

**CVD Coated Grades**




Class	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (µm)	Characteristics	Old Grades
<b>P</b> Steel	AC810P	91.0	2.2	Super FF Coat	18	A new P10 grade with excellent wear resistance that features stability and longer tool life. Utilises a special carbide substrate with Super FF Coat for high to medium speed cutting.	AC700G
	AC820P	90.1	2.2	Super FF Coat	14	A P20 grade that features stability and longer tool life. Employs special carbide substrate and Super FF Coat to improve on P20 wear and fracture resistance.	AC2000
	AC830P	89.4	2.6	Super FF Coat	8	Stable long-life grade employs special tough, carbide substrate and Super FF Coat. Improves on P30 grade fracture resistance and approaches P20 grade in terms of wear resistance.	AC3000
	AC630M	89.5	2.7	Super FF Coat	5	Superior performance in continuous and light cutting, and other low-speed applications that require sharp edges.	AC230
<b>M</b> Stainless Steel	AC610M	91.0	2.2	Super FF Coat	5	A high efficiency M10 grade featuring improved wear resistance during stainless steel cutting. Employs special, ultra-hard substrate and thin Super FF Coat.	—
	AC6030M	90.0	2.7	Absotech Coat	5	A general purpose grade featuring improved wear and fracture resistance during stainless steel cutting. Utilises a special tough carbide substrate with our patented Absotech Coat.	AC630M
<b>K</b> Cast Iron	AC405K	92.0	2.4	Super FF Coat	18	Employs an ultra-hard substrate and ultra-hard Super FF Coating to provide excellent resistance to wear and plastic deformation. Suitable for high-speed continuous cutting of cast iron.	AC410K
	AC415K	91.1	2.5	Super FF Coat	18	Employs a special dedicated ultra-hard substrate that is also suitable for interrupted cutting and ultra-hard Super FF Coating to provide stability and long tool life in a wide range of processes. First recommended grade for cast iron turning.	AC410K
	AC420K	91.1	2.5	Super FF Coat	12	A new, extremely versatile grade that can be used for rough, interrupted cutting of ductile and grey cast iron. Employs special, ultra-hard carbide substrate and Super FF Coat to provide stability and long tool life.	AC700G
	AC820P	90.1	2.2	Super FF Coat	14	A grade suited to heavy interrupted cutting of ductile cast iron.	AC2000

**PVD Coated Grades**


Class	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (µm)	Characteristics	Old Grades
<b>P</b> Steel	T1500Z (Cermet)	92.0	2.2	Brilliant Coat	3	• Brilliant Coat PVD coating gives excellent lubricity for higher quality machining. General-purpose coated cermet grade that can maintain high-quality machined surfaces and also gives excellent wear resistance.	T2000Z
	T3000Z (Cermet)	91.3	2.4	ZX Coat	3	• An ultra-reliable coating grade with tough cermet substrate.	—
	AC530U	91.4	3.3	Super ZX Coat	3	• For interrupted and general steel cutting. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a fine-grained super tough substrate for excellent fracture resistance.	ACZ310
	AC520U	91.7	3.0	Super ZX Coat	3	• Interrupted machining and stainless steel machining. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a super tough substrate for excellent fracture resistance.	EH520Z EH20Z
<b>M</b> Stainless Steel	AC6040M	91.4	3.8	Absotech Coat	3	• Heavy interrupted machining and stainless steel machining. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a fine-grained super tough substrate for excellent fracture resistance.	ACZ310 AC530U
<b>K</b> Cast Iron	AC510U	92.6	2.6	Super ZX Coat	3	• General to interrupted machining of cast iron and ductile cast iron. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a fine-grained super tough substrate for excellent fracture resistance.	EH510Z EH10Z
<b>S</b> Exotic Alloy	AC510U	92.6	2.6	Super ZX Coat	3	• Finishing to medium cutting of exotic alloys. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers. Superior wear and heat resistance, and stable, long tool life.	EH510Z EH10Z
	AC520U	91.7	3.0	Super ZX Coat	3	• Medium to rough cutting of exotic alloys. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers. Superior wear and heat resistance, and stable, long tool life even in interrupted cutting.	EH520Z EH20Z
Small Product Machining	ACZ150	91.4	3.3	ZX Coat	1	• For small tools, and high-precision finishing to general finishing applications. • TiN ultra-thin coating and fine-grained, super tough substrate combine to give good edge sharpness and superior cut finish.	—








## Ceramic Grades For Turning

Class	Grade	Hardness (HRA)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Characteristics
 <b>K</b> Cast Iron	SN2000K	94.9	1.2	—	—	Contains Si <sub>3</sub> N <sub>4</sub> . Suitable for medium to finishing of cast iron.
 <b>S</b> Exotic Alloy	WX2000	90.0	1.2	—	—	Enhanced with SiC whiskers. For heat-resistant alloy and ultra-hard roll cutting.
 <b>H</b> Hardened Steel	NB90S	95.0	1.0	TiAlN	2	Ultra-strong. Contains Al <sub>2</sub> O <sub>3</sub> and ZX Coat. Continuous low-speed turning of hardened steel.



## Ceramic Grades For Milling

Class	Grade	Hardness (HRA)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Characteristics
 <b>K</b> Cast Iron	SN2100K	93.2	0.7	—	—	Contains Si <sub>3</sub> N <sub>4</sub> . For high speed finish milling of cast iron.

## Uncoated Carbide Grades


Application	Grade	Hardness (HRA)	TRS (GPa)	Young Modulus (GPa)	Thermal Conductivity (W/m·°C)	Compressive Strength (GPa)	Linear-Thermal Expansion Coefficient (X 10 <sup>-6</sup> /°C)
 <b>P</b> Steel	A30N	91.2	2.2	520	-	-	-
 <b>M</b> Stainless Steel	EH510	92.6	2.6	-	-	-	-
	EH520	91.7	3.0	-	-	-	-
 <b>K</b> Cast Iron	BL130	94.3	2.9	-	-	-	-
	H1	92.9	2.1	650	109	6.1	4.7
	EH10	92.4	3.4	640	105	-	4.5
	EH510	92.6	2.6	-	-	-	-
	EH520	91.7	3.0	-	-	-	-
	G10E	91.1	2.2	620	105	5.7	-
 <b>N</b> Non-Ferrous Metal	H1	92.9	2.1	650	109	6.1	4.7
 <b>S</b> Exotic Alloy	EH510	92.6	2.6	-	-	-	-
	EH520	91.7	3.0	-	-	-	-

CBN Grades

Class	Grade	Binder	Carbon Content (%)	Grain Size (µm)	Hardness HV (GPa)	TRS (GPa)	Series	Characteristics	
	<b>BNC2010</b>	TiCN	50 to 55	2	30 to 32	1.10 to 1.20	Coated SUMIBORON (Coated)	Highly wear resistant coating makes this grade suited for high speed finishing.	
	<b>BNC2020</b>	TiN	70 to 75	5	34 to 36	1.20 to 1.30		High crater wear and breakage resistance make this grade suited for high load and interrupted cutting.	
	<b>BNC100</b>	TiN	40 to 45	1	29 to 32	1.05 to 1.15		Highly wear resistant coating makes this grade suited for high speed finishing.	
	<b>BNC160</b>	TiN	60 to 65	3	31 to 33	1.10 to 1.20		Stable, high precision finishing of hardened steel.	
	<b>BNC200</b>	TiN	65 to 70	4	34 to 36	1.15 to 1.25		Tough substrate with high wear resistant coating provide longer tool life.	
	<b>BNC300</b>	TiN	60 to 65	1	33 to 35	1.15 to 1.25		Suited for finishing when there is a combination of continuous and interrupted cutting.	
	Sintered Components	<b>BNX10</b>	TiCN	40 to 45	3	27 to 31	0.80 to 0.90	SUMIBORON (Uncoated)	Optimum wear resistance. Suited to continuous, high-speed cutting.
		<b>BN1000</b>	TiCN	40 to 45	1	27 to 31	0.90 to 1.00		Ultimate wear and fracture resistance. Suited to high-speed cutting.
		<b>BNX20</b>	TiN	55 to 60	3	31 to 33	0.95 to 1.10		Crater resistant grade, suitable for high efficiency cutting under high temperature conditions.
		<b>BNX25</b>	TiN	65 to 70	4	29 to 31	1.00 to 1.10		Excellent fracture resistance during high speed cutting. Suited to high speed interrupted cutting of hardened steel.
		<b>BN2000</b>	TiN	50 to 55	2	31 to 34	1.05 to 1.15		A general purpose grade for hardened steel that provides a high degree of fracture and wear resistance.
<b>BN350</b>		TiN	60 to 65	1	33 to 35	1.20 to 1.30	High cutting edge strength, suited to heavy interrupted cutting.		
<b>BN7500</b>		Co Compound	90 to 95	1	41 to 44	1.40 to 1.50	Maintains optimum cutting edge sharpness. Suited for finishing of sintered alloy.		
<b>BN700</b>		Co Compound	90 to 95	2	40 to 43	1.20 to 1.30	Maintains good wear and fracture resistance in rough cutting of sintered components.		
<b>BN7000</b>		Co Compound	90 to 95	2	41 to 44	1.30 to 1.40	Improved wear and fracture resistance in rough cutting of sintered components.		
		<b>BN700</b>	Co Compound	90 to 95	2	40 to 43	1.20 to 1.30		Coated SUMIBORON (Coated)
	<b>BN7000</b>	Co Compound	90 to 95	2	41 to 44	1.30 to 1.40	Improved wear and fracture resistance in rough cutting of cast iron and exotic alloy.		
	<b>BNS800</b>	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.10	100% solid CBN structure with good thermal impact resistance.		
	<b>BNC500</b>	TiC	60 to 65	4	32 to 34	1.00 to 1.10	Substrate with excellent wear resistance and coating makes this grade suited for hard-to-cut cast iron.		



## PCD Grades

Class	Grade	Binder	Carbon Content (%)	Grain Size (µm)	Hardness HV (GPa)	TRS (GPa)	Characteristics
	<b>DA1000</b>	Co	90 to 95	Up to 0.5	110 to 120	≈ 2.60	High density sintered material made of ultra-fine diamond particles that demonstrates optimum wear and fracture resistance, and edge sharpness.
	<b>DA2200</b>	Co	85 to 90	0.5	90 to 100	≈ 2.45	Sintered material made of ultra-fine diamond particles that demonstrates optimum wear and fracture resistance, and edge sharpness.
	<b>DA150</b>	Co	85 to 90	5	100 to 120	≈ 1.95	Sintered material made of fine diamond particles that provides a good balance of workability and wear resistance.
	<b>DA90</b>	Co	90 to 95	50	100 to 120	≈ 1.10	Sintered material made of coarse diamond particles with high diamond content and excellent wear resistance.

Turning

**P**  
Steel

**Carbide Grades**

Steel						
Application	High Speed			Medium	P30 (M30)	P40 (M40)
ISO Classification	-	P05	P10	P20		
COATED CARBIDE	AC810P		AC820P		AC830P	
	T1500Z		T3000Z			
	T1500A					
COATED CERMET						
CERMET						
CERAMIC						
CARBIDE					A30	

**K**  
Cast Iron

Cast Iron				
High Speed	Finishing	Medium		
—	K01	K10	K20	K30
AC405K/		AC415K		
		AC420K		
		AC820P		
SN2000K				
SN2100K				
		G10E		

**M**  
Stainless Steel


Stainless Steels		
Application	Finishing~Light Cut	Medium~Roughing
COATED CARBIDE	AC610M	
	AC630M	
	AC6030M	
	AC520U	
	AC6040M	
	AC530U	
CERMET	T1500A	

**S**  
Exotic Metal

Exotic Materials		
Application	Finishing~Light Cut	Medium
COATED CARBIDE	AC510U	
	AC520U	
	AC530U	
CARBIDE	EH510	
	EH520	
CERAMIC	WX2000	
CBN	BN7000	
	BNS800	





**Ceramic Grades**

For Turning	High-Speed	Finishing to Light		Medium	Rough to Heavy	
	—	01	10	20	30	40
	SN200K					
	WX2000					
	NB90S					

For Milling	High-Speed	Finishing to Light		Medium	Rough to Heavy	
	—	01	10	20	30	40
	SN2100K					

**CBN Grades**

Class	Series	Finishing to Light		Medium	Rough to Heavy
		H01	H10	H20	H30
	Classification				
	Coated SUMIBORON	BNC2010		BNC2020	
		BNC100	BNC160		
		BNC200			BNC300
		BNX10, BN1000			
	Uncoated SUMIBORON	BN2000		BNX20	BNX25, BN350
Sintered Components	Classification	01	10	20	30
	Uncoated SUMIBORON	BN7000, BN700			
		BN7500			
	Classification	K01	K10	K20	K30
	Coated SUMIBORON	BNC500			
		BN7000, BN700			
	Uncoated SUMIBORON	BN7500			BNS800

