Corrosion Resistance of the UNS N26455 Superalloy in Simulated Environment Containing Chloride and CO₂

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UNS N26455 is a superalloy commonly used on offshore platforms in components for injection pumps due to its appreciable resistance to various forms of corrosion. However, this superalloy sustain damage under aggressive operating conditions, such as in the presence of chloride ions (Cl⁻), harmful gases or even thermal variations. Hence, the corrosion resistance of UNS N26455 was evaluated via the anodic potentiodynamic polarization technique to understand its behavior under potentially harmful working conditions. The experiments were carried out in controlled environments containing high Cl⁻ concentrations at different temperatures (25 and 40 °C), with and without carbon dioxide (CO₂) saturation. The results confirmed that the as-cast superalloy is highly resistant to localized corrosion. On the other hand, the influence of the formation of its microstructure's secondary phase, which occurs when it is exposed to high temperatures for a prolonged period of time, still needs to be investigated properly.

Keywords: nickel superalloy, corrosion resistance, anodic polarization.

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