

- Ideal machining conditions
- ⊗ Normal machining conditions
- ⊗ Unfavourable machining conditions

CNMG	L	I.C	S	d
09 03	9.7	9.525	3.18	3.81
12 04	12.9	12.7	4.76	5.16

**Turning inserts**

CN** negative insert				HC <sup>1</sup> (CVD)											HC <sup>1</sup> (PVD)			HT	HC <sup>2</sup>	HW							
				P	M	K	N	S	H																		
ISO	r	a <sub>p</sub>	f	YB6315	YBC152	YBC252	YBC251	YBC352	YBC351	YBM153	YBM253	YBD052	YBD102	YB7315	YBD152	YBD152C	YBG101	YBG102	YBG105	YB9320	YBG205	YBG202	YNG151	YNT251	YNG151C	YD101	YD201
WG 	<b>CNMG120404-WG</b>	0.4	0.25-3.00	0.05-0.25	○																						
	<b>CNMG120408-WG</b>	0.8	0.5-5.0	0.15-0.70	● ●							○		○													
	<b>CNMG120412-WG</b>	1.2	0.8-6.0	0.20-0.75	●																						
ADF 	<b>CNMG120404-ADF</b>	0.4	0.5-3.0	0.05-0.30	●																						
	<b>CNMG120408-ADF</b>	0.8	0.5-3.0	0.1-0.4	●																						
	<b>CNMG120412-ADF</b>	1.2	0.8-3.0	0.15-0.50	○																						
DF 	<b>CNMG090304-DF</b>	0.4	0.25-1.50	0.07-0.30	● ●																						
	<b>CNMG090308-DF</b>	0.8	0.3-1.5	0.1-0.3	● ○																						
	<b>CNMG120404-DF</b>	0.4	0.25-1.50	0.07-0.30	● ● ○																						
	<b>CNMG120408-DF</b>	0.8	0.3-1.5	0.1-0.4	● ● ○																						
	<b>CNMG120412-DF</b>	1.2	0.35-1.50	0.10-0.35	● ●																						
EF 	<b>CNMG090304-EF</b>	0.4	0.5-2.0	0.05-0.20						○										● ○							
	<b>CNMG090308-EF</b>	0.8	0.5-2.0	0.05-0.25						○											● ○						
	<b>CNMG120404-EF</b>	0.4	0.5-2.5	0.05-0.20					○	●							○				● ○						
	<b>CNMG120408-EF</b>	0.8	0.5-2.5	0.05-0.25					○	●							○				● ○						
	<b>CNMG120412-EF</b>	1.2	0.5-2.5	0.10-0.35						○											○ ○						
SF 	<b>CNMG090304-SF</b>	0.4	0.05-0.50	0.05-0.30																					●		
	<b>CNMG090308-SF</b>	0.8	0.05-0.50	0.10-0.35																					●		
	<b>CNMG120404-SF</b>	0.4	0.1-1.5	0.05-0.30																					●		
	<b>CNMG120408-SF</b>	0.8	0.1-1.5	0.10-0.35																					●		

● Ex stock ○ On demand  
 YBC152F, YBC252F, YBM153F, YBM253F available

HC<sup>1</sup> Coated carbide  
 HT Uncoated cermet  
 HC<sup>2</sup> Coated cermet  
 HW Uncoated carbide

Tool holder					
DCLNR/L	PCBNR/L	PCLNR/L	MCBNR/L	MCLNR/L	S***-PCLNR/L
Kr: 95°	Kr: 75°	Kr: 95°	Kr: 75°	Kr: 95°	Kr: 95°
A197	A204	A205	A218	A219	A284

System code > A42      Grade selection > A40      Technical info > A447      Cutting data > A324



## ISO standard

**T N M G 22 04 08 (N) – DM**

**1 2 3 4 5 6 7 8 9**

Insert shape		
A	B	C
D	E	H
K	L	M
O	P	R
S	T	T
V	W	Z Special

**1**

Clearance angle	
A	B
C	D
E	F
G	N
P	O Special

**2**

Tolerance class			
Code	I.C [mm]	m [mm]	S [mm]
A	±0,025	±0,005	±0,025
C	±0,025	±0,013	±0,025
E	±0,025	±0,025	±0,025
F	±0,013	±0,005	±0,025
G	±0,025	±0,025	±0,130
H	±0,013	±0,013	±0,025
J	±0,05–0,15	±0,005	±0,025
K	±0,05–0,15	±0,013	±0,025
L	±0,05–0,15	±0,025	±0,025
M	±0,05–0,15	±0,08–0,20	±0,130
N	±0,05–0,15	±0,08–0,20	±0,025
U	±0,08–0,25	±0,13–0,38	±0,130

**3**

Fastening features (metric)	
Insert shape	
A	B
C	F
G	H
J	M
N	Q
R	T
U	W
X Special	

**4**

Cutting edge length l [mm]								
I.C [mm]	Insert shape							
3,97	06							
5,0	05							
5,56	09							
6,0	06							
6,35	06	07			11	11		
8,0	08							
9,525	09	11	09	09	16	16	06	16
10,0	10							
12,0	12							
12,7	12	15	12	12	22	22	08	
15,875	16		15	15	27			
16,0	19							
19,05	19		19	19	33			
20,0	20							
25,0	25	25	25					
25,4	25							
31,75	31							
32	32							

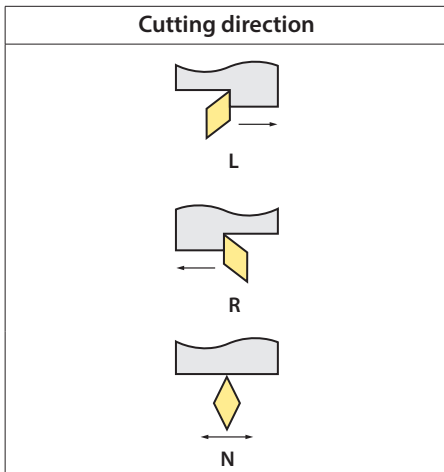
**5**

Insert thickness S [mm]			
Code	S	Code	S
00	0,79	T5	5,95
T0	0,99	06	6,35
01	1,59	T6	6,75
T1	1,98	07	7,94
02	2,38	09	9,52
T2	2,58	T9	9,72
03	3,18	11	11,11
T3	3,97	12	12,70
04	4,76		
T4	4,96		
05	5,56		

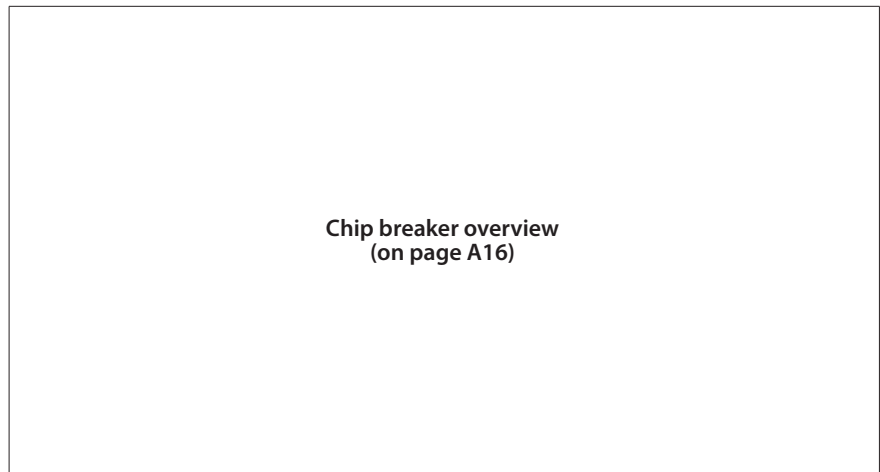
6

Nose radius r [mm]	
Code	r
00	–
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
20	2,0
24	2,4
32	3,2
X	Special
MO	Round inserts

7

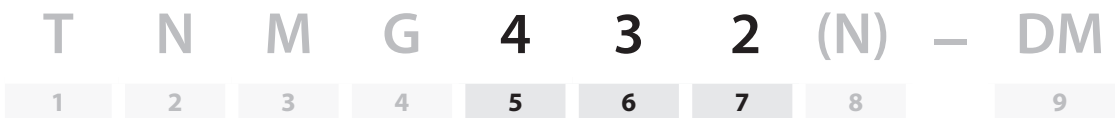


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9

## ANSI standard



Inner circle		
Code	[mm]	Pouce
2	6.35	0.250
3	9.525	0.375
4	12.7	0.500
5	15.875	0.625
6	19.05	0.750
8	25.4	1.000

5

Insert thickness		
Code	[mm]	Pouce
2	3.18	0.125
3	4.76	0.187
4	6.35	0.250
5	7.94	0.313
6	9.52	0.375

6

Nose radius		
Code	[mm]	Pouce
0	0.2	0.008
1	0.4	0.016
2	0.8	0.031
3	1.2	0.047
4	1.6	0.063
5	2.0	0.079
6	2.4	0.094

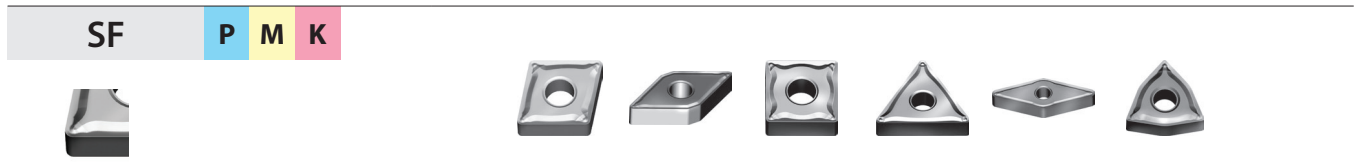
7

**A**

Turning

## Negative inserts

Finishing



Double sided chip breaker in combination with cermet grades. Geometry with high sharpness for improved chip control and great surface quality. Ideal for machining with small cutting depths and feed rates.

**B**

Milling



Double sided chip breaker with good chip control. Suitable for finishing and medium machining of steel and cast iron.

**C**

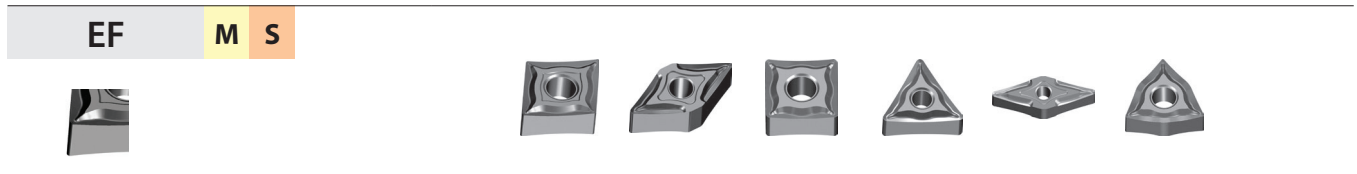
Drilling



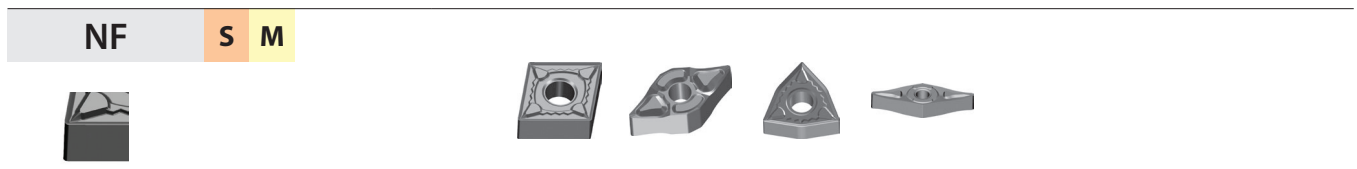
Ground, double sided chip breaker with good chip control. Wide range of application due to excellent balance of sharpness and cutting edge stability.

**D**

Technical Information



Double sided chip breaker with sharp cutting edge and large rake angle for finishing of stainless steel.

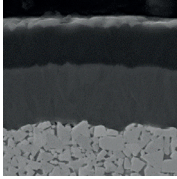
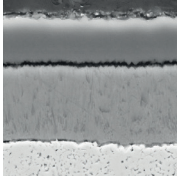
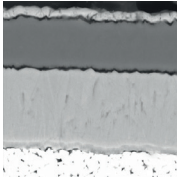
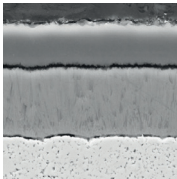
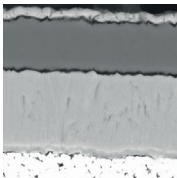
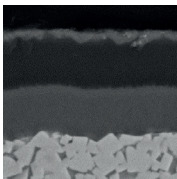
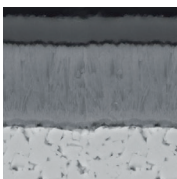
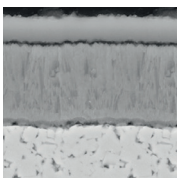


Double sided chip breaker with ground cutting edge and large rake angle for finishing. E-tolerance for high repeatability.

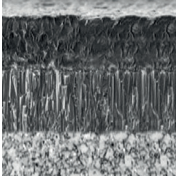
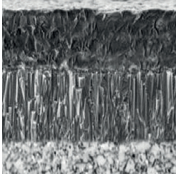
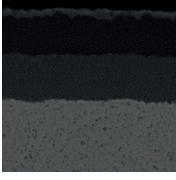
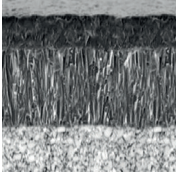
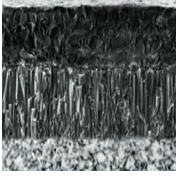
**E**

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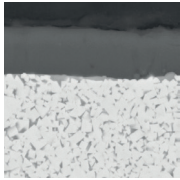
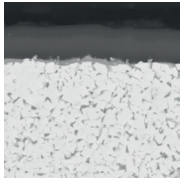
## Coated cemented carbide CVD

Grade	ISO	Micro structure	Grade description
<b>A</b>		Turning	
<b>YB6315</b>	P10 – 20		CVD coated P10–P20 carbide grade for finishing to medium operation of steel, casting steel and high chrome material. Outstanding performance under high cutting speed and temperature with excellent wear resistance.
<b>YBC152</b>	P10 – 20		CVD coated P10–P20 carbide grade for finishing to medium operation of steel and casting steel. Outstanding performance under higher cutting speed and temperature with excellent wear resistance.
<b>B</b>		Milling	
<b>YBC251</b>	P20 - P35		CVD coated P20–P35 carbide grade for medium operation to roughing of steel and casting steel in lower cutting speed.
<b>YBC252</b>	P20 - P35		CVD coated P20–P35 carbide grade for medium operation to roughing of steel and casting steel. Optimal performance of wear resistance and toughness for a wide application field.
<b>C</b>		Drilling	
<b>YBC351</b>	P20 - P40		CVD coated P20–P40 carbide grade for roughing operation of steel and casting steel in lower cutting speed.
<b>YBC352</b>	P20 - P40		CVD coated P20–P40 carbide grade for roughing operation of steel and casting steel. Optimal performance of wear resistance and toughness for a wide application field.
<b>D</b>		Technical Information	
<b>YBM153</b>	M10 - M25		CVD coated M10–M25 carbide grade for finishing to medium application in stainless steel. High wear resistance and capability against plastic deformation at higher cutting speed.
<b>YBM253</b>	M15 - M35		CVD coated M15–M35 carbide grade for medium to roughing operation in stainless steel with wide application field. High wear resistance and capability against plastic deformation at higher cutting speed.
<b>E</b>		Index	

**Coated cemented carbide CVD**

Grade	ISO	Micro structure	Grade description
<b>YBD052</b>	K05 - K15		CVD coated K05-K15 carbide grade for cast iron material, special grey cast iron. Excellent wear resistance in higher cutting speed and dry machining.
<b>YBD102</b>	K05 - K20		CVD coated K05-K20 carbide substrate. Optimized for medium operation of cast iron, special nodular cast iron and hard steel at high cutting speed.
<b>YB7315</b>	K10 - K25		CVD coated K10-K25 carbide substrate. Optimized for medium to roughing operation of cast iron. Improved wear resistance and toughness at high cutting speed.
<b>YBD152</b>	K10 - K25		CVD coated K10-K25 carbide substrate. Optimized for medium to roughing operation of cast iron. Good wear resistance and toughness at higher cutting speed.
<b>YBD152C</b>	K10 - K25		Thick Al <sub>2</sub> O <sub>3</sub> CVD coated K05-K25 carbide substrate. Optimized for medium to roughing operation of cast iron. Higher wear resistance and toughness at higher cutting speed in combination with TC chip breaker.

**Coated cemented carbide PVD**

Grade	ISO	Micro structure	Grade description
<b>YBG102</b>	S05 - S15		PVD coated S05-S15 carbide substrate for finishing to medium application of super alloy material, stainless steel and aluminum. Good wear resistance in a wide application field.
<b>YBG105</b>	S05 - S20		PVD multilayer coated S05-S20 carbide substrate for finishing to medium application of super alloy material but also stainless steel. Good wear resistance and thermal stability in a wide application field.

**A**

Turning

**B**

Milling

**C**

Drilling

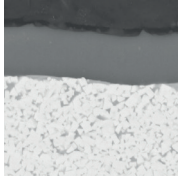
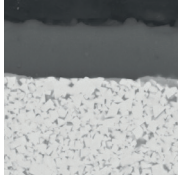
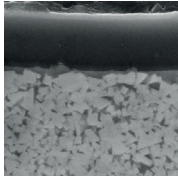
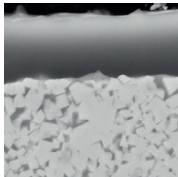
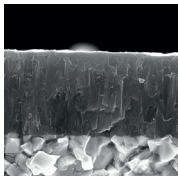
**D**Technical  
Information**E**

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**A**

Turning

## Coated cemented carbide PVD

Grade	ISO	Micro structure	Grade description
<b>YBG202</b>	P10 - P30 M10 - M25		PVD coated M10–M25/P10–P30 carbide substrate for finishing to medium application of stainless steel and steel (milling). Good wear resistance in a wide application field.
<b>YBG205</b>	P10 - P30 M20 - M40 S15-S25		PVD multilayer coated M20–M40/S15–S25/P10–P30 carbide substrate for finishing to medium application of stainless steel, super alloy and steel (milling). Good wear resistance and thermal stability in a wide application field.
<b>YB9320</b>	P10 - P30 M10 - M25		PVD multilayer coated M10–M25/P10–P30 carbide substrate for finishing to medium application of stainless steel, super alloy and steel (grooving/milling). Optimized coating stability for higher wear resistance and thermal stability in a wide application field.
<b>YBG302</b>	P15 - P30 M25 - M40		PVD coated M25–M40/P15–P30 carbide substrate for medium roughing application of stainless steel and steel (milling). Good wear resistance and toughness.
<b>YBG101</b>	N05 - N20		PVD coated N05–N20 carbide substrate for finishing to medium application in aluminum material. Coating only on the top face, in combination with the aluminum chip breaker, prevents build up edges and gives a smooth cut.

**B**

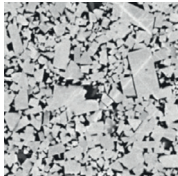
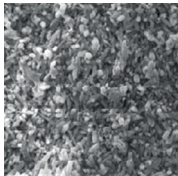
Milling

**C**

Drilling

**D**

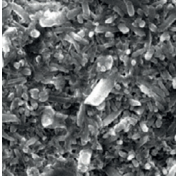
## Ceramic

Grade	ISO	Micro structure	Grade description
<b>CA1000</b>	K10 - K25 H10 - H25		Uncoated H10–H25/K10–K25 mixed ceramic grade for finishing to medium operation in hardened steel and nodular cast iron. Good wear resistance and toughness.
<b>CN1000</b>	K05 - K15		Uncoated K05–K15 Si <sub>3</sub> N <sub>4</sub> ceramic grade for finishing to medium operation in grey cast iron. Good wear resistance and thermal stability.

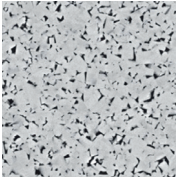
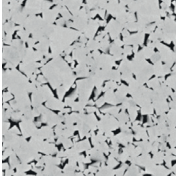
**E**

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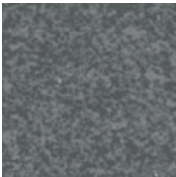
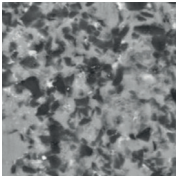
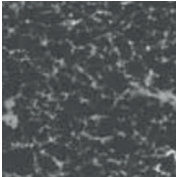
**Ceramic**

Grade	ISO	Micro structure	Grade description
<b>CN2000</b>	K10 - K30		Uncoated K10–K30 Si <sub>3</sub> N <sub>4</sub> Ceramic grade for medium operation in grey cast iron also with interrupted cut. Good wear resistance, toughness and thermal stability.

**Uncoated cemented carbide**

Grade	ISO	Micro structure	Grade description
<b>YD101</b>	N05 - N20 K05 - K20		Uncoated N05–N20/K05–K20 carbide substrate for fine to medium application in aluminum and other material.
<b>YD201</b>	N10 - N30 K10 - K30		Uncoated N10–N30/K10–K30 carbide substrate for medium application in aluminum and other material.

**CBN**

Grade	ISO	Micro structure	Grade description
<b>YCB111</b>	H01 - H10		Uncoated, brazed H01–H10 CBN grade for fine finishing operation in hardened steel with continuous cut. High wear resistance and productivity at higher cutting speed.
<b>YCB121</b>	H10 - H25		Uncoated, brazed H10–H25 CBN grade for fine to medium application in hardened steel from continuous to light interrupted cut. Good wear resistance and toughness for universal use.
<b>YCB131</b>	H20 - H35		Uncoated, brazed H20–H35 CBN grade for fine to medium application in hardened steel with interrupted cut. Good wear resistance and optimized toughness for safe process.

**A**

Turning

**B**

Milling

**C**

Drilling

**D**Technical  
Information**E**

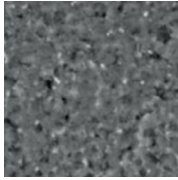
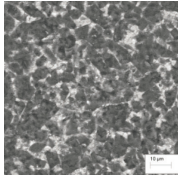
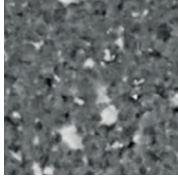
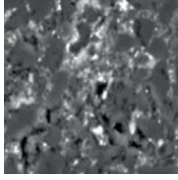
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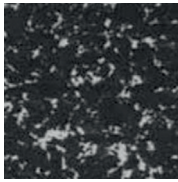
## CBN

Grade	ISO	Micro structure	Grade description
YCB211	K10 - K25		Uncoated, brazed K10–K25 CBN grade for fine to medium machining of cast iron. Good wear resistance and thermal conductivity.
YZB121	H10 - H25		Uncoated H10–H25 solid CBN grade for medium application in hardened steel, HSS or bearing steel also in light interrupted cut. Good wear resistance and toughness.
YZB221	K10 - K25		Uncoated K10–K25 solid CBN grade for medium application in grey cast iron, nodular cast iron and Ni/Cr basic alloy, also in light interrupted cut. Good wear resistance and thermal conductivity.
YZB231	K20 - K30		Uncoated K20–K30 solid CBN grade for medium to roughing application in grey cast iron and nodular cast iron in interrupted cut. Good wear resistance, toughness and thermal conductivity.

**C**

Drilling

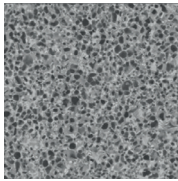
## PCD

Grade	ISO	Micro structure	Grade description
YCD421	N01 - N10		Uncoated, brazed N01–N10 PCD grade for fine finishing operation of aluminum alloys less than 12 % Si, composites, copper/magnesium and other alloys. Medium grain size grade with good wear resistance for a wide application field.

**D**

Technical Information

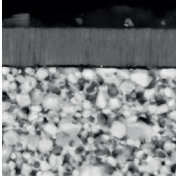
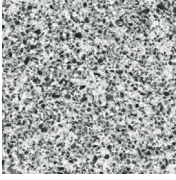
## Cermet

Grade	ISO	Micro structure	Grade description
YNG151	P05 - P15		Uncoated P05–P15 cermet grade for fine finishing operation of steel and stainless steel. Good resistance against plastic deformation for good surface finishing.

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**Cermet**

Grade	ISO	Micro structure	Grade description
<b>YNG151C</b>	P05 – P15		PVD coated P05–P15 cermet grade for fine finishing operation of steel and stainless steel. Good wear resistance and capability against plastic deformation for good surface roughness.
<b>YNT251</b>	P10 - P25		Uncoated P10–P25 cermet grade for fine finishing to medium operation of steel and stainless steel. Good wear resistance and toughness. Suitable also in light interrupted cut.

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## Application fields of grades – general turning

	ISO	HC <sup>1</sup> (CVD)	HC <sup>1</sup> (PVD)	HT	HC <sup>2</sup>	Ceramic	HW	CBN	PCD
<b>P</b>	P01								
	P10	YB6315 YBC152		YNG151 YNT251	YNG151C	CA1000			
	P20	YBC251 YBC252							
	P30	YBC351 YBC352							
	P40								
<b>M</b>	M01		YBG105	YNG151	YNG151C				
	M10	YBM153	YBG202	YBG205					
	M20	YBM253	YB9320						
	M30								
	M40								
<b>K</b>	K01	YBD052				CN1000		YCB211	YZB221
	K10	YBD102					YD201	YCB211	YZB221
	K20	YBD152				CN2000		YCB211	YZB221
	K30	YBD152C YB7315						YCB211	YZB221
<b>N</b>	N01								
	N10		YBG102				YD101		YCD421
	N20						YD201		
	N30								
<b>S</b>	S01								
	S10		YBG102 YBG105	YNT251	YNG151C				
	S20		YB9320	YBG202 YBG205					
	S30								
<b>H</b>	H01							YCB111	
	H10							YCB121	YZB121
	H20							YCB121	YZB121
	H30							YCB131	

<b>P</b>	Steel
<b>M</b>	Stainless steel
<b>K</b>	Cast iron

<b>N</b>	Non-ferrous metals
<b>S</b>	Heat-resistant alloys
<b>H</b>	Hardened materials

HC <sup>1</sup>	Coated carbide
HT	Uncoated cermet
HC <sup>2</sup>	Coated cermet
HW	Uncoated carbide

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