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Performance of boron nitride coated tools and dies

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ABSTRACT

Boron nitride (BN) has been utilized as a significant coating material for cutting tool applications due to its excellent mechanical and chemical properties. Cutting tools, molds and machine parts are coated with BN with the coating system using a sputtering technology – a physical vapour deposition (PVD) process. Design and manufacture of the equipment is made locally. Physical, mechanical and tribological properties such as thickness, friction coefficient, wear, and adhesion are measured by using calotest, tribometer, profilometer, micro and macro scratch test, and nanohardness devices. The results of characterization of the coatings show that wear resistance and hardness increase and BN coatings provide increased efficiency by creating a value-added manufacturing. In this case, the use of BN-coated tools in machining is expected to be one of the best solutions.

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