel at test condition. The best formula of mixture inhibitors was then presented. The synergistic mechanism of gemini with other ingredients were also discussed.

Keywords: N80 steel, gemini corrosion inhibitor, synergistic effect, weight loss, electrochemical measurement

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