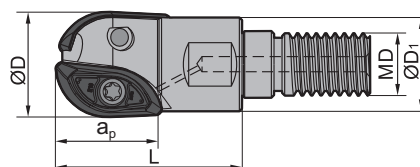
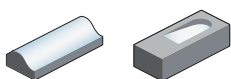


Profile milling

QCH - XPHT



Article	*	Stock	Dimensions [mm]					Teeth	kg	Inserts
			ØD	ØD ₁	a _p	L	MD			
QCH-16-XPHT16-M10	●		16	17	16	28	10	2	0.036	XPHT16
QCH-20-XPHT20-M12	○		20	19	20	30	12	2	0.051	XPHT20
QCH-25-XPHT25-M12	●		25	24	25	35	12	2	0.071	XPHT25
QCH-30-XPHT30-M16	●		30	29	30	45	16	2	0.14	XPHT30
QCH-32-XPHT32-M16	●		32	30	32	45	16	2	0.162	XPHT32

● Ex stock ○ On demand

* With internal cooling

Spare parts						
	Insert	XPHT16	XPHT20	XPHT25	XPHT30	XPHT32
	ØD	16	20	25	30	32
	Screw (insert)	I60M2.5×6.5 (1.0 Nm)		I60M4×10 (3.4 Nm)	I60M5×13.2 (6.7 Nm)	I60M5×13.2 (6.7 Nm)
	Screw (insert)		I60M3.5×08TT (2.7 Nm)			
	Wrench (insert)		WT10IP			
	Wrench (insert)				WT20IT	WT20IT
	Wrench (insert)	WT07P				
	Wrench (insert)			WT15S		
						

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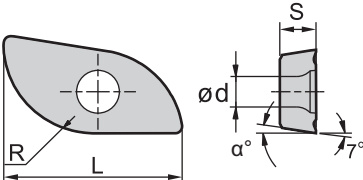
E

Index

XPHT	L	S	d
16	16	3.18	3.1
20	20	3.97	4
25	25	4.76	4.7
30	30	6.35	5.8
32	32	6.35	5.8

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

Milling inserts

XP** milling insert			HC ¹ (CVD)						HC ¹ (PVD)						HT	HC ²	HW																																																								
	P	     	     	   	 																																																																				

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

System code > B26

Grade selection > B24

Technical info > B527

Cutting data > B230

QCH – 35 – SDMT 09 – Q 18 – 03

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7

Series [mm]	
Code	Description
QCH	Indexable head system

1

Nominal diameter [mm]	
Code	Description
16	16
20	20
25	25
35	35
...	

2

Insert shape

3

Cutting edge length l [mm]	
A	
R	
S	

4

Thread type	
Code	Description
M	Metric
Q	Q thread

5

Thread size [mm]	
Code	Description
8	8
10	10
12	12
14	14
...	

6

Number of teeth

7



a Groove milling

b Square shoulder milling

c Profile milling

d Slot milling

e Face milling

f Chamfer milling

g Plunge milling

h Circular milling/Ramping

A

G 25 – QCH – Q 12 – 250 C – (ZJ) (115)

1

2

3

4

5

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7

8

9

Turning

Clamping form	
Code	Description
G	Cylindrical
XP	Weldon

Clamping diameter [mm]	
Code	Description
12	12
16	16
20	20
25	25
32	32

Series [mm]	
Code	Description
QCH	Indexable head system

1

2

3

B

Milling

Thread type	
Code	Description
M	Metric
Q	Q thread

Thread size [mm]	
Code	Description
8	8
10	10
12	12
14	14
...	

Total length [mm]	
Code	Description
85	85
150	150
200	200
...	

4

5

6

C

Drilling

Material	
Code	Description
C	Solid carbide
S	Steel

Shank	
Code	Description
ZJ	Conical
–	Cylindrically stepped

Taper length [mm]	
Code	Description
90	90
115	115
...	

7

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S P K N 12 04 ED T21K R – DM

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8

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10

Insert shape	
A	C
H	L
M	O
P	R
S	T
W	X Special
Z	Special

1

Clearance angle	
B	C
D	E
F	N
P	

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	±0,05–0,13	±0,005	±0,025
K	±0,05–0,13	±0,013	±0,025
L	±0,05–0,13	±0,025	±0,025
M	±0,05–0,13	±0,08–0,18	±0,130
N	±0,05–0,13	±0,08–0,18	±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

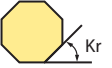
4

Cutting edge length l [mm]	
Insert shape	
A	C, M
H, O, P	L
R	S
T	W

5

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

6

Angle			
			
Code	Kr	Code	an
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	Special	F	25°
		G	30°
		N	0°
		P	11°
		Z	Special

7

Chamfer							
Code	Type	Code	Angle	Code	Width [mm]	Code	Position
F		0	5°	0	0,10	K	
E		1	10°	1	0,15	P	
T		2	15°	2	0,20	W	
S		3	20°	3	0,25	-	
		4	25°	4	0,30		
		5	30°	5	0,35		
				6	0,40		
				7	0,45		

8

Cutting direction	
Code	Description
R	Right
L	Left
N	Right and left

9

Chip breaker overview (on page B20)
--

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Guide for recommended cutting data – indexable milling

Indexable milling – group 1 (FMA07/11/12, FMD02, EMP09/13)

Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c (m/min)								
					HC (CVD)								
					YBC302		YBC401		YBD152		YBD252		
					a_p / D		a_p / D		a_p / D		a_p / D		
				1/1 3/4		1/5		1/1 3/4		1/5			
P	Unalloyed steel	ca. 0,15 % C	annealed	125	1	260	300	225	260				
		ca. 0,45 % C	annealed	190	2	225	255	195	225				
		ca. 0,45 % C	tempered	250	3	210	240	180	210				
		ca. 0,75 % C	annealed	270	4	185	210	160	185				
		ca. 0,75 % C	tempered	300	5	170	195	150	170				
	Low-alloyed steel		annealed	180	6	225	255	195	225				
			tempered	275	7	185	210	160	185				
			tempered	300	8	170	195	150	170				
			tempered	350	9	145	165	125	145				
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	115	130				
		hardened and tempered	325	11	95	105	80	95					
M	Stainless steel	ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K	Grey cast iron	perlitic/ferritic		180	16					370	430	320	370
	Cast iron with spheroidal graphite	perlitic (martensitic)		260	17					220	255	190	220
		ferritic		160	18					255	295	220	255
		perlitic		250	19					170	200	145	170
		ferritic		130	20					305	355	265	305
	Malleable cast iron	perlitic		230	21					205	240	175	205
N	Aluminium wrought alloys	cannot be hardened		60	22								
		hardenable	hardened	100	23								
	Cast aluminium alloys	$\leq 12\%$ Si, cannot be hardened		75	24								
		$\leq 12\%$ Si, hardenable	hardened	90	25								
		$> 12\%$ Si, cannot be hardened		130	26								
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27								
CuZn, CuSnZn			90	28									
CuSn, Pb-free copper, electrolytic copper			100	29									
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co base	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R _m 400	35								
α and β alloys		hardened	R _m 1050	36									
H	Hardened steel		hardened and tempered	55 HRC	37								
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39								
X	Non-metallic materials		hardened and tempered	55 HRC	40								
			Thermoplasts		41								
			Thermosetting plastics		42								
			Plastic, glass-fibre reinforced GFRP		43								
			Plastic, carbon fibre reinforced CFRP		44								
			Graphite		45								
	Wood		46										

Note: The given cutting values are guide values, which were determined under ideal conditions.

The values have to be adapted in individual cases.

Feed rate recommendations on page B248

For examples of material for cutting tool groups view page D22.

Recommend feed rate

Indexable milling – group1 (FMA07/11/12, FMD02, EMP09/13)

5		Material group	Feed rate per cutting edge [mm]																		
			EMP09			EMP13			EMP13			FMA07			FMA07			FMA11			
			LNKT12			ANGX15			ANGX15			ONHU06			ONHU08			SNEG12			
			Application																		
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R		
P	Unalloyed steel		0,25	0,50		0,23			0,25			0,19	0,23		0,19	0,23			0,20	0,23	
	Low-alloyed steel		0,23	0,47		0,22			0,23			0,17	0,22		0,17	0,22			0,19	0,21	
	High-alloyed steel and high-alloyed tool steel		0,22	0,44		0,20			0,22			0,16	0,20		0,16	0,20			0,18	0,20	
M	Stainless steel		0,18	0,35															0,14	0,16	
K	Grey cast iron		0,28	0,55		0,26			0,28			0,20	0,26		0,20	0,26			0,22	0,25	
	Cast iron with spheroidal graphite		0,25	0,50		0,23			0,25			0,19	0,23		0,19	0,23			0,20	0,23	
	Malleable cast iron		0,25	0,50		0,23			0,25			0,19	0,23		0,19	0,23			0,20	0,23	
N	Aluminium wrought alloys					0,20			0,21												
	Aluminium-Gusslegierungen					0,20			0,21												
	Copper and copper alloys(bronze/brass)					0,18			0,19												
S	Heat-resistant alloys																				
	Titanium alloys																				
H	Hardened steel																				
	Hard cast iron																				
	Hardened cast iron																				
X	Non-metallic materials																				

1. Select the appropriate product family/cutting data group.
2. Select the used grade.
3. Determine the immersion.
4. Select the used material and read the cutting speed.
5. Please have a look at the detached feed rate recommendations.
6. Select the used tool, the machining mode and the used material.

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Indexable milling – group 7 (XMR01, XMP01)

	Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]					
						HC (CVD)					
						YBC302			YBD152		
						a_e / D			a_e / D		
						1/1 3/4	1/5	1/20	1/1 3/4	1/5	1/20
A Turning	P Unalloyed steel	approx. 0,15 % C	annealed	125	1	260	300	390			
		approx. 0,45 % C	annealed	190	2	225	255	335			
		approx. 0,45 % C	tempered	250	3	210	240	315			
		approx. 0,75 % C	annealed	270	4	185	210	275			
		approx. 0,75 % C	tempered	300	5	170	195	255			
B Milling	P Low-alloyed steel		annealed	180	6	225	255	335			
			tempered	275	7	185	210	275			
			tempered	300	8	170	195	255			
			tempered	350	9	145	165	215			
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	195			
			hardened and tempered	325	11	95	105	140			
C Drilling	M Stainless steel	ferritic/martensitic	annealed	200	12						
		martensitic	tempered	240	13						
		austenitic	quench hardened	180	14						
		austenitic-ferritic		230	15						
	K Cast iron with spheroidal graphite	perlitic/ferritic		180	16				335	390	510
		perlitic (martensitic)		260	17				200	230	300
		ferritic		160	18				225	260	340
		perlitic		250	19				150	175	230
		ferritic		130	20				275	320	420
		perlitic		230	21				185	215	280
D Technical Information	N Aluminium wrought alloys	cannot be hardened		60	22						
		hardenable	hardened	100	23						
	Cast aluminium alloys	$\leq 12\% \text{ Si}$, cannot be hardened		75	24						
		$\leq 12\% \text{ Si}$, hardenable	hardened	90	25						
		$> 12\% \text{ Si}$, cannot be hardened		130	26						
E Index	S Heat-resistant alloys	machining steel, PB > 1%		110	27						
		CuZn, CuSnZn		90	28						
		CuSn, Pb-free copper, electrolytic copper		100	29						
		Fe-based alloys	annealed	200	30						
			hardened	280	31						
	Titanium alloys	Ni or Co bass	annealed	250	32						
			hardened	350	33						
			cast	320	34						
	H Hardened steel	pure titanium		R_m 400	35						
		α and β alloys		R_m 1050	36						
		Hard cast iron	hardened and tempered	55 HRC	37						
			hardened and tempered	60 HRC	38						
	X Non-metallic materials	cast		400	39						
		hardened and tempered		55 HRC	40						
		Thermoplasts			41						
		Thermosetting plastics			42						
	Non-metallic materials	Plastic, glass-fibre reinforced GFRP			43						
		Plastic, carbon fibre reinforced CFRP			44						
		Graphite			45						
		Wood			46						

Note: The given cutting values are guide values, which were determined under ideal conditions.
 The values have to be adapted in individual cases.
 Feed rate recommendations on page B254.
 For examples of material for cutting tool groups view page D11.

Index

HC	Coated carbide
HT	Uncoated carbide, main component (TiC) o. (TiN), cermet
HC ₁	Coated cermet
HW	Uncoated carbide, main component (WC)

Indexable milling – group 7 (XMR01, XMP01)

Material group		Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v _c [m/min]						
						HC (PVD)						
						YBG252			YBG302			
						a _e / D			a _e / D			
					1/1 3/4	1/5	1/20	1/1 3/4	1/5	1/20		
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	230	265	345	225	260	340	
		approx. 0,45 % C	annealed	190	2	200	230	300	195	225	295	
		approx. 0,45 % C	tempered	250	3	185	215	280	180	210	275	
		approx. 0,75 % C	annealed	270	4	165	190	250	160	185	245	
		approx. 0,75 % C	tempered	300	5	150	175	230	150	170	225	
	Low-alloyed steel		annealed	180	6	200	230	300	195	225	295	
			tempered	275	7	165	190	250	160	185	245	
			tempered	300	8	150	175	230	150	170	225	
			tempered	350	9	130	150	195	125	145	190	
High-alloyed steel and high-alloyed tool steel		annealed	200	10	115	135	180	115	130	170		
		hardened and tempered	325	11	85	95	125	80	95	125		
M	Stainless steel	ferritic/martensitic	annealed	200	12	115	135	175	115	130	170	
		martensitic	tempered	240	13	100	115	145	95	110	145	
		austenitic	quench hardened	180	14	125	145	185	120	140	185	
		austenitic-ferritic		230	15	100	115	145	95	110	145	
K	Grey cast iron	perlitic/ferritic		180	16	255	295	385	250	290	380	
		perlitic (martensitic)		260	17	150	175	230	150	170	225	
	Cast iron with spheroidal graphite	ferritic		160	18	175	200	260	170	195	255	
		perlitic		250	19	115	135	180	115	130	170	
	Malleable cast iron	ferritic		130	20	210	240	315	205	235	310	
		perlitic		230	21	140	160	210	135	160	210	
N	Aluminium wrought alloys	cannot be hardened		60	22							
		hardenable	hardened	100	23							
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24							
		≤ 12 % Si, hardenable	hardened	90	25							
		> 12 % Si, cannot be hardened		130	26							
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27							
		CuZn, CuSnZn		90	28							
CuSn, Pb-free copper, electrolytic copper		100	29									
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30							
			hardened	280	31							
		Ni or Co bass	annealed	250	32							
			hardened	350	33							
			cast	320	34							
	Titanium alloys	pure titanium		R _m 400	35							
		α and β alloys	hardened	R _m 1050	36							
H	Hardened steel		hardened and tempered	55 HRC	37							
			hardened and tempered	60 HRC	38							
	Hard cast iron		cast	400	39							
	Hardened cast iron		hardened and tempered	55 HRC	40							
X	Non-metallic materials	Thermoplasts			41							
		Thermosetting plastics			42							
		Plastic, glass-fibre reinforced GFRP			43							
		Plastic, carbon fibre reinforced CFRP			44							
		Graphite			45							
		Wood			46							

Note: The given cutting values are guide values, which were determined under ideal conditions.
 The values have to be adapted in individual cases.
 Feed rate recommendations on page B254.
 For examples of material for cutting tool groups view page D11.

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D	Technical Information
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HC	Coated carbide
HT	Uncoated carbide, main component (TiC) o. (TiN), cermet
HC ₁	Coated cermet
HW	Uncoated carbide, main component (WC)

Recommended feed rate

Indexable milling – group7 (XMR01, XMP01, QCH)

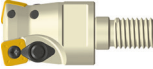
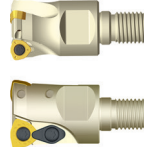
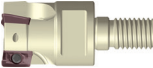
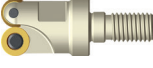
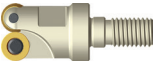
Material group		Feed rate per cutting edge [mm]									
		XMR01 face milling			XMR01 plunge milling			XMR01 circular milling			
		SDMT/WPGT			SDMT/WPGT			SDMT/WPGT			
		Tool diameter [mm]									
		20-25	30-50	63-160	20-25	30-50	63-160	20-25	30-50	63-160	
P	Unalloyed steel	1,00	1,20	2,00	0,20	0,25	0,30	0,80	0,96	1,40	
	Low-alloyed steel	0,93	1,12	1,86	0,19	0,23	0,28	0,74	0,89	1,30	
	High-alloyed steel and high-alloyed tool steel	0,70	0,84	1,40	0,18	0,22	0,26	0,70	0,84	1,23	
M	Stainless steel	0,50	0,60	1,00	0,14	0,18	0,21	0,56	0,67	0,98	
K	Grey cast iron	0,90	1,08	1,80	0,22	0,28	0,33	0,88	1,06	1,54	
	Cast iron with spheroidal graphite	0,90	1,08	1,80	0,20	0,25	0,30	0,80	0,96	1,40	
	Malleable cast iron	1,00	1,20	2,00	0,20	0,25	0,30	0,80	0,96	1,40	
N	Aluminium wrought alloys										
	Aluminum cast alloys										
	Copper and copper alloys (bronze/brass)										
S	Heat-resistant alloys										
	Titanium alloys										
H	Hardened steel										
	Hard cast iron										
	Hardened cast iron										
X	Non-metallic materials										

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

	Feed rate per cutting edge [mm]							
	XMP01	QCH	QCH	QCH	QCH	QCH	QCH	
	CNE	ZOHX	RD*	APKT	WPGT	SDMT	XPHT	
	Tool diameter [mm]							
	80-400	16-32	15-32	16-40	20-42	20-40	16-32	
	0,20	0,20	0,20	0,15	1,00	1,00	0,20	
	0,20	0,19	0,19	0,14	0,93	0,93	0,19	
	0,20	0,18	0,18	0,13	0,70	0,70	0,18	
	0,20	0,14	0,14	0,11	0,50	0,50	0,14	
	0,20	0,22	0,22	0,17	0,90	0,90	0,22	
	0,20	0,20	0,20	0,15	0,90	0,90	0,20	
	0,20	0,20	0,20	0,15	1,00	1,00	0,20	
				0,13				
				0,13				
				0,11				

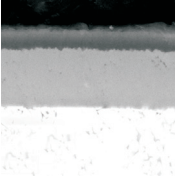
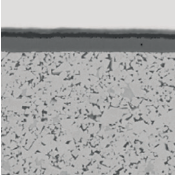
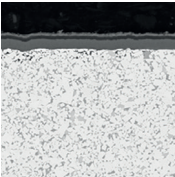
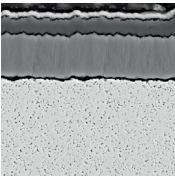
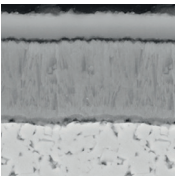
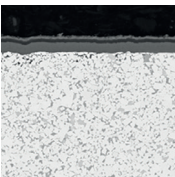
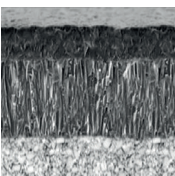
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Indexable heads - QCH series

Series	Milling body	Inserts	Kr	Application						Features	Page
				P	M	K	N	S	H		
QCH-XPHT		 XPHT16 XPHT20 XPHT25 XPHT30 XPHT32		✓	✓	✓				- Diameter range Ø16 – 32 mm - For steel and cast iron - Very suitable for roughing in mould and die industry	B195
QCH-SDMT		 SDMT06T2 SDMT09T3 SDMT1204	15°	✓	✓	✓				- Diameter range Ø20 – 40 mm - For steel, stainless steel and cast iron - Inserts with four cutting edges - Ramping possible - Double clamping system for inserts	B197
QCH-WPGT		 WPGT0503 WPGT0604 WPGT0806	11°-22°	✓	✓	✓				- Diameter range Ø16 – 42 mm - For steel, stainless steel and cast iron - Inserts with three cutting edges - Ramping possible - Double clamping system for inserts	B199
QCH-APKT		 APKT11T3 APKT1604	90°	✓	✓	✓	✓	✓		- Diameter range Ø16–40 mm - For steel, stainless steel, cast iron, non-ferrous metals and heat-resistant alloys - For square-shoulder, slot and plunge milling - Milling cutter with positive, soft cutting geometry - INSERTs with two cutting edges - For metric ISO threads according to DIN standard only	B201
QCH-RD		 RDKW0702 RDKW10T3 RDKW1605		✓	✓	✓			✓	- Diameter range Ø15 – 42 mm - For steel, stainless steel and cast iron - Screw clamping - Mould and die industry - For two different thicknesses of inserts	B204
QCH-RD		 RDKW0702 RDKW1003 RDKW12T3 RDKW1604		✓	✓	✓			✓	- Diameter range Ø15 – 42 mm - For steel, stainless steel and cast iron - Screw clamping - Mould and die industry - For two different thicknesses of inserts	B206

✓ Very suitable ✓ Suitable

Coated cemented carbide CVD

Grade	ISO	Micro structure	Grade description
YBC302	P20 - P35		CVD coated P20–P35 carbide grade for medium operation to roughing of steel at higher cutting speed. Optimal performance of wear resistance and toughness for a wide application field.
YBC301	P20 - P35		CVD coated P20–P35 carbide grade for medium operation to roughing of steel at lower cutting speed.
YBC401	P30 - P50 M30 - M40		CVD coated P30–P50/M30–M40 carbide grade for roughing operation of steel at lower cutting speed and unstable condition.
YBM251	P20 - P30 M15 - M35		CVD coated P20–P30/M15–M35 carbide grade for medium to roughing operation in stainless steel and steel with wide application field. Good wear resistance and capability against plastic deformation at normal cutting speed.
YBM253	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.
YBM351	P25 - P40 M20 - M40		CVD coated P25–P40/M25–M40 carbide grade for roughing operation in stainless steel and steel. Good wear resistance and edge stability at normal cutting speed.
YBD152	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.
YBD252	K20 - K35		CVD coated K20–K35 carbide substrate. Optimized for medium to roughing operation of cast iron and Steel. Good wear resistance and toughness at higher cutting speed.

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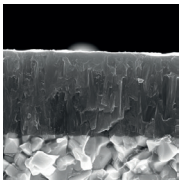
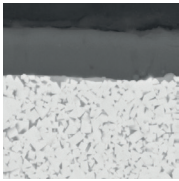
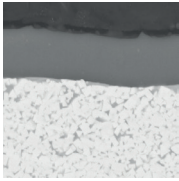
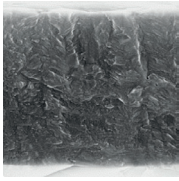
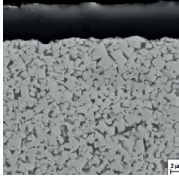
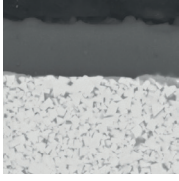
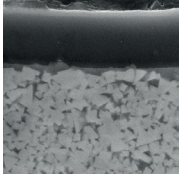
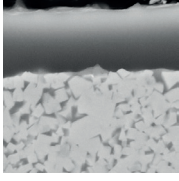
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Coated cemented carbide PVD

Grade	ISO	Micro structure	Grade description
YBG101	N05–N20		PVD coated N05–N20 carbide substrate for finishing to semi-finishing in aluminium materials. Coating only on the top face, in combination with the aluminium chip breakers, prevents built-up edges and gives a smooth cut.
YBG102	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.
YBG202	P10 - P30 M10-M25		PVD coated P10–P30/M10–M25 carbide substrate for finishing to medium application of stainless steel and steel (milling). Good wear resistance in a wide application field.
YBG212	P25 - P35 M25-M40		PVD coated M25–M40/P25–P35 carbide substrate for steel and stainless steel. Especially for inner insert at drilling operation.
YBS203	S15 – S25		Turning and milling grades for processing heat-resistant materials. A special carbon substrate and the latest PVD coating technology enable a very good wear behaviour, high fracture toughness and high thermal stability.
YBG205	P10 - P30 M20 - M40 S15-S25		PVD multilayer coated P10–P30/M20–M40/S15–S25 carbide substrate for finishing to medium machining of stainless steel, super alloys and steel (milling). Excellent wear resistance and thermal stability in a wide range of applications.
YB9320	P10 - P30 M10-M25		PVD multilayer coated P10–P30/M10–M25 carbide substrate for finishing to medium machining of stainless steel, super alloys and steel (grooving/milling). Optimised coating stability for higher wear resistance and thermal stability in a wide range of applications.
YBG302	P15 - P30 M25 - M40		PVD coated P15–P30/M25–M40 carbide substrate for medium roughing application of stainless steel and steel (milling). Good wear resistance and toughness.

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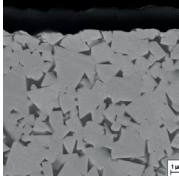
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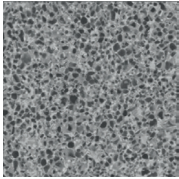
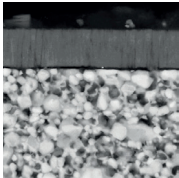
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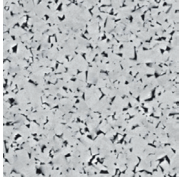
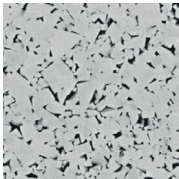
Coated cemented carbide PVD

Grade	ISO	Micro structure	Grade description
YBS303	S25 - S35		Milling grade for machining titanium alloys. A tough carbide substrate and the latest PVD coating technology with increased impact resistance and high thermal stability.

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.
YNG151C	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.

Uncoated cemented carbide

Grade	ISO	Micro structure	Grade description
YD101	N05 - N25 K05 - K20		Uncoated K05-K20/N05-N20 carbide substrate for fine to medium application in aluminum and other material.
YD201	K10 - K30 N10 - N30		Uncoated K10-K30/N10-N30 carbide substrate for medium application in aluminum and other material.

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Application fields of grades – indexable milling

	ISO	HC ¹ (CVD)	HC ¹ (PVD)	HT	HC ²	HW	PCBN/PCD
P	P01		YBG102		YNG151C		
	P10		YBG202	YNG151			
	P20	YBC301	YBG205				
	P30	YBC302	YBG302			YC305	
	P40	YBC401	YB9320				
M	M01		YBG102		YNG151C		
	M10	YBM251	YBG202	YNG151			
	M20	YBM253	YBG205				
	M30	YBM351	YBG302			YC305	
	M40	YBC401	YB9320				
K	K01		YBG102				
	K10	YBD152	YBG152				
	K20	YBD252	YBG202			YD201	
	K30						
	K40						
N	N01					YD051	
	N10		YBG101			YD101	
	N20		YBG202				YD201
	N30						
S	S01		YBG102				
	S10		YBG202				
	S20		YBG205				
	S30		YBS203				
H	H01		YBG102				
	H10						
	H20						
	H30						

P	Steel
M	Stainless steel
K	Cast iron

N	Non-ferrous metals
S	Heat-resistant alloys
H	Hardened materials

HC¹ Coated carbide
 HT Uncoated cermet
 HC² Coated carbide
 HW Uncoated carbide