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(54) Title of the invention : TURNING INSERT WITH LUBRICATING PASSAGE ALONG THE NORMAL PLANE FOR MINIMIZATION OF FRICTION AND CUTTING FORCE

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(86) International Application No	:PCT//	Name of Applicant : NA
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(87) International Publication No	: NA	(72)Name of Inventor :
(61) Patent of Addition to Application Number	:NA	1)Vivek Bajpai
Filing Date	:NA	Address of Applicant :Department of Mechanical Engineering, INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD, Dhanbad -826004, Jharkhand, India Dhanbad -----
(62) Divisional to Application Number	:NA	2)Arnab Das
Filing Date	:NA	Address of Applicant :Department of Mechanical Engineering, INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD, Dhanbad -826004, Jharkhand, India Dhanbad -----

(57) Abstract :

The invention relates to a turning insert (100) with lubricating passage (105) along the normal plane to reduce friction at the chip-tool interface and cutting force. The lubricating passage (105) is generated on the principal cutting edge (102) along the normal plane. The passage (105) is at a distance of 0.75 mm from the insert tip (104) with a depth of 0.4 mm from the principal cutting edge (102). Three different lubricating passages have been generated on the turning inserts at an angle of 60°, 45°, and 30° with the principal cutting edge. Depending on the angle, the opening of the lubricating passage (105) on the rake surface (101) and the principal flank surface (103) varied accordingly. Therefore, three different inserts with lubricating passages have been generated. These are turning insert (300) with nozzle type lubricating passage (301); turning insert (400) with equal opened lubricating passage (401); turning insert (500) with throttle type lubricating passage (501). The turning insert (100) enables a favorable lubricant flow towards the rake face; and therefore, it is able to reduce the frictional force and cutting force during turning operation with lesser flank wear. Additionally, the turning insert (100) acts as a chip breaker as well.

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