

Microstructural and Tribological Properties of Al₂O₃-13pctTiO₂ Thermal Spray Coatings Deposited by Flame Spraying

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Description

The present investigation has been conducted to study the tribological properties of Al₂O₃-13pctTiO₂ (AT-13) ceramic coatings deposited on a low carbon steel type E335 by using a thermal flame spray technique. The microstructure and phase composition of wire and coatings were analyzed by scanning electron microscope, energy dispersive spectroscopy (EDS), and X-ray diffraction (XRD). Measurements of micro hardness were also performed on the surface of the coatings. The tribological tests were carried out using a pin-on-disk tribometer at different loads. All tests were performed using two disks as counter body, namely Al₂O₃-ZrO₂ (AZ-25) and Al₂O₃-TiO₂ (AT-3) which formed couple 1 and couple 2, respectively, in order to work out the wear rate and friction coefficient. Roughness profiles were also evaluated before and after each test. The SEM showed that the dense microstructure of Al₂O₃-TiO ...