

# Investigation on High Depth of Cut of Ultra-smoothness Grinding of Al<sub>2</sub>O<sub>3</sub>-TiC Ceramic

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With the increase of demand of high quality components, the ultra-smoothness grinding technique of fine ceramics with high productivity has been strongly required. In our previous research, the ultra-smoothness grinding method based on the new concept is devised. Using the new method, the grinding characteristics of some materials with horizontal grinder are examined. From the results, the surface roughness of cemented carbide, glass and some fine ceramics formed by using coarse grain size of #140 diamond wheel is ascertained to attain below 50nm (Rz) in three dimensional measuring of 256 micro-meters square. Furthermore, to improve the productivity, the influence of high wheel depth of cut up to 1mm on ultra-smoothness grinding is examined by grinding of hot pressed silicon carbide ceramics (HPSC) and glass. It is found from the results that the surface roughness attains below 60 nm for HPSC ceramic ground at the high depth of cut of 1 mm. As ultra-smoothness surface is obtained by grinding the workpiece at the high depth of cut, machining time until finishing can be shortened effectively. The present research is extended to the investigation on the ultra-smoothness grinding characteristics of Al<sub>2</sub>O<sub>3</sub>-TiC ceramic in high depth of cut.

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