

A

Grades

Steel

Stainless Steel

Cast Iron

Exotic Alloy

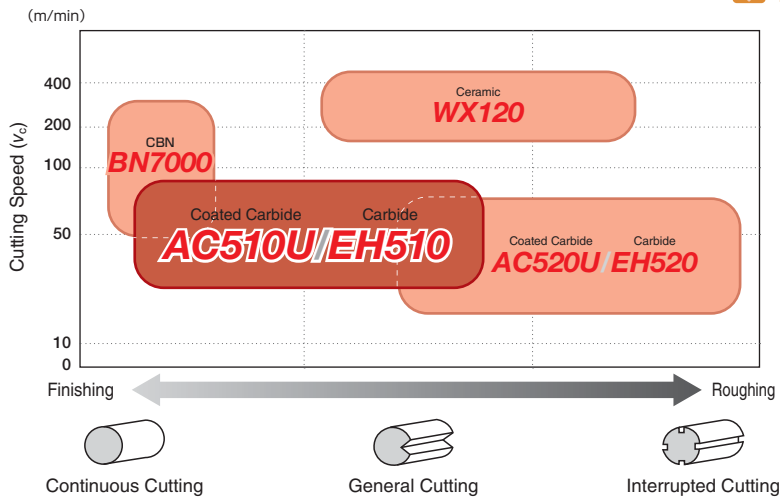
Hardened Steel

Non-Ferrous Metal

Small Product Machining

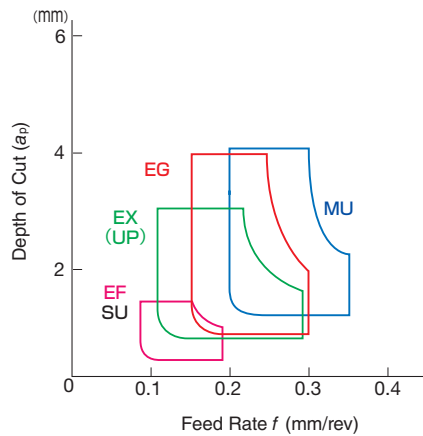
Grades

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Chipbreakers

Negative Type



Recommended Cutting Conditions

(Red text indicates 1st recommendation.)

Work Materials	Cutting Process	Chipbreakers	Grades	Cutting Conditions		
				Depth of Cut a_p (mm)	Feed Rate f (mm/rev)	Cutting Speed V_c (m/min)
Heat-Resistant Alloy (Ni-based Alloy Fe-based Alloy Co-based Alloy)	Finishing	EF (SU)	AC510U	0.2- 0.5 -1.5	0.1- 0.12 -0.2	50- 60 -90
	Light	EX	AC510U	0.5- 1.0 -3.0	0.1- 0.20 -0.3	40- 50 -80
	Medium	EG	AC510U	0.5- 2.0 -4.0	0.15- 0.25 -0.3	40- 50 -80
	Rough	MU	AC520U	1.0- 2.0 -4.0	0.2- 0.25 -0.35	30- 45 -60
Titanium Alloy (Pure Titanium (99.5%) $\alpha + \beta$ Alloy)	Finishing	EF (SU)	EH510 (AC510U)	0.2- 0.5 -1.5	0.1- 0.15 -0.2	50- 65 -80
	Light	EX	AC510U	0.5- 1.0 -2.5	0.1- 0.20 -0.25	40- 55 -70
	Medium	EG	EH510 (AC510U)	0.5- 2.0 -3.5	0.15- 0.25 -0.3	40- 55 -70
	Rough	MU	AC520U	1.0- 2.0 -3.5	0.2- 0.25 -0.3	30- 40 -50

Grades AC510U / AC520U / EH510 / EH520

- PVD (Super ZX Coat) grade with excellent wear and thermal resistance.

AC510U : Excellent sharpness and reliability. A general purpose grade suitable for a wide range of applications from roughing to finishing.

AC520U : Excellent fracture resistance. A tough grade that is perfect for heavy interrupted cutting and mill-scaled workpiece.

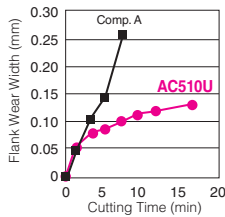
- Carbides with excellent thermal, wear, and fracture resistance for use with titanium alloys.

EH510 : General purpose grade for titanium machining that features excellent wear and thermal resistance. For applications from roughing to finishing.

EH520 : Tough grade for titanium machining with excellent fracture and thermal resistance. Perfect for interrupted cutting and mill-scaled workpiece.

AC510U Cutting Performance

- Turning of Thermal Resistant (Ni-based) Alloys

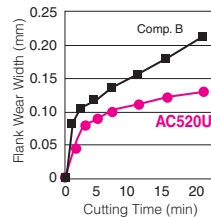


Half the wear of competitor's grade with 2x tool life!



AC520U Cutting Performance

- Turning of Thermal Resistant (Fe-based) Alloys



Stable turning with no notch wear!



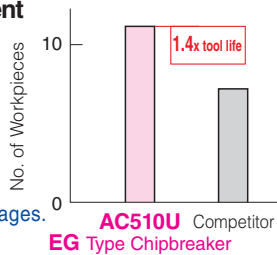
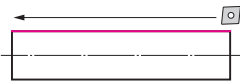
Work Material: Inconel 718 (45HRC)
Insert: CNMG120408N-EX (AC510U)
Cutting Conditions: $v_c=80\text{m/min}$ $f=0.12\text{mm/rev}$ $a_p=0.8\text{mm}$ Wet

Work Material: Heat resistant ferrous alloy
Insert: CNMG120408N-MU (AC520U)
Cutting Conditions: $v_c=40\text{m/min}$ $f=0.2\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet

Application Examples

AC510U/EH510

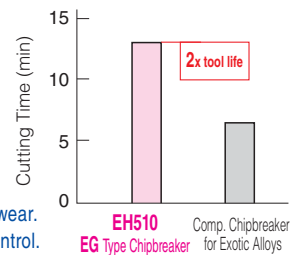
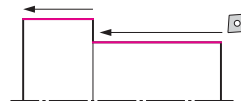
Inconel 718 Shaft Component



Stable, long tool life with no breakages. Small chips.

Insert: CNMG120408N-EG(AC510U)
Cutting Conditions: $v_c=45\text{m/min}$ $f=0.23\text{mm/rev}$ $a_p=2\text{mm}$ Wet

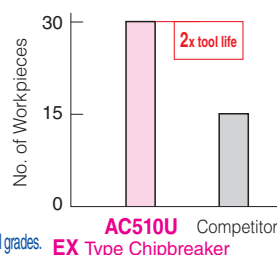
Titanium Ti-6Al-4V



Tool life doubled with reduced crater wear. Now with drastically improved chip control.

Insert: CNMG120412N-EG(EH510)
Cutting Conditions: $v_c=65\text{m/min}$ $f=0.2\text{mm/rev}$ $a_p=2.5\text{mm}$ Wet

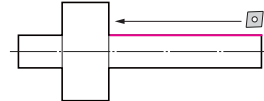
Inconel 718 Pin



Achieving 1.3x higher efficiency and stable tool life with cutting speeds of 40m/min as compared to 30m/min for conventional grades.

Insert: CNMG120408N-EX(AC510U)
Cutting Conditions: $v_c=40\text{m/min}$ $f=0.25\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet

Inconel 718 Shaft Component

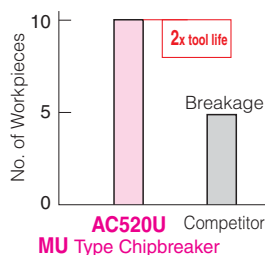
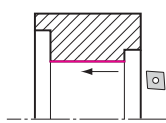


Drastically improved chip control. Eliminate final polishing process without damaging work.

Insert: CNMG120408N-EF(AC510U)
Cutting Conditions: $v_c=45\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=0.25\text{mm}$ Wet

AC520U

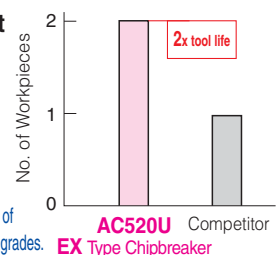
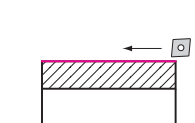
Inconel 718 Machine Component



Stable, long tool life with no breakage.

Insert: CNMG120412N-MU(AC520U)
Cutting Conditions: $v_c=35\text{m/min}$ $f=0.2\text{mm/rev}$ $a_p=2.5\text{mm}$ Wet

Stellite Machine Component



Achieving 1.5x higher efficiency with cutting speeds of 30m/min as compared to 20m/min for conventional grades.

Insert: CNMG120408N-EX(AC520U)
Cutting Conditions: $v_c=30\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=1.0\text{mm}$ Wet