

**Erosion-Oxidation Behavior of Thermal Sprayed Ni20Cr Alloy and WC and Cr₃C₂
Cermets Coatings**

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Abstract

Industrial components in gas turbine engines, fluidized bed combustors and catalytic converters are often subject to the conjoint effect of erosion and high temperature oxidation processes. Adequate characterization of high temperature erosion-oxidation behavior of materials involves the reproduction of process conditions such as temperature, impacting particle parameters such as size, shape, hardness, velocity, impact angle and mechanical as well as physical properties of the target material. An apparatus to conduct high temperature erosion-oxidation studies up to 850°C and with particle impact velocities of up to 15 m.s⁻¹ was designed and constructed in the Corrosion Laboratories of IPEN. The erosion-oxidation behavior of high velocity oxy fuel (HVOF) sprayed alloy and cermet coatings of Ni20Cr, WC-20Cr7Ni and Cr₃C₂-Ni20Cr on a steel substrate has been studied. Details of this apparatus and the erosion-oxidation behavior of these coatings are presented and discussed.

Keywords: Erosion, oxidation, high temperature, composite coatings, HVOF

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