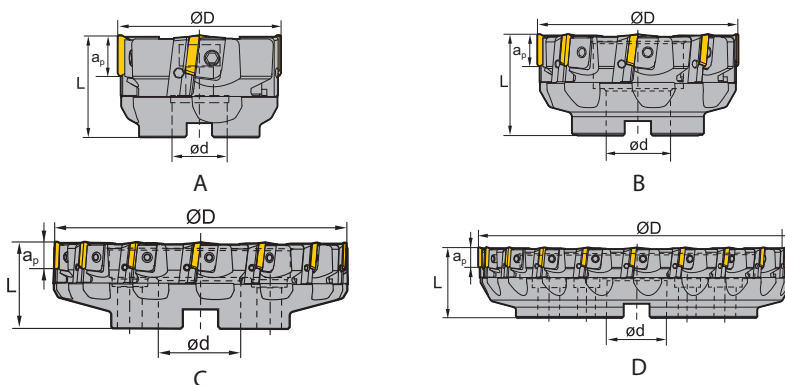
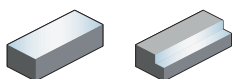


Face milling

FMP01 Kr: 90°



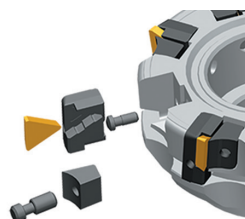
Article	*	Stock		Dimensions [mm]				Teeth	Coupling	kg	Inserts
		R	L	ØD	Ød	L	a _p max				
FMP01-080-A27-TP22-04	●			80	27	50	18	4	A	1.2	TPKN2204
FMP01-100-B32-TP22-06	●			100	32	50	18	6	B	1.7	
FMP01-125-B40-TP22-08	● ○			125	40	63	18	8	B	3.2	
FMP01-160-B40-TP22-10	● ○			160	40	63	18	10	B	5.1	
FMP01-200-C60-TP22-12	● ○			200	60	63	18	12	C	7.4	
FMP01-250-C60-TP22-16	○ ○			250	60	63	18	16	C	12.3	
FMP01-315-D60-TP22-20	○ ○			315	60	70	18	20	D	21.9	

● Ex stock ○ On demand

* With internal cooling

Spare parts

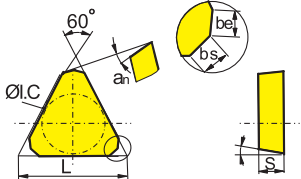
	Insert	TPKN2204	TPKN2204
	ØD	80-100	125 - 315
	Adjustable screw	LOM5×15.1	LOM5×15.1
	Cassette (left)	LTP4L1	LTP4L
	Cassette (right)	LTP4R1	LTP4R
	Screw (wedge)	WM8×17	WM8×22
	Wedge (left)	W04L	W04L
	Wedge (right)	W04R	W04R
	Wrench (locator)	WT20T	WT20T
	Wrench (wedge)	WT25T	WT25T



Milling inserts

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

TPKN	L	I.C	S
22 04	22	12.7	4.76

TP** milling insert				HC ¹ (CVD)						HC ¹ (PVD)						HT	HC ²	HW										
				P																								
				M																								
				K																								
				N																								
				S																								
				H																								
ISO				be	bs	an	YBC302	YBC301	YBC401	YBM253	YBM251	YBM351	YBD152	YBD252	YBG101	YBG102	YBG202	YBG212	YBG203	YBG205	YBG320	YBG302	YBS303	YBG252	YNG151	YNG151C	YD101	YD201
	TPKN2204PD ^F R			1.4	0.7	11°										○												●
	TPKN2204PD ^S 32PR			1.4	0.7	11°												○		○								
	TPKN2204PD ^S KL			1.4	0.7	11°		○																				
	TPKN2204PD ^S KR			1.4	0.7	11°		●	●			●		●			○			●	●							
	TPKN2204PD ^T KR			1.4	0.7	11°										●												

● Ex stock ○ On demand

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

A

Turning

B

Milling

C

Drilling

D

Technical
Information

E

Index

FM A 12 050 – A22 O – N 06 – 04 (L) (C)

1

2

3

4

5

6

7

8

9

10

11

Type	
Code	Description
BM	Profile milling
CM	Chamfer milling
EM	Square shoulder milling
FM	Face milling
HM	Helical milling
SM	Slot milling
TM	T-slot milling
XM	Special

1

Entering angle	
A	45°
E	75°
D	60°
P	90°
R	

2

Serial number

3

Nominal diameter [mm]	
Code	Description
025	25
050	50
160	160
315	315
...	

4

Type and size of tool holders			
Code	Type	Code	Type
A	Nominal diameter Ø50 – 80 mm	B	Nominal diameter Ø100 – 160 mm
C	Nominal diameter Ø200 – 250 mm	D	Nominal diameter Ø315 mm
G	Straight shank	XP	Weldon shank
K	Bore with keyway		

5

With respect to mounting please adhere to the information provided by the tool holder manufacturer.

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

6

Clearance angle	
B 	C 
D 	E 
F 	N 
P 	

7

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

8

Number of teeth

9

Cutting direction	
Code	Description
L	Left

10

With inner cooling

11


Tools with B coupling and inner coolant supply require the following spare parts:



Coolant clamp screw



Coolant shower plate



Spare parts (B coupling with inner coolant supply)

		B27	B32	B40	B40
	Ø	80	100	125	160
	Coolant clamp screw	LDB27C	LDB32C	LDB40C	LDB40C
	Coolant shower plate	B27-002-CP	B32-002-CP	B40-002-CP	B40-003-CP

When purchasing tools with inner coolant supply and B coupling these spare parts are included in delivery.

A

Turning

B

Milling

C

Drilling

D

Technical Information

E

Index

S P K N 12 04 ED T21K R – DM

1

2

3

4

5

6

7

8

9

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

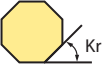
4

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)
--

10

A

Turning

B

Milling

C

Drilling

D

Technical
Information

E

Index

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	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	
		perlitic (martensitic)		260	17					220	255	190	220	
	Cast iron with spheroidal graphite	ferritic		160	18					255	295	220	255	
		perlitic		250	19					170	200	145	170	
	Malleable cast iron	ferritic		130	20					305	355	265	305	
		perlitic		230	21					205	240	175	205	
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 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									
	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 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			ANGX11			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.

A

Turning

B

Milling

C

Drilling

D

Technical
Information

E

Index

Indexable milling – group 2 (FMA01/02/03/04, FME01/02, FMP01/02, EMP01/02/03/04)

	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_e / D	a_e / D	a_e / D	a_e / D	a_e / D	a_e / D	a_e / D	
						1/1 3/4	1/5	1/1 3/4	1/5	1/1 3/4	1/5	1/1 3/4	1/5
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	245	285	210	245				
		approx. 0,45 % C	annealed	190	2	210	245	180	210				
		approx. 0,45 % C	tempered	250	3	200	230	170	200				
		approx. 0,75 % C	annealed	270	4	175	200	150	175				
		approx. 0,75 % C	tempered	300	5	160	190	140	160				
P	Low-alloyed steel		annealed	180	6	210	245	180	210				
			tempered	275	7	175	200	150	175				
			tempered	300	8	160	190	140	160				
			tempered	350	9	135	160	120	135				
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	125	145	105	125				
			hardened and tempered	325	11	90	100	75	90				
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	perlite/ferritic		180	16					315	365	270	315
		perlite (martensitic)		260	17					185	215	160	190
	Cast iron with spheroidal graphite	ferritic		160	18					215	250	185	215
		perlite		250	19					145	170	125	145
	Malleable cast iron	ferritic		130	20					260	300	225	260
		perlite		230	21					175	205	150	175
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								
	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								
H	Hardened steel	α and β alloys	hardened	R _m 1050	36								
			hardened and tempered	55 HRC	37								
	Hard cast iron		hardened and tempered	60 HRC	38								
			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								
E		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.

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

Index

Indexable milling – group 2 (FMA01/02/03/04, FME01/02, FMP01/02, EMP01/02/03/04)

	Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed vc [m/min]			
						HC1			
						YNG151C			
						a _e / D	1/1	3/4	1/5
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	285	335		
		approx. 0,45 % C	annealed	190	2	250	285		
		approx. 0,45 % C	tempered	250	3	235	270		
		approx. 0,75 % C	annealed	270	4	205	235		
		approx. 0,75 % C	tempered	300	5	190	225		
P	Low-alloyed steel		annealed	180	6	250	285		
			tempered	275	7	205	235		
			tempered	300	8	190	225		
			tempered	350	9	160	190		
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	150	170		
			hardened and tempered	325	11	105	120		
M	Stainless steel	ferritic/martensitic	annealed	200	12	145	170		
		martensitic	tempered	240	13	120	145		
		austenitic	quench hardened	180	14	155	180		
		austenitic-ferritic		230	15	120	145		
K	Grey cast iron	perlitic/ferritic		180	16				
		perlitic (martensitic)		260	17				
	Cast iron with spheroidal graphite	ferritic		160	18				
		perlitic		250	19				
	Malleable cast iron	ferritic		130	20				
		perlitic		230	21				
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.

A	Turning
B	Milling
C	Drilling
D	Technical Information
E	Index

Index

Recommended feed rate

Indexable milling – group 2 (FMA01/02/03/04, FME01/02, FMP01/02, EMP01/02/03/04)

Material group		Feed rate per cutting edge [mm]																		
		FMA01 FMA02			FMA03			FMA03			FMA04			FMA04			FMA04			
		SEET12			SEKN12			SEKN15			OFKT05			OFKR07			ODHT06			
		Application																		
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	
P	Unalloyed steel	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25		
	Low-alloyed steel	0,14	0,19	0,23		0,17			0,19		0,19	0,23		0,19	0,23		0,19	0,23		
	High-alloyed steel and high-alloyed tool steel	0,13	0,18	0,22		0,16			0,18		0,18	0,22		0,18	0,22		0,18	0,22		
M	Stainless steel	0,11	0,14	0,18		0,13			0,14		0,14	0,18		0,14	0,18		0,14	0,18		
K	Grey cast iron	0,17	0,22	0,28		0,20			0,22		0,22	0,28		0,22	0,28		0,22	0,28		
	Cast iron with spheroidal graphite	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25		
	Malleable cast iron	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25		
N	Aluminium wrought alloys	0,13	0,17	0,21							0,17	0,21		0,17	0,21		0,17	0,21		
	Aluminum cast alloys	0,13	0,17	0,21							0,17	0,21		0,17	0,21		0,17	0,21		
	Copper and copper alloys (bronze/brass)	0,11	0,15	0,19							0,15	0,19		0,15	0,19		0,15	0,19		
S	Heat-resistant alloys	0,11	0,14	0,18							0,14	0,18		0,14	0,18		0,14	0,18		
	Titanium alloys	0,11	0,14	0,18							0,14	0,18		0,14	0,18		0,14	0,18		
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.

Indexable milling – group 3 (FMR01/02/03/04) Face milling

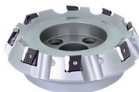
Material group		Feed rate per cutting edge [mm]																			
		FMR01			FMR01			FMR02			FMR02			FMR02			FMR03				
		RCKT10			RC*12			RC*12			RCKT16			RCKT20			RDKW07				
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R		
P	Unalloyed steel		0,20	0,25		0,20	0,25		0,20	0,25		0,23	0,29		0,26	0,33		0,17			
	Low-alloyed steel		0,19	0,23		0,19	0,23		0,19	0,23		0,21	0,27		0,25	0,31		0,16			
	High-alloyed steel and high-alloyed tool steel		0,18	0,22		0,18	0,22		0,18	0,22		0,20	0,25		0,23	0,29		0,15			
M	Stainless steel		0,14	0,18		0,14	0,18		0,14	0,18		0,16	0,20		0,19	0,23		0,12			
K	Grey cast iron		0,22	0,28		0,22	0,28		0,22	0,28		0,25	0,32		0,29	0,36		0,19			
	Cast iron with spheroidal graphite		0,20	0,25		0,20	0,25		0,20	0,25		0,23	0,29		0,26	0,33		0,17			
	Malleable cast iron		0,20	0,25		0,20	0,25		0,20	0,25		0,23	0,29		0,26	0,33		0,17			
N	Aluminum wrought alloys					0,17	0,21		0,17	0,21											
	Aluminum cast alloys					0,17	0,21		0,17	0,21											
	Copper and copper alloys (bronze/brass)					0,15	0,19		0,15	0,19											
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.

F	Finishing
M	Medium machining
R	Roughing

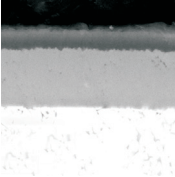
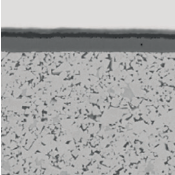
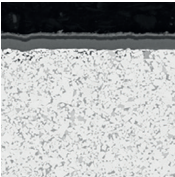
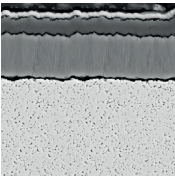
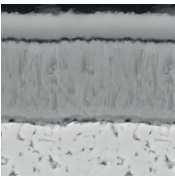
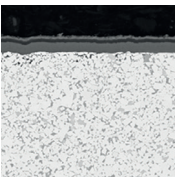
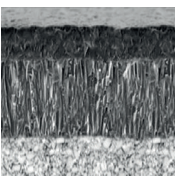
F	Finishing
M	Medium machining
R	Roughing

Face milling

Series	Milling body	Inserts	Kr	Application						Features	Page
				P	M	K	N	S	H		
FMD02		 HNEX0905	55°			✓				- Diameter range Ø80 – 315 mm - For cast iron - Wedge clamping - Inserts with twelve cutting edges	B63
FMD03		 LNKT2007-ZR LNKT2510-ZR	60°	✓		✓				- Diameter range Ø100 – 400 mm - For steel, stainless steel and cast iron - Tangential insert with four cutting edges - Heavy duty machining for high cutting depths - Screw clamping	B65
FME02		 SPKT1204 SPKW1204	75°	✓	✓	✓				- Diameter range Ø50 – 125 mm - For steel and cast iron - Screw clamping	B67
FME03		 SPKN1203 SPKR1203 SPEX1203 SPKN1504 SPKR1504 SPEX1504	75°	✓	✓	✓				- Diameter range Ø80 – 400 mm - For steel and cast iron - Wedge clamping	B69
FME04		 LNKT1506-ZR	75°	✓		✓				- Diameter range Ø125 – 315 mm - For steel, stainless steel and cast iron - Tangential insert with four cutting edges - Heavy duty machining for high cutting depths - Screw clamping	B72
FMP01		 TPKN2204	90°	✓	✓	✓		✓		- Diameter range Ø80 – 315 mm - For steel, stainless steel and cast iron - Milling cutter with positive, soft cutting geometry - Wedge clamping	B74

✓ 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.

A

Turning

B

Milling

C

Drilling

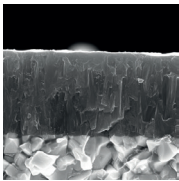
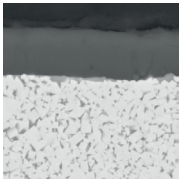
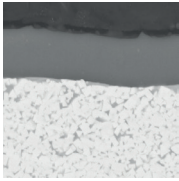
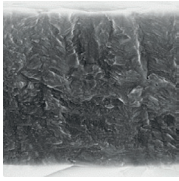
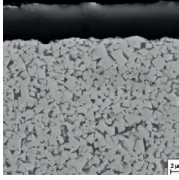
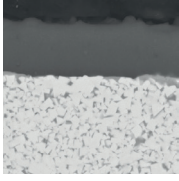
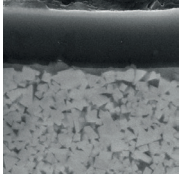
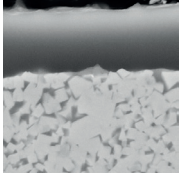
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Technical
Information

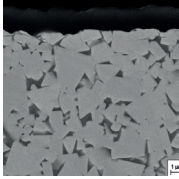
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Index

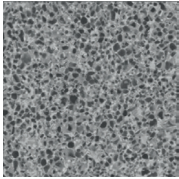
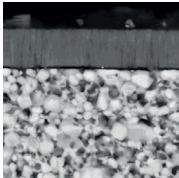
Coated cemented carbide PVD

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.

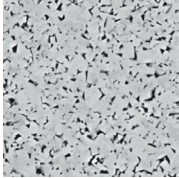
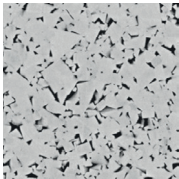
Coated cemented carbide PVD

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.

A

Turning

B

Milling

C

Drilling

D

Technical
Information

E

Index

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