Steel milling

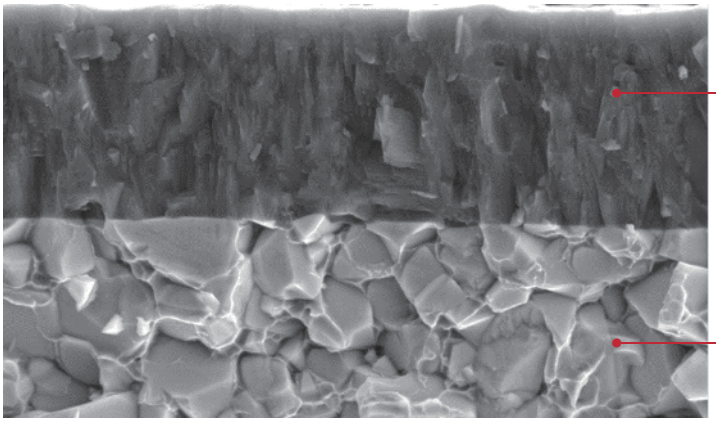
New grade AP251U

AP251U grade introduction

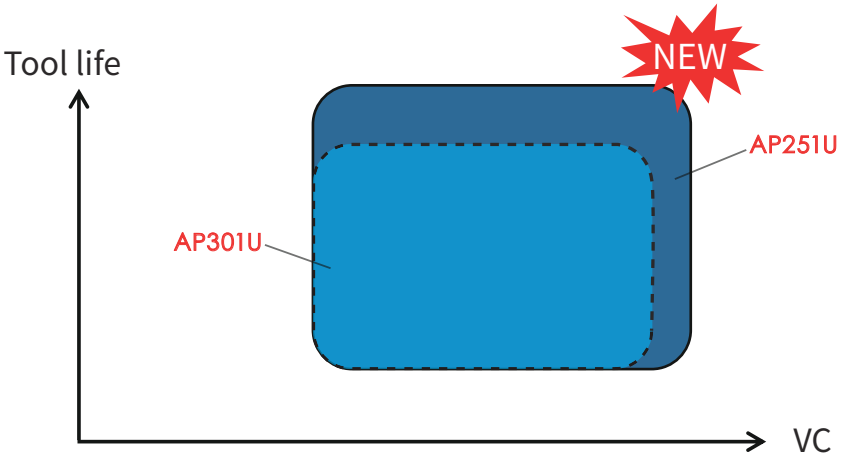
First choice for steel milling

Achteck has launched a new PVD grade AP251U for steel milling, which used a new super-fine grain carbide substrate, with uniform grain structure, high hardness, good strength and thermal crack resistance. The coating has excellent wear resistance and thermal crack resistance. Compared with exiting AP301U grade, the new grade AP251U has reduced chipping and edge breakage. It can achieve longer tool life and more stable and reliable applications.

AP251U grade feature



Comparison between AP251U and AP301U



Customer benefits

- Longer tool life and lower tool cost;
- Good application stability and safer machining;
- For universal applications, suitable for different machining conditions;

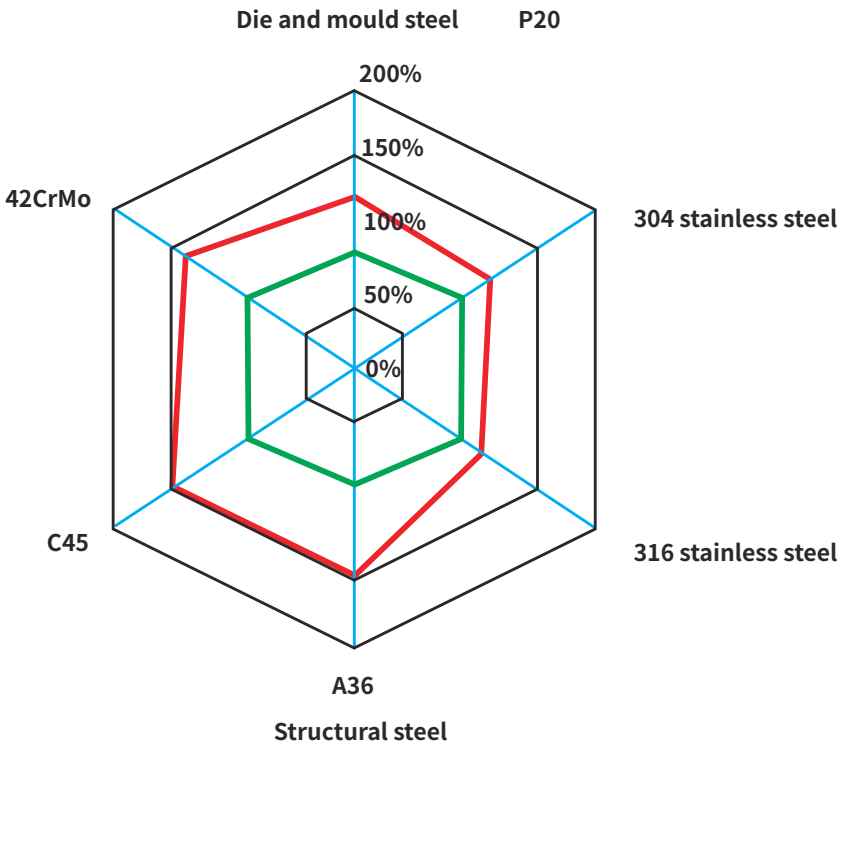
AP251U application range

For steel milling in all conditions

Materials	Application range								
Application	Finishing ⟷ Roughing								
ISO classification	10	15	20	25	30	35	40	45	50
P	AP251U								
M	AP251U								

- From finishing to roughing;
- First choice for steel shoulder milling;
- Wet and dry machining (dry is recommended);
- Complex tool paths, deep cavity milling with long overhang length;
- Good optional for stainless steel milling;

Application in different materials



AP251U product list

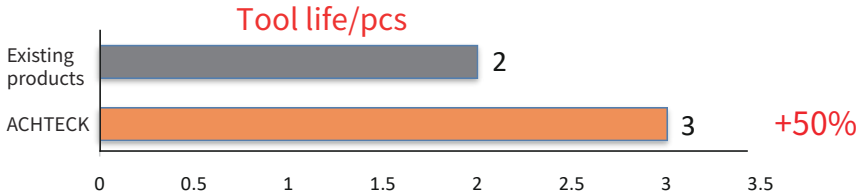
No.	Insert	Product code	Stock
1		ADMT 11T308R-MM4 AP251U	●
2		ADMT 180612R-MR6 AP251U	●
3		APKT 1705PER-DT AP251U	●
4		APKT 170516R-DT AP251U	●
5		APMT 1135PDER AP251U	●
6		APMT 1604PDER AP251U	●
7		LNHU 130608ER-MR2 AP251U	●
8		LNMX 060410R-MM3 AP251U	●
9		LNMX 060410R-MM4N AP251U	●
10		LNMX 100512R-MM3 AP251U	●
11		LNMX 100512R-MM4 AP251U	●
12		ODHT 0605APEN-MM3 AP251U	●
13		RPMT 1204MOE AP251U	●

AP251U product list

No.	Insert	Product code	Stock
14		RPMW 1003MOE-HR2 AP251U	●
15		RPMW 10T3MOE-HR2 AP251U	●
16		SDMT 09T304EN-MM3 AP251U	●
17		SDMT 120412EN-MM3 AP251U	●
18		SNGX 1206ANN-MM4 AP251U	●
19		SNGX 1206ZNN-MM4 AP251U	●
20		SNMX 120612R-MM4 AP251U	●
21		TDMT 150508R-MM4 AP251U	●
22		TDMT 150512R-MM4 AP251U	●
23		TDMT 150516R-MM4 AP251U	●
24		XEMT 120512ER-MR6 AP251U	●
25		XNMU 0705ANN-MM4 AP251U	●

AP251U Case study 1

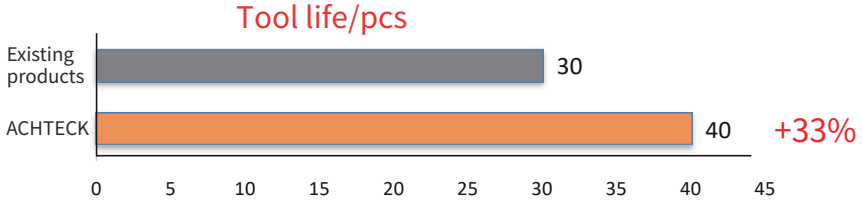
Workpiece: Mounting seat
Material: C45
Insert: TDMT 150508R-MM4 AP251U
Cutter: ASM90-063-Z05-A22R-TD15-C
Operation: Rough milling counterbore
Cutting parameter:
Vc=220 m/min
ap=2 mm
fz=0.2 mm
Coolant: Dry cutting



Test report from an enduser

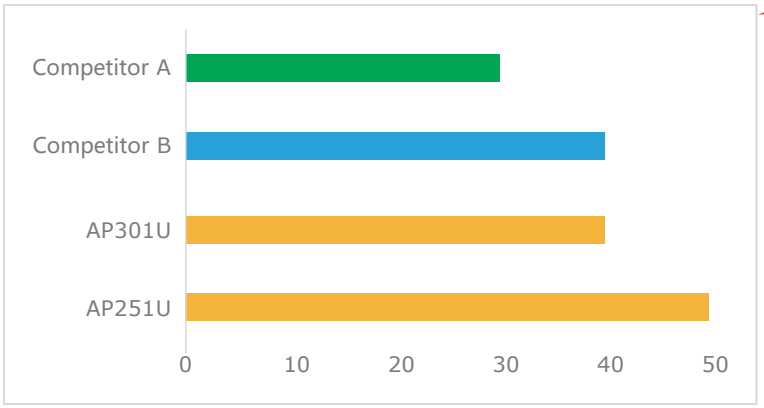
AP251U Case study 2

Workpiece: Gear shaft
Material: 42CrMo
Insert: ADMT 11T308R-MM4 AP251U
Cutter: D20-Z02
Operation: Rough milling key slot
Cutting parameter:
Vc=200 m/min
ap=3 mm
fz=0.1 mm
Coolant: Dry cutting



Test report from an enduser

Lab test result of AP251U grade



AP251U's tool life is+25% higher in average

Workpiece：Test workpiece
Material: 42CrMo
Insert: TDMT 150508R-MM4 AP251U
Cutter：ASM90-080-Z06-A27R-TD15-C
Cutting parameter:
Vc=220m/min
ap=2 mm
ae=60 mm
fz=0.2 mm
Coolant: Wet cutting

Cutting parameter recommendation of AP251U

Materials						AP251U cutting parameter range		
ISO	Material classification			Hardness (HB)	Tensile strength (N/mm^2)	Vc (m/min)		
						1/10	1/5	1/1
P	Unalloyed steel	C≤0.25%	Annealing	125	428	320	280	240
		0.25＜C≤0.55%	Annealing	190	639	290	240	200
		0.25＜C≤0.55%	Tempering	210	708	260	210	170
		C＞0.55%	Annealing	190	639	290	240	200
		C＞0.55%	Tempering	300	1013	210	170	130
		Free cutting steel (short-chip)	Annealing	220	745	250	200	160
	Low carbone alloyed steel	Annealing		175	591	290	250	200
		Tempering		285	960	250	210	160
		Tempering		380	1282	230	190	140
		Tempering		430	1477	190	150	110
	High-alloyed steel and high-alloyed tool steel	Annealing		200	675	220	190	160
		Quenching and tempering		300	1013	170	140	110
		Quenching and tempering		400	1361	150	120	90
	Stainless steel	Ferrite/Martensite, Annealing		200	675	190	160	130
		Martensite, Tempering		330	1114	160	120	90
M	Stainless steel	Austenite, Quenching		200	675	180	150	120
		Austenite, Precipitation Dispersion Hardening Stainless Steel		300	1013	160	130	100
		Austenite Ferrite, Duplex stainless steel		230	778	170	140	110