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Effect of Carbide Inserts with Titanium Nitride Coating of Different Thickness on Machining Mild Steel

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Abstract:The intent of this study is to analyze the effect of different coating thickness of Titanium Nitride (TiN) on the carbide insert while machining mild steel at dry machining condition. The carbide insert was coated with Chemical Vapour Deposition (CVD) technique with varying thickness of 3 μ m,6 μ m, and 9 μ m. The coating thickness was analyzed through microstructure examination. The machining is done with varying spindle speed, feed rate and constant depth of cut. Performance of the insert is analyzed based on the surface quality of machined component. The results revealed that surface roughness of the machined mild steel component with coated insert is low when compared to the surface machined with uncoated insert and also, increase in coating thickness from 3 μ m to 9 μ m of coated inserts decreases the surface roughness of the mild steel component considerably.

Keywords : Dry machining, Chemical Vapour Deposition (CVD), Titanium Nitride (TiN), Mild steel, Surface roughness.

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