Study on Optimal Surface Property Of Wc-Co Cutting Tool for Aluminium Alloy Cutting

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ABSTRACT

The light weight property as well as high corrosion resistance of aluminium alloy has increased their demand especially in automobile industries. Aluminium alloy as a matter of fact has a low melting point and high ductility that severely adhere to the cutting tool surface and cause deterioration of chip evacuation. This problem often resulting in tools breakage. In this paper, in order to impart functions of anti-adhesion, we propose a technique by controlling the grinding marks micro texture on the tool surface by using the blast polishing treatment without any coating technologies. The results show that the tool which underwent polishing treatment reduces the cutting force as well as the aluminium adherence during the initial cutting process, and become worst as the process cutting continues. These results indicate that grinding mark texture improves the anti-adhesion by reducing the contact area during cutting and provide storage for the lubricant. In addition, too much polishing on the tool surface may remove these textures and resultantly worsen the tool performance.

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