Abstract
This work deals with the experimental study of the flank wear evolution of two coating carbide inserts and a cermet insert during the dry turning of AISI 1045 steel with 500 and 600 m/min cutting speed. The results were compared using the variance and regression analysis. The investigation showed a significant effect of cutting speed and machining time on the flank wear in high speed machining. The three coating layers insert showed the best performance while the two layers insert had the worst behaviour of the cutting tool wear at high cutting speed, this is because once the coating film is peeled off, the substrate of the insert becomes uncovered and the wear grows rapidly due to the extreme machining conditions for high speed. Besides, the machining time recommendations of inserts for the cutting conditions at high speed are exposed.

Keywords
High speed turning, flank wear, AISI 1045 steel, experimental study.