

37 - 10 Influence of Fluid Supply on Ultra-Smoothness

Grinding of Silicon Nitride Ceramic

with #140 Metal Bond Diamond Wheel

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Grinding operation is one of the most effective manners for high smoothness machining of fine ceramics. However, it is difficult to form crack-free high smoothness surface by ductile-mode grinding because of their mechanical properties of high brittleness. To machine the ceramic component of high quality by low productive cost, the high productive ultra-smoothness grinding technique for the fine ceramics has been strongly required. In our previous research^{1),2),3)}, the new ultra-smoothness grinding method is developed and ascertained to be useful for finishing to near the ultra-smoothness surface. The surface roughness of silicon carbide ceramic and cemented carbide tool formed by the ultra-smoothness grinding method using the #140 diamond wheel is found to attain below 25nm(*Rz*) or 4nm(*Ra*), and below 30nm(*Rz*) or 5nm(*Ra*), respectively.

This is one of a series of the researches on ultra-smoothness grinding of fine ceramics. In this report, the influence of the grinding fluid supply on ultra-smoothness grinding of silicon nitride ceramic is examined.

(The 19th Annual Meeting The American Society for Precision Engineering, Orlando, USA, 2004.10)