THE WEAR BEHAVIOR OF MAGNETRON DEPOSITED N-ALLOYED STAINLESS STEEL COATINGS

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Abstract
The possibility of increasing the wear resistance of nitrogen alloyed austenitic stainless steel coatings deposited by a magnetron sputtering method assisted by a high voltage pulse discharge was performed at different nitrogen flow rates (5,5; 3,8; 1,8cm³/min). The chemical composition of the coatings was evaluated by GDOES investigations whereas their mechanical properties were evaluated by microhardness tests and ball-on-disc abrasive wear tests. Depending on the deposition parameters, the nitrogen content within the coating raised up to 27 at. %. The conditions to obtain compact surface layers with 2 to 3 times higher hardness than the base material were determined. A correlation between the microhardness of coatings and their wear behavior was observed.

Keywords: Magnetron, Coatings, N-alloyed, Wear, Hardness

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