

New Chemical Vapor Deposition-Coated Insert “AC8025P” for Steel Turning

1. Outline

In the production of machine components, there is an ever-growing demand for saving delivery time, machining costs, and labor by automatic and unmanned operation. In this situation, cutting tools are required more than ever to have more durability to prevent unexpected breakage during machining, in addition to higher machining efficiency and longer tool life. To meet the above requirements, Sumitomo Electric Hardmetal Corporation has developed and released new chemical vapor deposition (CVD)-coated inserts “AC8025P” series (Photo 1). The inserts employ a new coating technology called “Absotech Platinum,” offering remarkably high machining stability and reliability.

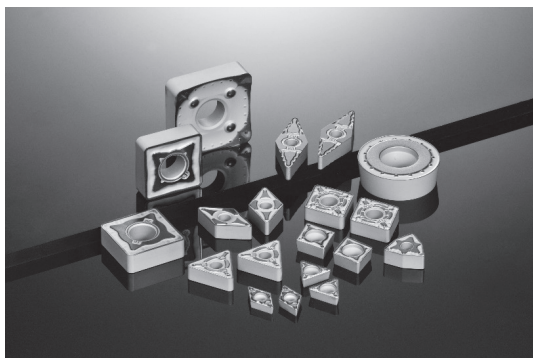


Photo 1. AC8025P

2. Features

The new CVD coating technology “Absotech Platinum” enhances the chipping resistance of the insert by reducing the tensile stress of coating film. It also improves the adhesion resistance of the insert by smoothing the surface of the coating film (JP Pat. No. 4891515), as shown in Fig. 1. The new technology has doubled chipping resistance (Fig. 2 (a)) and adhesion resistance (Fig. 2 (b)) of conventional inserts without deteriorating its original wear resistance.

An example of an AC8025P that was put to practical use by one of our customers is shown in Fig. 3. Even after turning carbon steel workpieces three times more than usual processing by an equivalent insert made by a competitor, the AC8025P exhibited only slight adhesion and chipping at the cutting edge. This result assures that

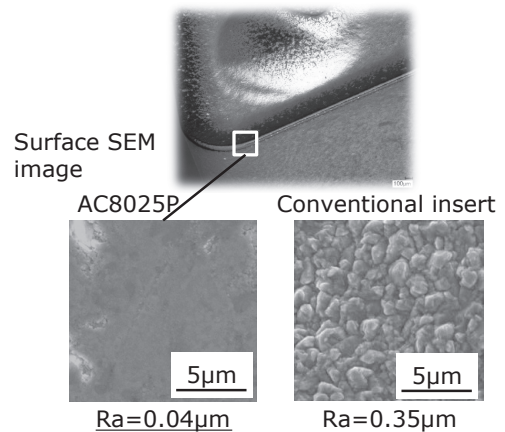


Fig. 1. Cutting Edge Surface Structure of AC8025P

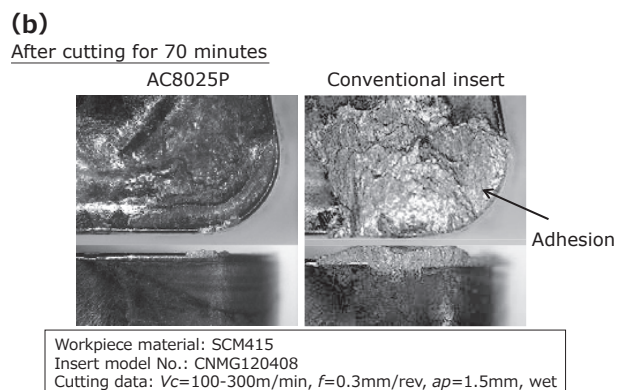
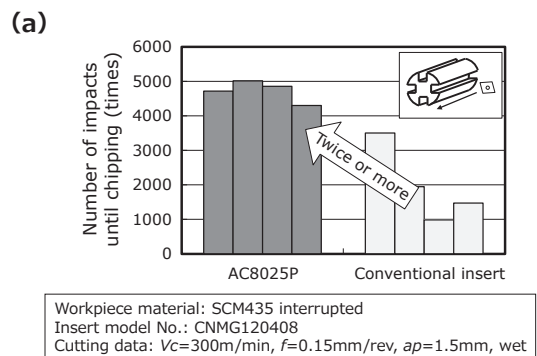
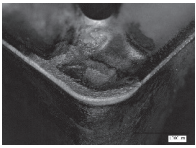
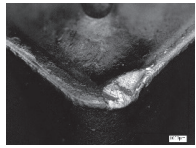


Fig. 2. (a) Chipping Resistance Test Result for AC8025P
 (b) Adhesion Resistance Test Result for AC8025P

AC8025P will be used stably for a longer period of time.

Because of its superior versatility, AC8025P is used to turn steel of all grades and therefore is expected to significantly reduce machining cost and raise productivity.

	AC8025P	Insert made by competitor (equivalent to P20)
		
Number of workpieces	450 pcs	150 pcs

workpiece: Ring
 Workpiece material: S45C
 Insert model No.: CNMG120408
 Cutting data: $V_c = 200\text{m/min}$, $f = 0.25\text{mm/rev}$, $ap = 1.0\text{mm}$, wet

Fig. 3. Application Examples of AC8025P

• “Absotech” is a registered trade name of Sumitomo Electric Industries, Ltd.