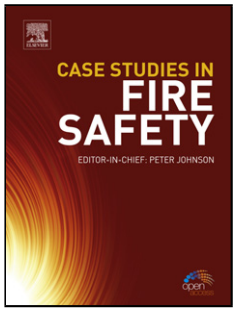

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PII: S0010-938X(18)30309-3
DOI: https://doi.org/10.1016/j.corsci.2018.08.011
Reference: CS 7647

To appear in:

Received date: 13-2-2018
Revised date: 16-7-2018
Accepted date: 6-8-2018

Please cite this article as: Mahboubi S, Zurob HS, Botton GA, Kish JR, Silicon Effects on the Wet Oxidation of Type 310 Stainless Steel, *Corrosion Science* (2018), https://doi.org/10.1016/j.corsci.2018.08.011

Silicon Effects on the Wet Oxidation of Type 310 Stainless Steel

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Highlights

- Si-alloying significantly alters the oxide scale formed during wet oxidation.
- Lower parabolic rate constant linked to continuous SiO_2 layer improves protection.
- Cr-rich silicides serve as reservoirs replacing oxidized Cr lost to volatilization.

Abstract

The wet oxidation performance of a high-Si (5.9 wt.%) Type 310 stainless steel exposed in flowing ambient pressure (0.1 MPa) air-10% H_2O mixture at 800 °C was investigated. A lower parabolic rate constant, relative to that exhibited by conventional