2001

Machining of Curved Surface of Wood by Ball End Mill
- A Preliminary Study -

In order to optimize the cutting conditions for machined surface by ball end mill , surfaces of workpieces of makanba and hinoki were machined into planes through the successive feed of in a increment of 2mm , and the effects of wood species , feed direction to grain , feed speed , and tilting angle of tool on surface roughness were examined.

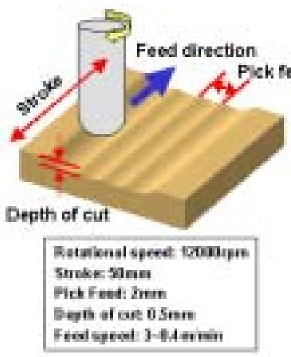
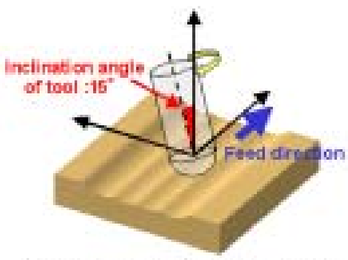
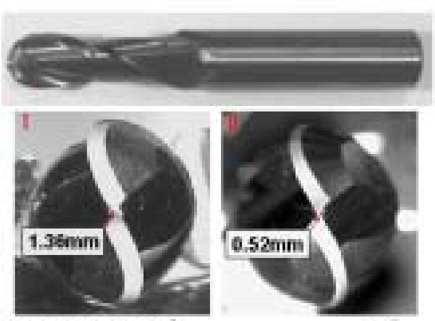


Fig1. Illustration of cutting experiment



Tool was inclined both in a vertical plane to feed direction and to be up cut milling

Fig2. Inclination of tool



End rake angle: 23.4° 22.3°
End relief angle: 12.5° 12.0°
Radius of ball nose: 7.5mm Overall length: 110mm

Fig.3 Shape of ball end mill

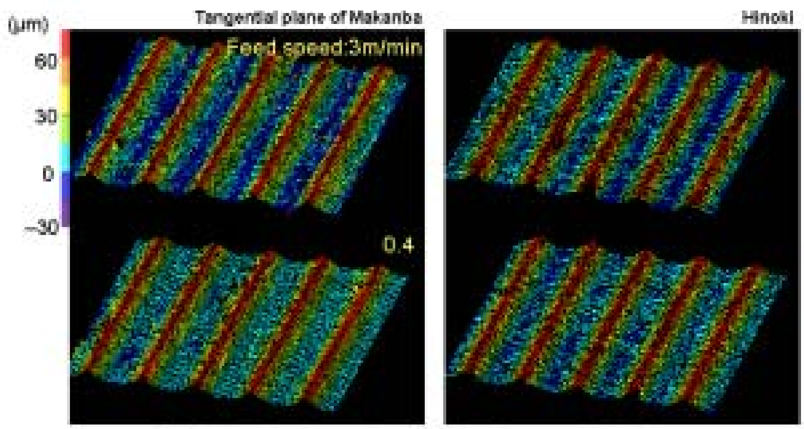


Fig5. Effects of work species and feed speed on machined surface
(Feed direction: parallel to grain , inclination angle: 0°)
※ Feed speed: 0.4, 0.8, 1.5, 3.0m/min, tool: II

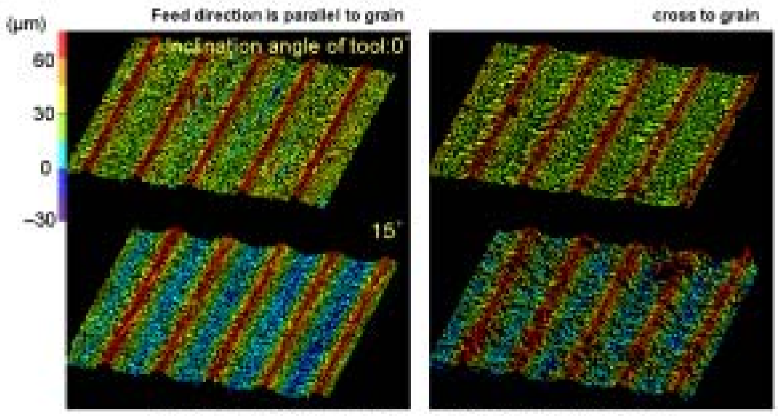


Fig4. Effects of feed direction to grain and inclination angle of tool on machined surface (Tangential plane of Makanba)
※ Feed speed : 3m/min, tool : I