

Solid Particle Erosion of Heat Treated TNB-V4 at Ambient and Elevated Temperatures

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Abstract : Solid particle erosion has been identified as a critical wear phenomenon which takes place during operation of aeroengines in dusty environment. The present work discusses the erosion behavior of Ti-44.5Al-6.25Nb-0.8Mo-0.1B alloy (TNB-V4) which finds its application in low pressure gas turbines and can be used for high pressure compressors too. Prior to the erosion tests, the alloy was heat treated to improve the mechanical properties. Afterwards, specimens were eroded at impact angles of 30° and 90° at room and high temperatures (100 °C-400 °C). Volume loss and erosion behavior are studied through gravimetric analysis, whereas erosion mechanisms are characterized through scanning electron microscopy. The results indicate a clear difference in the erosion mechanism for different impact angles. The influence of the test temperature on the erosion behavior of the alloy is also discussed in the present contribution.

Keywords : solid particle erosion, gamma TiAl, TNB-V4, high temperature erosion

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