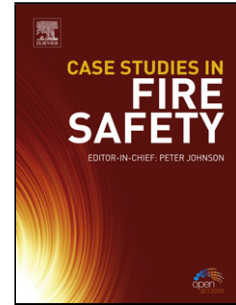


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Corrosion behavior of alumina-forming and oxide dispersion strengthened austenitic 316 stainless steel in supercritical water

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Highlights

- The corrosion behavior of AFA 316 SS and ODS 316 SS in aerated 650°C SCW was evaluated.
- Nodular corrosion is observed on both AFA and ODS 316 SS.
- Al enrichment is observed on the oxide/matrix interface in AFA 316 SS.
- Continuous Cr-rich oxide layer improves the corrosion resistance of AFA and ODS 316 SS.

Abstract: The corrosion behavior of alumina-forming austenitic (AFA) 316 stainless steel (SS) and oxide dispersion strengthened (ODS) 316 SS in aerated supercritical water (SCW) at 650 °C/25 MPa was investigated. The results show that the weight gain curves of AFA and ODS 316 SS follow near-parabolic law. Both AFA and ODS 316 SS show higher corrosion resistance in SCW than normal 316 SS, which is because that Al-Cr rich oxide and Cr-rich oxide layer are formed on AFA and ODS 316 SS,

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