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Mechanical Properties of Plasma Spray Formed Alumina-Titania Ceramic Composite

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Abstract

Advances in ceramic processing technology have resulted in a new generation of high-performance structural ceramics exhibiting improved properties through micro structural engineering. The advanced structural ceramics have very good corrosion resistance, high refractoriness, good mechanical strength, high fracture toughness and hardness, ionic conduction, high melting point, low thermal conductivity at high temperature and thermal stability and resistance to thermal shock. The advanced ceramics have high resistance to electrochemical wear and abrasion wear.

The present study deals with the mechanical properties of free standing bodies made of alumina-titania ceramic composite. The mechanical properties of the alumina-titania ceramic composite in the as sprayed condition and heat treated condition were evaluated. The density, hardness, Young's modulus and strength improved by heat treatment The SEM observations of heat treated specimen indicated a more densified structure with closing of small pores.

Keywords*:* Alumina, titania, ceramic, composite and spray