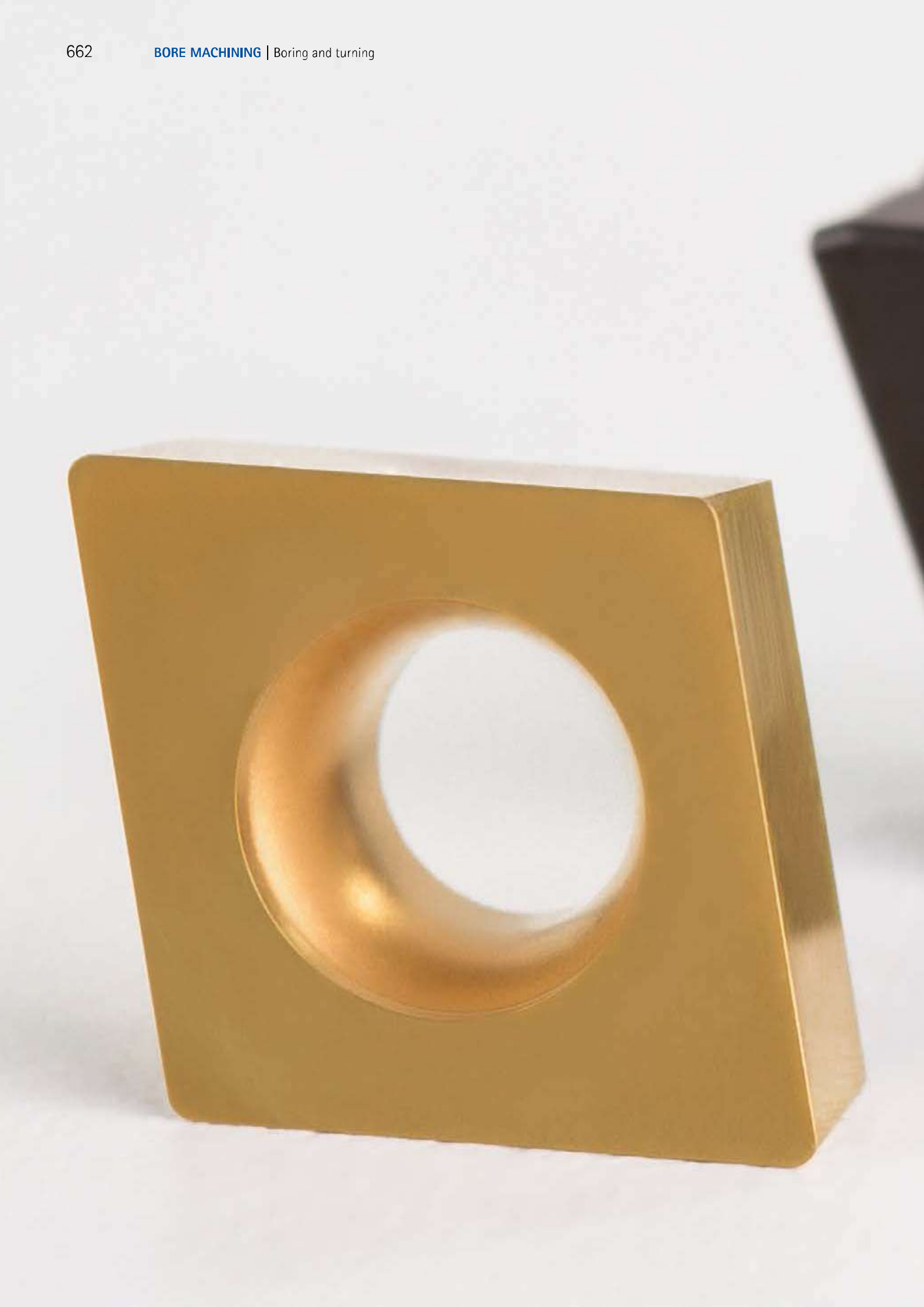


INDEXABLE INSERTS

Introduction

Indexable inserts

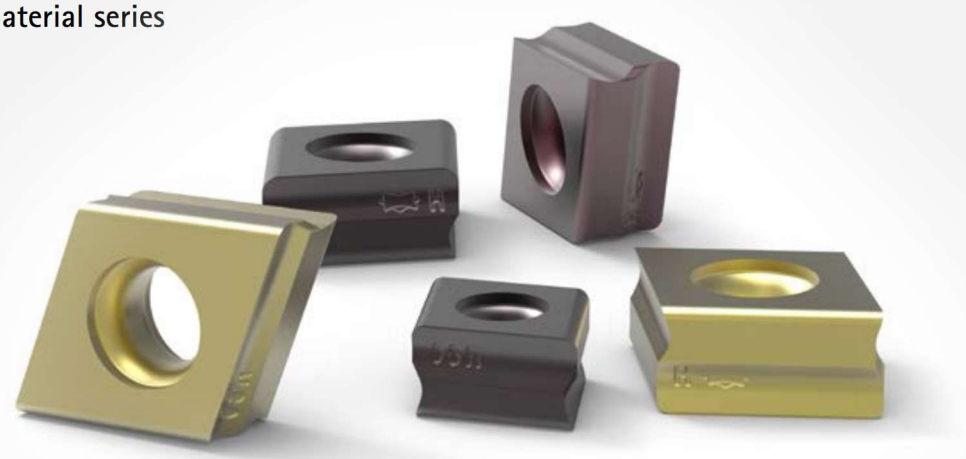
Technical appendix

Cutting material series – the right cutting material for every application

MAPAL offers a wide range of radial and tangential indexable inserts that covers all requirements for different cutting materials and coatings as well as the related cutting edge geometries and accuracies.

Performance Line cutting material series

P M K N



The cutting material series of the Performance Line offers a wide range of radial and tangential indexable inserts that covers all requirements for different cutting materials and coatings as well as the related cutting edge geometries and accuracies.

The high-precision, ground indexable inserts from tolerance class H are truly multi-cutting-edge capable even with fixed cutting edges. This is because, in conjunction with precisely manufactured insert seats, the cutting edges show only minimal deviations from each other. This means that all cutting edges are in use at the same time during machining. As a result, considerable increases in performance are possible.

Sintered tangential indexable inserts in tolerance class N add particularly cost-effective alternatives to the range, especially for machining with larger permissible tolerances. New to the range are the circumferentially ground radial and tangential indexable insert of tolerance class G, which represent a cost-effective alternative to the high-precision indexable inserts.

AT A GLANCE

- Wide range of radial and tangential indexable inserts.
- The range extends from ground, high-precision inserts in tolerance class H to sintered inserts in tolerance class N and G
- Large selection of cutting materials for almost every application area
- Tipped variants with PCD and PcBN for highly economical machining of machining of aluminium and cast iron

Marking on "press-to-size" indexable inserts

1 MAPAL embossing and chip guiding stage

2 Radius/lead and cutting direction

Basic Line cutting material series

P M K

The Basic Line series of positive radial inserts for boring and turning impresses due to an excellent price/performance ratio. For machining cast iron, steel and stainless steel, CVD- and PVD-coated cutting materials are available that cover a wide range, whether wear resistant or ductile. So it is possible to select the optimal indexable insert for every application. Depending on the machining, different basic shapes are available with different chip guiding stages in the tolerance classes M and G for roughing, medium machining and finishing.

AT A GLANCE

- Positive radial inserts for boring and turning
- Excellent price-performance ratio
- CVD- and PVD-coated cutting materials for P, M and K workpiece material
- Cermet cutting edges for high surface finish in steel
- Different chip guiding stages for roughing, medium machining and finishing

Cutting material series for mixed machining

N + K N + P

Material combinations of aluminium and sintered steel or aluminium and cast iron, such as those used in the manufacturing of the crankcase, place special demands on machining. MAPAL offers a specially adapted cutting material series for such machining operations. Both their carbide substrates and the micro and macro geometries of the cutting edges were specially developed for mixed machining.

A PVD coating as part of the cutting material series prevents both a built-up edge during aluminium machining and excessive wear during machining of the cast iron or sintered steel portion of the workpiece. This is because it ensures that the cutting material is particularly wear-and-tear and heat resistant. In this way, machining can be carried out in the highest quality.

AT A GLANCE

- Cutting material for the machining of the material combinations aluminium and cast iron as well as aluminium and sintered steel
- Modified carbide substrate, optimised micro and macro geometries on the insert, PVD coating based on TiAlN alloy with special dopant
- Standard and custom ISO indexable inserts available
- Long tool life and therefore high economic efficiency

Product overview for indexable inserts 1/2

Radial technology

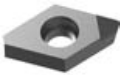
Insert type	Radial technology – Basic Line							
	CCMT	CCGT	DCMT	SCMT | SPMT	SCGT	TCMT	VCMT	VCGT
								
Features								
Number of cutting edges	2	2	2	4	4	3	2	2
Insert size	06 / 09 / 12	06 / 09 / 12	07 / 11 / 15	06 / 09 / 12	09	09 / 11 / 16 / 22	16	11
Diameter range	from 17 mm	from 17 mm		from 17 mm	from 25 mm	from 17 mm		
Cutting direction	N	N	N	N	N	N	N	N
Boring – neutral	■	■	■	■	■	■	■	■
Boring – arc shaped land								
Countersinking / chamfering								
Application								
Roughing	■		■	■		■	■	
Medium machining	■	■	■	■		■	■	■
Finishing	■	■	■	■	■	■		
Cutting material								
Ground carbide		■						■
Pressed carbide	■		■	■		■	■	
Cermet		■	■		■	■	■	
PcBN								
PCD								
Material suitability								
P	■	■	■	■	■	■	■	■
M_1	■	■	■	■		■		■
M_2	■	■	■	■		■		■
K	■		■	■		■	■	
N								
N K								
N P								
Page	**686**	**688**	**692**	**694**	**694**	**700**	**704**	**704**

* With favourable installation situation Stainless steel Heat-resistant cast steel (turbocharger materials)

	Radial technology – Performance Line								
	CCGW	CCHT	CCHT	SCGW | SPGW	SCHT | SPHT	SCHT | SPHT	SCHT	TCHT	TCHT
									
	2	2	2	4	4	2	4	3	1
	06 / 09	06 / 09 / 12	09	06 / 09 /12	06 / 09 / 12	06 / 09 / 12	09	06 / 09 / 11 / 16	06 / 09 / 11 / 16
	from 17 mm	from 17 mm	from 24 mm	from 17 mm	from 17 mm	from 17 mm	from 25 mm	from 15 mm	from 15 mm
	N	L / R	L / R	N	L / R	X	L / R	L / R	X
	■	■	■	■	■	■	■	■	■
	■	■		■	■	■	■	■	■
	■	■		■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	■	■		■	■	■		■	■
		■			■	■		■	■
			■				■		
			■				■		■
	689	**690**	**706**	**696**	**698**	**697**	**707**	**702**	**703**

Product overview for indexable inserts 2/2

Tangential technology

Insert type	Radial technology – Performance Line							
	CCGT	CCGW	DCGT	DCGW	SCGT | SPGT	SCGW | SPGW	TCGW	VBGW | VCGW
								
Features								
Number of cutting edges	1	1	1	1	1	1	1	1
Insert size	06 / 09	06 / 09	11	11	06 / 09	06 / 09 /12	11	16
Diameter range	from 17 mm	from 17 mm			from 17 mm	from 17 mm	from 17 mm	
Cutting direction	N	N	N	N	L / R / N	N	N	N
Neutral – boring	■	■	■	■	■	■	■	■
Boring – arc shaped land								
Countersinking / chamfering								
Application								
Roughing								
Medium machining	■	■	■			■	■	
Finishing	■	■	■	■	■	■	■	■
Cutting material								
Ground carbide								
Pressed carbide								
Cermet								
PcBN		■		■		■	■	■
PCD	■	■	■	■	■	■	■	
Material suitability								
P								
M_1								
M_2								
K		■		■		■	■	■
N	■	■	■	■	■	■	■	
N K								
N P								
Page	**688**	**689**	**692**	**692**	**694**	**696**	**700**	**704**

Stainless steel Heat-resistant cast steel (turbocharger materials)

	Tangential technology – Performance Line									
	CTNQ	CTGQ	CTHQ		FTNQ	FTGQ	FTHQ		STHD / STHE	
										
	4	4	4	1	4	4	4	1	4	1
	09 / 12	09 / 12	06 / 09 / 12	06 / 09 / 12	09 / 12	09 / 12	06 / 09 / 12	06 / 09 / 12	06 / 09	06 / 09
	from 41 mm	from 65 mm	from 28 mm	from 28 mm	from 30 mm	from 30 mm	from 22 mm	from 22 mm		
	L / R	L	L / R	L / R	L / R	L	L / R	L / R	N	N
	■		■	■	■		■	■		
		■	■	■		■	■	■		
									■	■
	■	■	■	■	■	■	■	■		
	■	■	■	■	■	■	■	■		
	■		■			■	■		■	
		■			■					
				■				■		■
	■	■	■		■	■	■			
	■	■	■		■		■			
	■	■	■		■		■		■	
	■		■		■	■	■		■	
			■	■			■	■	■	■
	708	**710**	**712**	**712**	**718**	**720**	**722**	**722**	**728**	**728**

Cutting material overview: Selection of the correct cutting material

Selection of cutting material

A wide spectrum of cutting material is available, whether wear resistant or ductile. The designation of the cutting material indicates the level of ductility; the ductility increases as the number increases.

CVD-coated cutting materials (HC...) are the first choice for boring K, P and M workpiece materials. This achieves the longest tool life.

Example: HC830 is more ductile than HC815 (the more ductile the cutting material, the less resistant it is to wear).

For non-ferrous workpiece materials, uncoated and PCD-coated carbide types (HU.../HP...) are the first choice. From a silicon content of ≥12%, PCD (PU...) is recommended due to increasing abrasiveness. With PCD, the longest tool life can be achieved, which is why this cutting material is particularly suitable for large series.

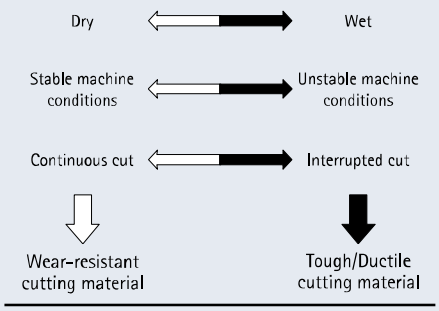
1. Select your workpiece material according to the MMG (MAPAL machining groups, see fold-out page on inside cover).

2. Depending on the product line, select the type below the desired workpiece material from the corresponding **"Cutting material overview [...]" table.**

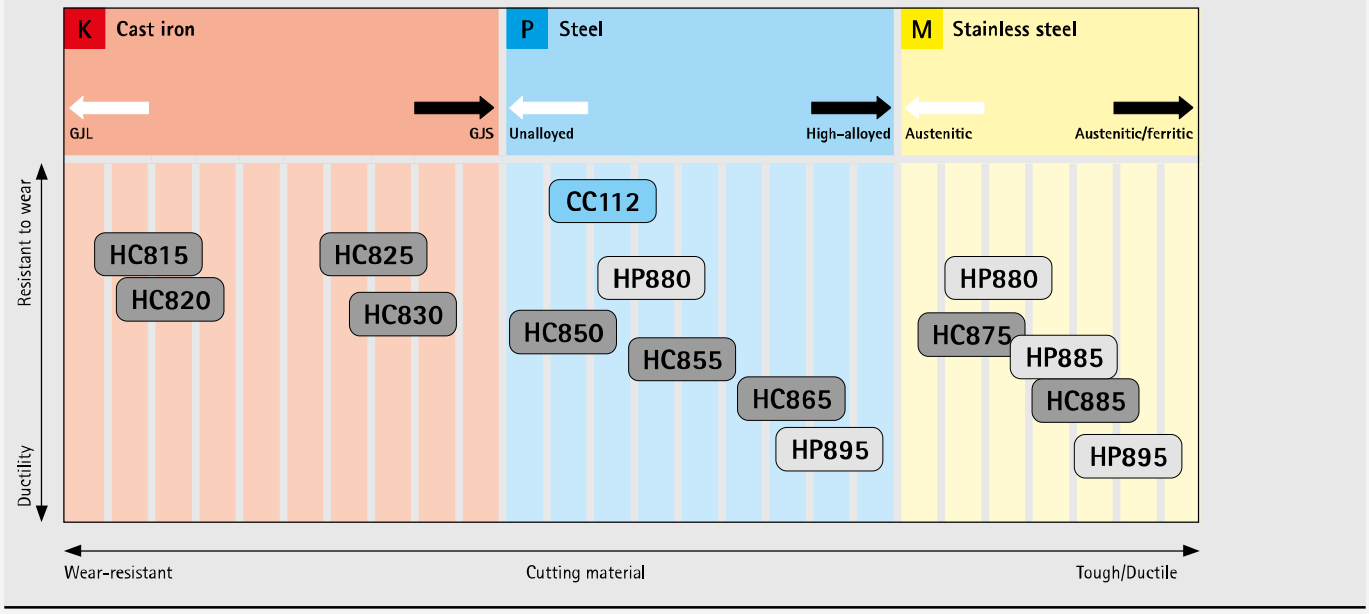
3. Depending on the general conditions (see **"General conditions" table**), a wear-resistant or rather ductile CVD-coated cutting material should be selected.

4. If general conditions in the direction of the black arrow predominate and breakages cannot be prevented despite a ductile CVD grade, you should change to PVD-coated cutting materials.

General conditions



Basic Line cutting material overview



CVD PVD Cermet, CVD

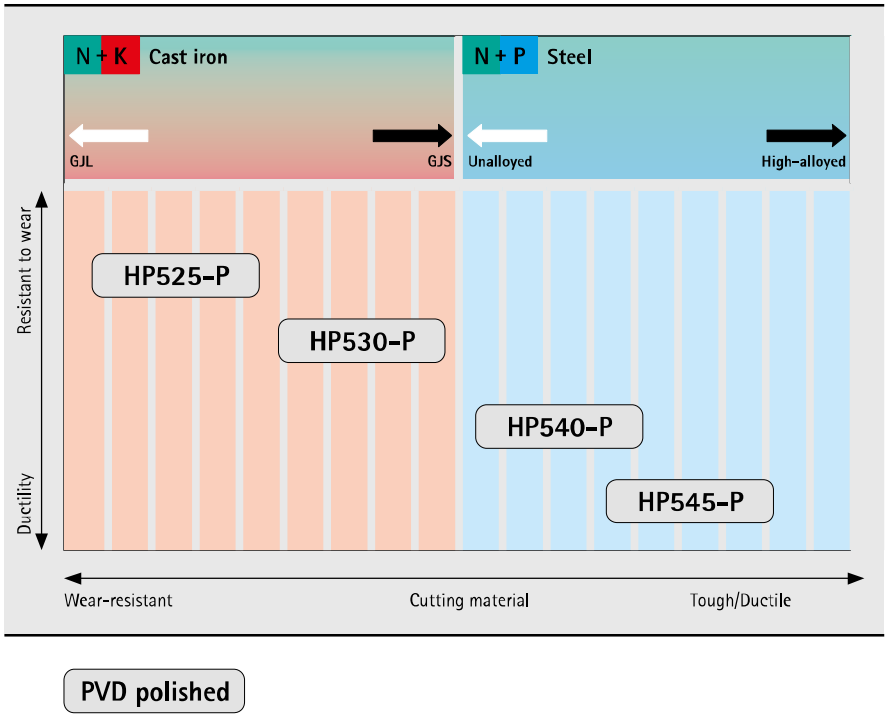
Selection of cutting material

1. Select the material type below the desired workpiece material in the **"Cutting material overview" table.**

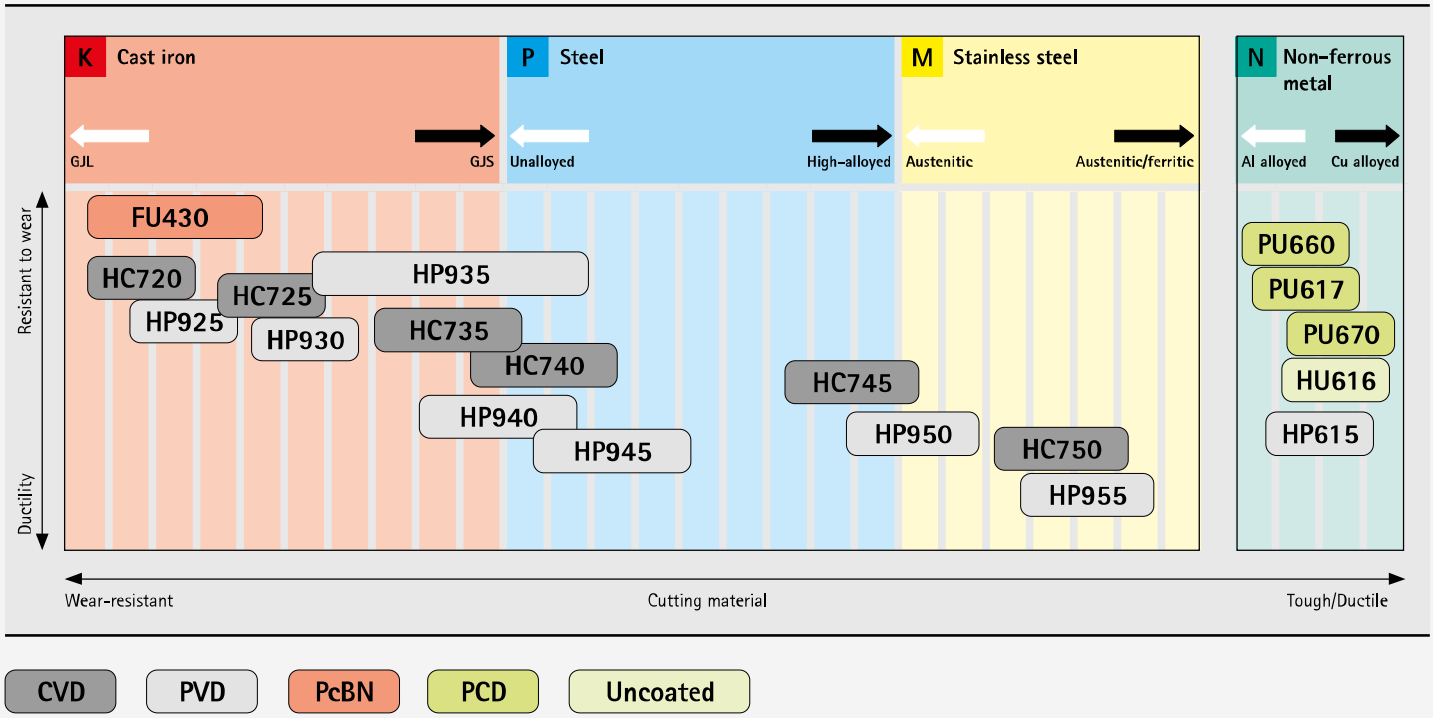
2. For the mixed machining of aluminium-cast-iron, the grade HP530-P is the first choice, for aluminium-steel the grade HP545-P.

3. If a stable process is ensured with normal wear and tear, a wear-resistant grade (HP525-P for aluminium-cast-iron or HP540-P for aluminium-steel) can be selected for improved tool life.

Cutting material overview for mixed machining



Performance Line cutting material overview

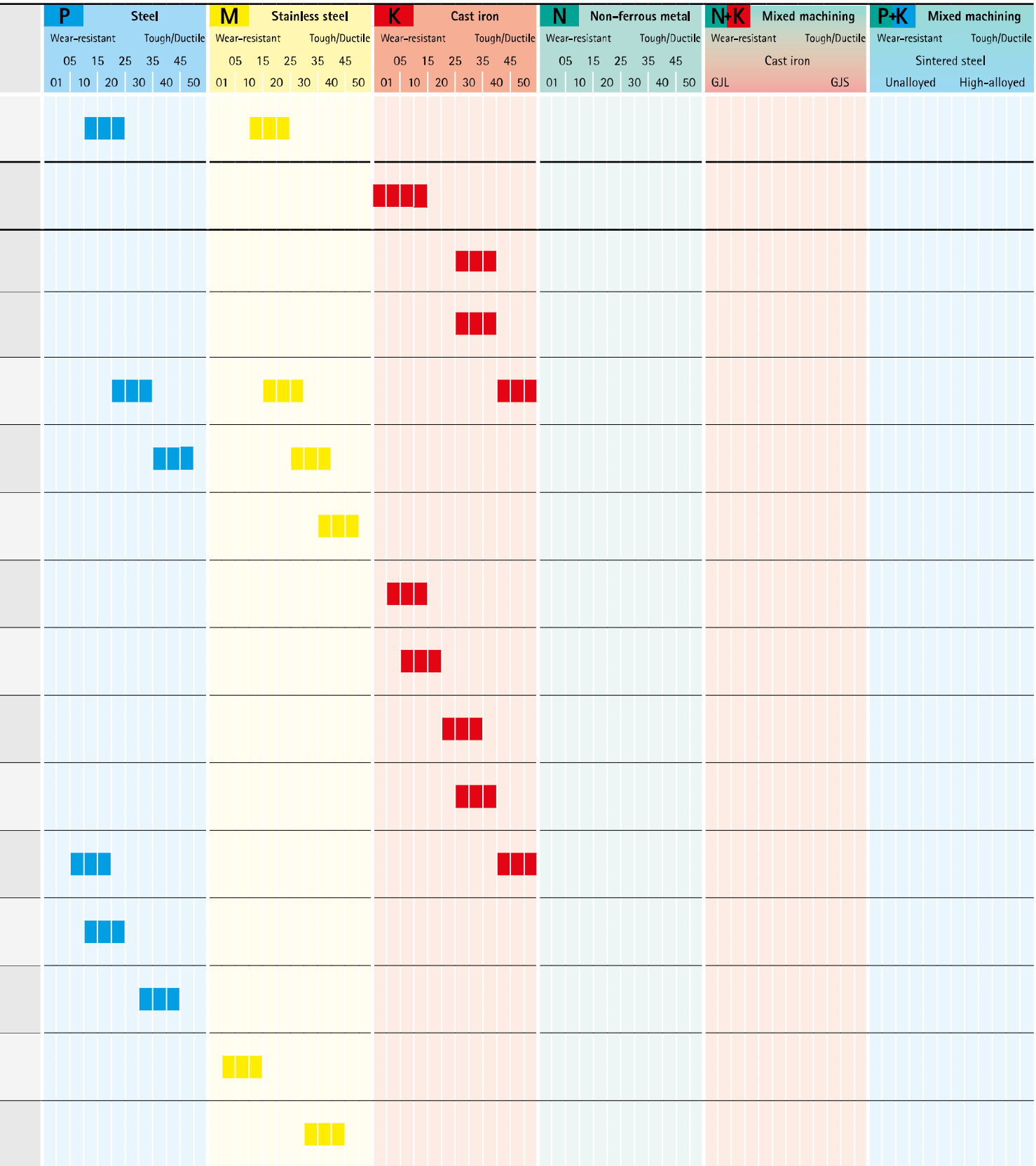


Cutting material overview: Types and type description 1/2

Substrate	Coating	Cutting material	Coating composition	Colour of coating	Field of application	Recommended application
Cermet	CVD-coated	CC112	TiCN+ Al_2O_3	Multi-coloured	●	Finest grain cermet grade with Al_2O_3 coating for finishing and semi-machining steel and cast iron materials with elevated cutting speeds.
PcBN	Uncoated	FU430	–	–	●	PcBN grade with high CBN content for finishing and semi-finishing GJL and sintered metal.
Carbide	CVD-coated	HC698*	Diamond	Black anthracite	●	Carbide with CVD diamond coating for machining aluminium.
		HC725	TiCN +Al_2O_3	Black	●	Fine-grain carbide with high wear resistance and a multi-layer CVD coating with Al_2O_3 top coating for machining GJL and GJS at high cutting speeds. For smooth to slightly interrupted cut for medium machining to roughing.
		HC740	TiCN +Al_2O_3	Black	●	Fine-grain carbide with high wear resistance and a multi-layer CVD coating with Al_2O_3 top coating. For smooth to slightly interrupted cut for medium machining to roughing in GJS, non-alloy steels as well as heat-resistant cast steel.
		HC745	TiCN +Al_2O_3	Black	✱	Fine grain carbide with a balanced proportion of wear-and-tear and ductility and a multi-layer CVD coating with Al_2O_3 top coating for machining at higher cutting speeds. For interrupted cut or unstable conditions and workpiece materials with increased tensile strength, from high-alloy steels to stainless steels as well as heat-resistant cast steel.
		HC750	TiCN +Al_2O_3	Black	✱	Fine grain carbide with a balanced amount of ductility and a multi-layer CVD coating with Al_2O_3 top coating. For interrupted cut or unstable conditions and workpiece materials with highest tensile strength, from stainless steels to heat-resistant steel castings.
		HC815	TiCN +Al_2O_3	Black	●	Wear-resistant fine-grain carbide grade with Al_2O_3 coating. Suitable for machining cast iron materials in stable conditions.
		HC820	TiCN +Al_2O_3	Black	●	Al_2O_3-coated carbide with optimised post-treatment to increase edge stability. Suitable for machining GJL in stable conditions and with slightly interrupted cut.
		HC825	TiCN +Al_2O_3	Black	●	Increased wear resistance due to thicker CVD coating. Suitable for machining cast iron in unstable conditions.
		HC830	TiCN +Al_2O_3	Black	●	Fine-grain carbide grade with thick coating and improved edge stability. Suitable for heavily interrupted cut in cast iron.
		HC850	TiCN +Al_2O_3 +TiN	Gold	●	Gradient carbide with MT-TiCN and Al_2O_3 coating and TiN surface layer. Suitable for machining steel due to reduced surface roughness.
		HC855	TiCN +Al_2O_3 +TiN	Gold	●	Gradient carbide with balanced proportion of ductility and wear resistance. Suitable for semi-finishing and for medium machining of steel.
		HC865	TiCN +Al_2O_3 +TiN	Gold	✱	Ductile gradient carbide grade with Al_2O_3 coating and smooth TiN surface layer. Suitable for semi-finishing and for medium machining of steel and alloyed steel.
		HC875	TiCN +Al_2O_3 +TiN	Gold	●	Fine grain gradient carbide grade with thin CVD coating. Suitable for machining high-alloy steel and stainless steel.
		HC885	TiCN +Al_2O_3 +TiN	Gold	✱	Carbide grade with increased ductility and CVD coating. Suitable for machining stainless steel.

* Cutting material for drilling aluminium from solid.

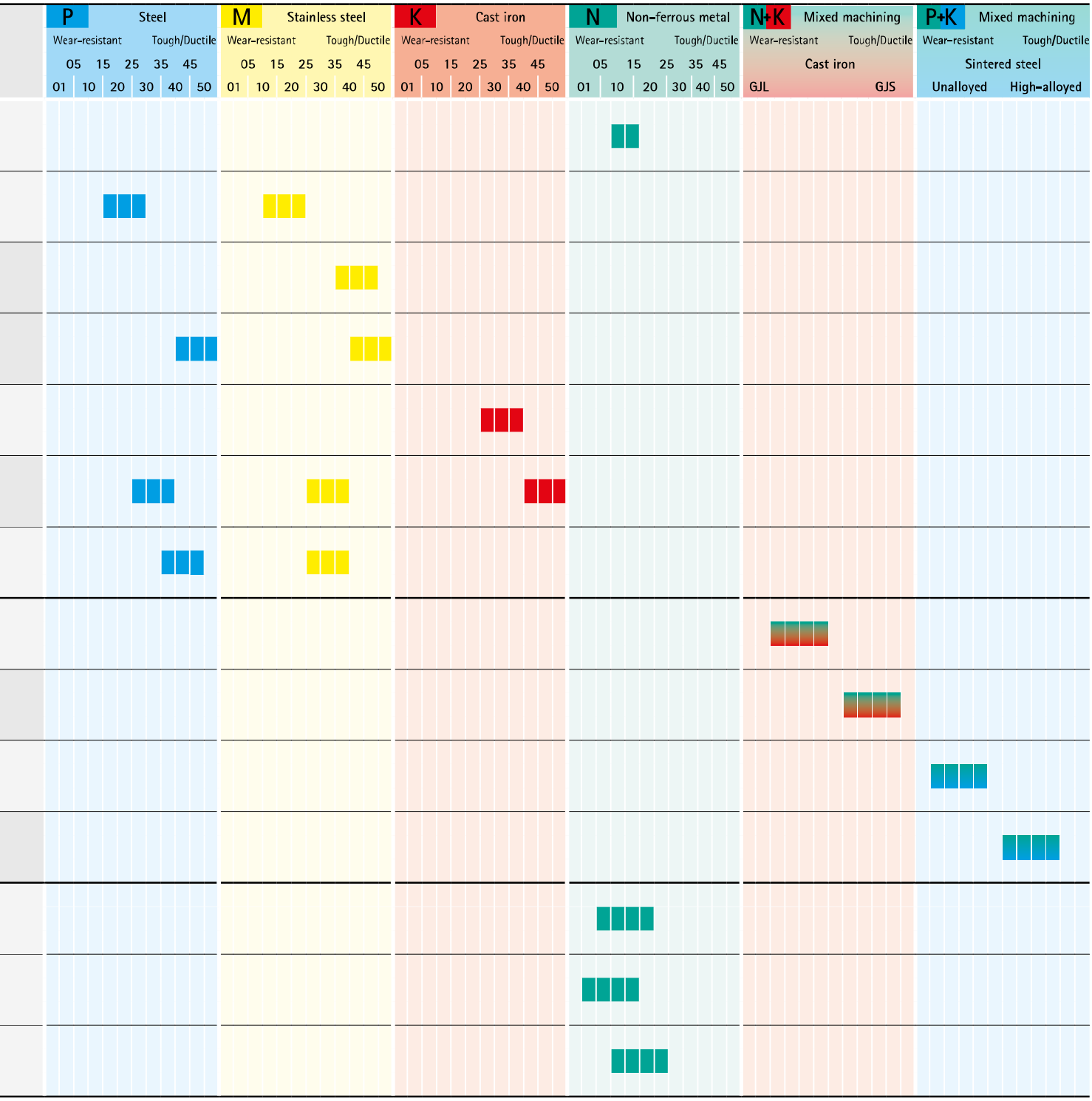
Field of application: ✱ Unstable machining ● General machining ● Stable machining


P Steel
Wear-resistant Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
M Stainless steel
Wear-resistant Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
K Cast iron
Wear-resistant Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
N Non-ferrous metal
Wear-resistant Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
N+K Mixed machining
Wear-resistant Tough/Ductile
Cast iron
GJL GJS
P+K Mixed machining
Wear-resistant Tough/Ductile
Sintered steel
Unalloyed High-alloyed

Cutting material overview: Types and type description 2/2

Substrate	Coating	Cutting material	Coating composition	Colour of coating	Field of application	Recommended application
Carbide	PVD-coated	HP615	TiB2	Anthracite	●	Fine grain carbide with a partially reduced PVD coating for machining adhesive materials. First choice for increasing tool life compared to uncoated cutting edges in aluminium alloys with 7–12 per cent silicon.
		HP880	TiAlN	Anthra-cite	●	Outstanding wear and heat resistance due to new PVD coating. Suitable for finishing stainless steel.
		HP885	TiAlN + TiAlSiN	Copper	●	Temperature-resistant cutting material type, finest grain carbide with multilayer PVD coating for universal machining of stainless steels.
		HP895	TiAlN	Anthra-cite	✱	TiAlN-coated finest grain carbide with high binder content. Optimised interaction of wear resistance and ductility. Suitable for semi-finishing stainless steel.
		HP930	AlTiCrN	Black an-thracite	●	Fine grain carbide with PVD top coating. Grade for semi-machining and roughing, for machining GJL and GJS.
		HP945	AlTiCrN	Black an-thracite	✱	Fine grain carbide with PVD top coating. For boring steels or stainless steels as well as heat-resistant cast steel.
		HP950	TiAlSiN	Copper	✱	Ductile fine-grain carbide with PVD coating. For boring workpiece material with highest tensile strength, stainless steels and heat-resistant cast steel.
	PVD-coated, mixed machining	HP525-P	TiAlXN	Gold brown	●	PVD-coated carbide, particularly suitable for the mixed machining of aluminium and GJL/GJS with smooth cut.
		HP530-P	TiAlXN	Gold brown	●	PVD-coated carbide, particularly suitable for the mixed machining of aluminium and GJL/GJS with smooth cut to slightly interrupted cut.
		HP540-P	TiAlXN	Gold brown	●	PVD-coated carbide, particularly suitable for the mixed machining of aluminium and sintered steel with smooth cut to slightly interrupted cut.
		HP545-P	TiAlXN	Gold brown	●	PVD-coated carbide with a balanced amount of ductility, particularly suitable for the mixed machining of aluminium and sintered steel with smooth cut to slightly interrupted cut.
PCD	I	PU617	-	-	●	PCD grade with medium particle size for roughing to semi-machining in non-ferrous metals and for machining very abrasive materials.
		PU660	-	-	●	Fine grain PCD grade for finishing non-ferrous metals as well as non-metallic workpiece materials such as fibre-reinforced plastics. The fine grain lends the insert very good sharpness (chipping) with good resistant to wear and achieves high surface finishes.
		PU670	-	-	✱	PCD cutting material with medium to coarse particle size. Excellent mechanical resistant to wear with good ductility, particularly suitable for machining abrasive workpiece materials.

Field of application: ✱ Unstable machining ● General machining ● Stable machining


P
Steel
Wear-resistant
Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
M
Stainless steel
Wear-resistant
Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
K
Cast iron
Wear-resistant
Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
N
Non-ferrous metal
Wear-resistant
Tough/Ductile
05 15 25 35 45
01 10 20 30 40 50
N+K
Mixed machining
Wear-resistant
Tough/Ductile
Cast iron
GJL
GJS
P+K
Mixed machining
Wear-resistant
Tough/Ductile
Sintered steel
Unalloyed
High-alloyed

Product ID codes: Radial indexable inserts

S	C	H	T	0	9	T	3

Blade form

S (90°)
C (80°)
T (60°)
D (55°)
V (35°)
W (82°) **

Tolerance

	d [mm]	m [mm]	s [mm]
H	±0.013	±0.013	±0.025
G	±0.025	±0.025	from ±0.05 to ±0.13 *
M	from ±0.05 to ±0.15 *	from ±0.08 to ±0.20 *	from ±0.05 to ±0.13 *

Insert type

W
T

Insert size

Incircle	d	d	d	a	
d [mm]	S	C	T	D	V
5.56	–	–	09	–	–
6.35	06	06	11	07	11
6.70	–	–	–	–	–
9.525	09	09	16	11	16
12.70	12	12	22	–	–

Clearance angle

B	5°
C	7°
P	11°
0	Special shapes

Insert thickness

Identification number	s [mm]
T1	1.98
02	2.38
03	3.18
T3	3.97
04	4.76

* Tolerance independent of the insert size
** Drilling from the solid

Not required with sintered inserts

0	4	E	0	2	L	-	2	W	-	H	P	5	3	0	-	P

Ground indexable insert

Cutting edge design

Code letter	Design
F 01	Sharp-edged
E 01, 02, 04	Rounded
T 51	Bevelled

Cutting direction

L	left
R	right
N	neutral
X	right / left

Cutting material

HP930
(Example)

Only with polished inserts

Code letter	Design
P	Polished insert S

Laser cut / ground chip guiding stage

Sintered chip guiding stage

2	L	A	U	3	0

Only with cutting edge tipping

Corner radius

Identification number	r [mm]
02	0.2
04	0.4
08	0.8
12	1.2

Laser-cut chip guiding stage

Code letter
C1
C2

Ground chip guiding stage

Code letter	
0A	6L
1R	1W
2R	2W
1L	X11
2L	X21
5L	

Tipping

Code letter	Design
A	Tipped on one side
	One corner or one cutting edge

Cutting edge design

Code letter	Design
MMM	Chip guiding stage finishing
U 01...99	
MGP	Chip guiding stage semi
M 01...99	
MKM	Chip guiding stage roughing
R 01...99	

Product ID codes: Tangential indexable inserts

W	T	H	Q	0 9	0 6	0 8

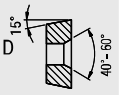
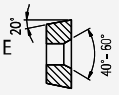
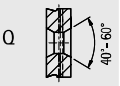
Blade form

C (80°) 
F (70°) 
S (90)° 

Tolerance

	d [mm]	s [mm]
H	±0.013	±0.025
G	±0.025	±0.13
N	±0.05 – ±0.15	±0.25

Insert type

	D 
	E 
	Q 

Insert size

Incircle	d	d	d
d [mm]	C	F	S
6.35	06/09	06	06
9.525	09/13	09	09
12.7	12/18	12	–

Indexable insert


T
Tangential

Insert thickness

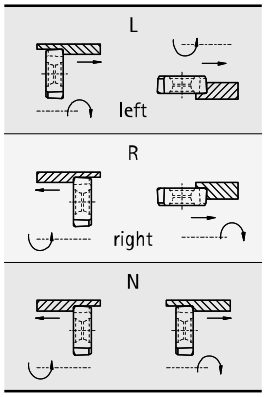
Identification number	s [mm]
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35

Corner radius

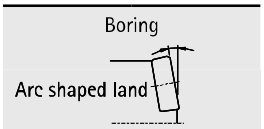
Identification number	r [mm]
00	0
04	0.4
08	0.8
12	1.2

A	3	2	L	0	0	B	0	4	1	-	H	U	6	1	5

Cutting direction



Contact angle



Identification number	Angle
00	0°
10	10°

Cutting material

HU615

(Example)

Chip guiding stage

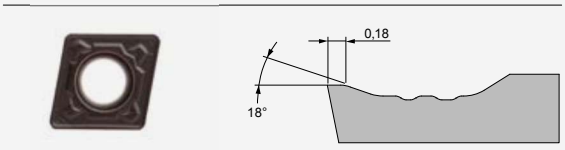
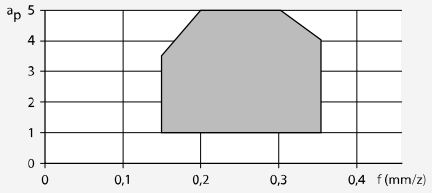
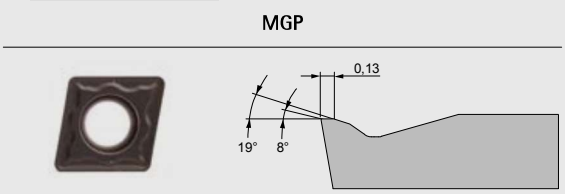
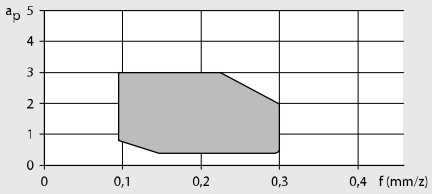
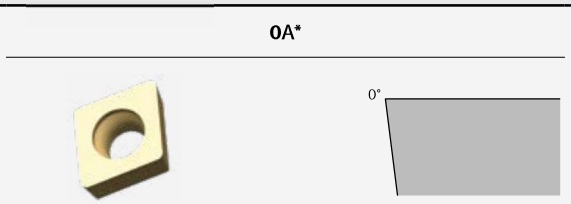
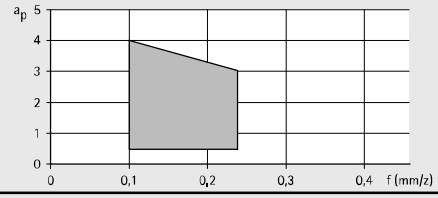
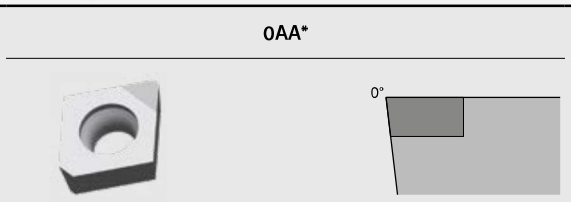
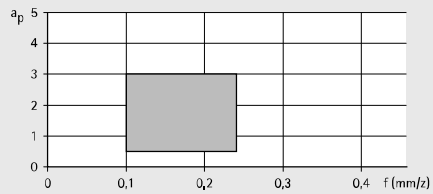
Code letter
A 01...99
C 01...99
D 01...99
H 01...99

Arc shaped land

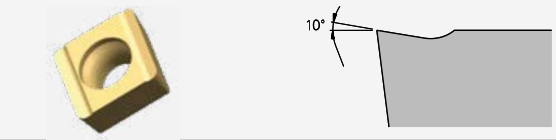
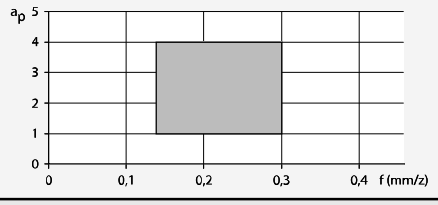
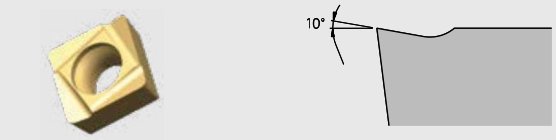
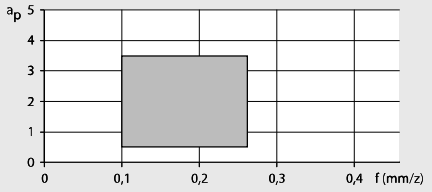
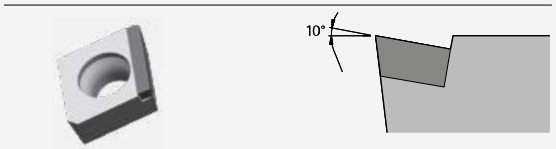
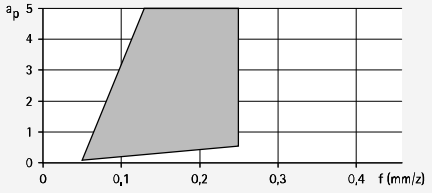
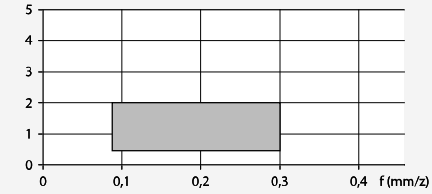
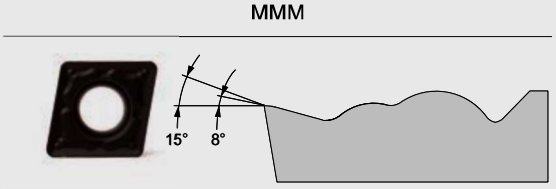
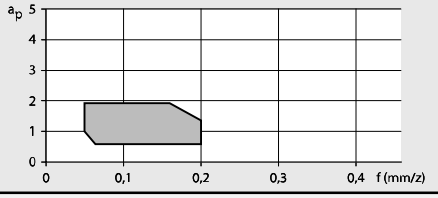
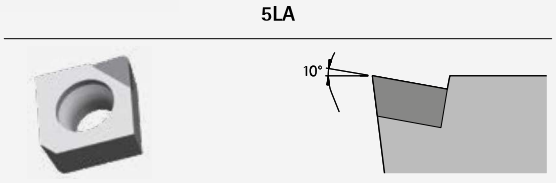
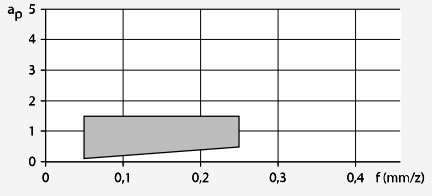
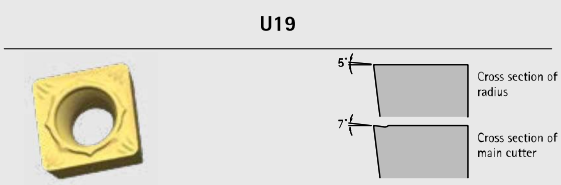
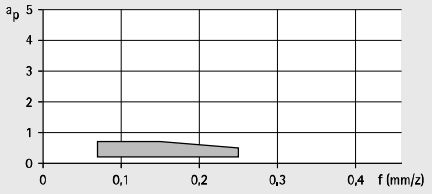
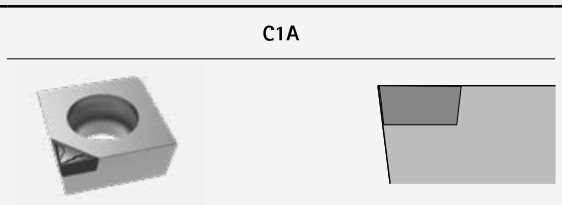
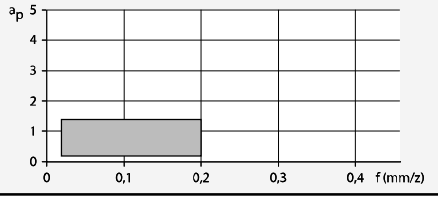
	Identification number	Radius	
Installation position	B012	12	CTHQ/FTHQ
	B016	16	
	B021	21	
	B041	40	
	B081	80	

Overview of chip guiding stages – boring

Radial indexable inserts

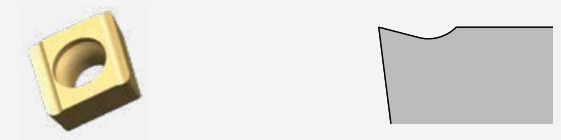
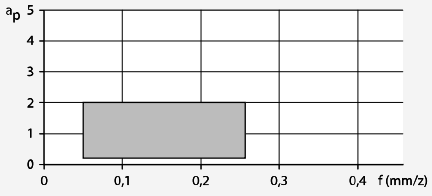
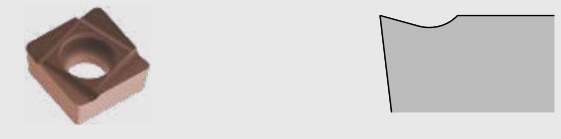
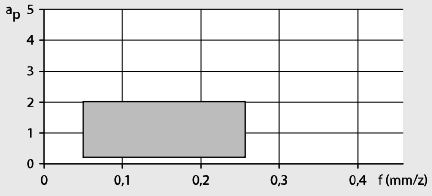
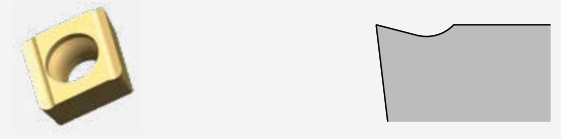
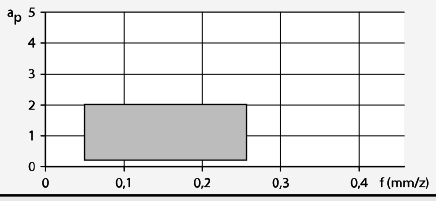
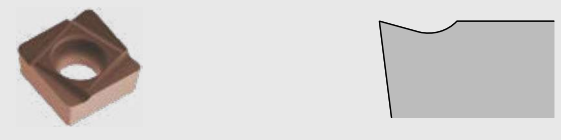
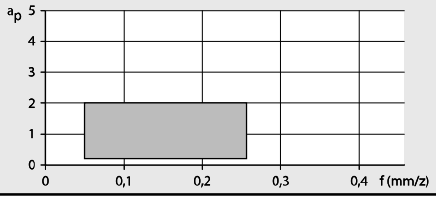
	Type	Workpiece material group	Edge rounding	Diagram
Roughing	**MKM** 	P M K N	+++	
Medium machining	**MGP** 	P M K N	++	
	0A* 	P M K N	+ ++	
	0AA* 	P M K N	0 + ++	

* This chip guiding stage is available with different edge rounding.
0 = sharp edged | + = slightly rounded | ++ = medium rounded | +++ = heavily rounded

	Type	Workpiece material group	Edge rounding	Diagram
Medium machining	1L* 	P M K N	+ ++	
	2L* 	P M K N	+ ++	
	6LA 	P M K N	0	
	C2A 	P M K N	0	
Finishing	MMM 	P M K N	++	
	5LA 	P M K N	0	
	U19 	P M K N	+	
	C1A 	P M K N	0	

Overview of chip guiding stages – boring

Radial indexable inserts

	Type	Workpiece material group	Edge rounding	Diagram
Mixed machining	1R* 	P M K N	0 +	
	2R* 	P M K N	0 +	
	1W 	P M K N	+	
	2W 	P M K N	+	

Marking on "press-to-size" indexable inserts

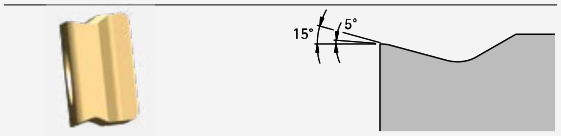
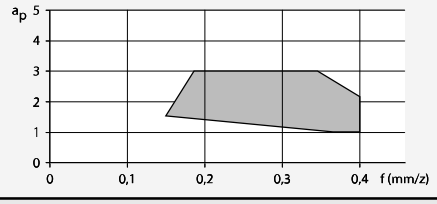
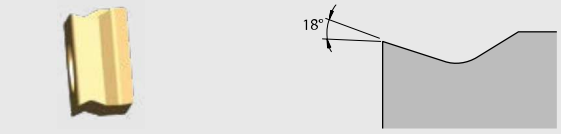
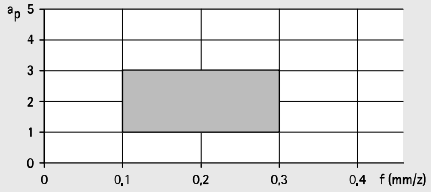
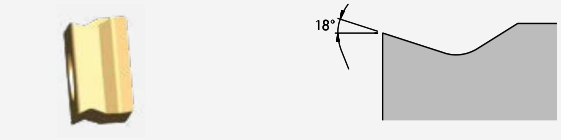
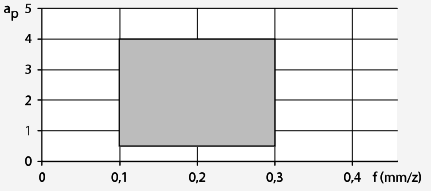
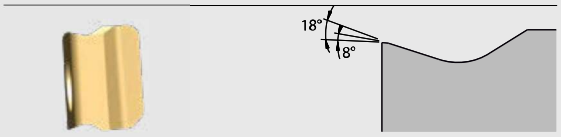
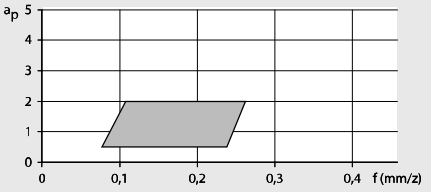
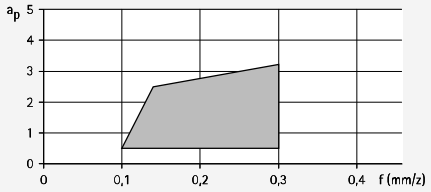
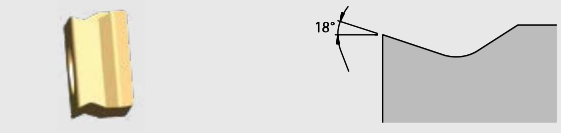
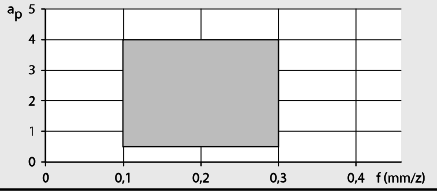
1 MAPAL embossing and chip guiding stage

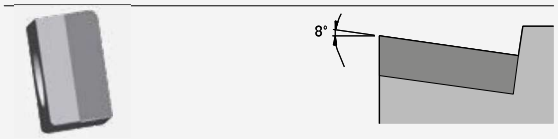
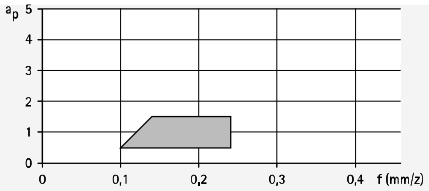
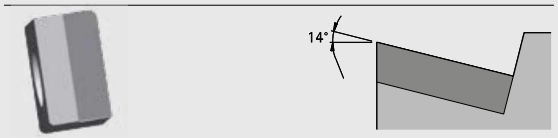
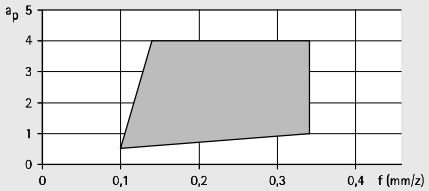
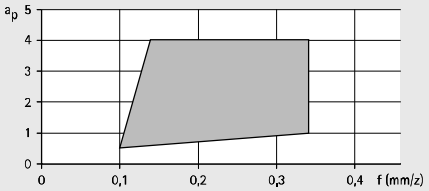
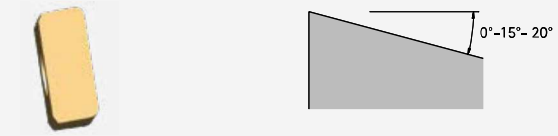
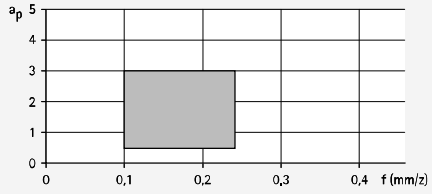
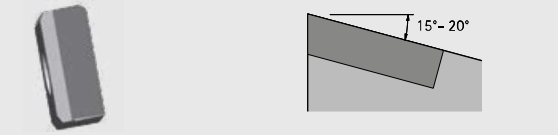
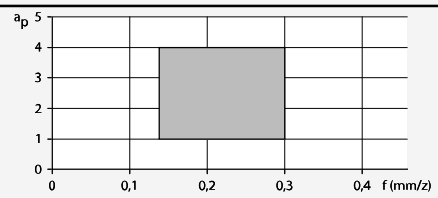
2 Radius/lead and cutting direction

* This chip guiding stage is available with different edge rounding.
0 = sharp edged | + = slightly rounded | ++ = medium rounded | +++ = heavily rounded

Overview of chip guiding stages – boring

Tangential indexable inserts

	Type	Workpiece material group	Edge rounding	Diagram
Roughing	A53 	P M K N	++	
	A32 	P M K N	++	
	H02 	P M K N	++	
	H32 	P M K K	++	
Medium machining	A30 	P M K N	0	
	A32 	P M K N	++	

	Type	Workpiece material group	Edge rounding	Diagram
Medium machining	**A79** 	P M K N	0	
	A80 	P M K N	0	
Universal	**D00** 	P M K N	0	
	D02 	P M K N	++	
	D80 	P M K N	0	

CCMT

Radial indexable insert, two cutting edges, neutral design

Workpiece material		P				
		Unalloyed ← Wear-resistant		Alloyed → Tough/Ductile	Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile
Substrate		Carbide				
Coating		CVD			PVD	
Cutting material type		HC850	HC855	HC865	HP880	HP895
	Cutting edge design	MKM		MKM		
	CCMT06	a_p max. [mm]				
Roughing	CCMT060204N-...-	1.5 - 2.5				
	CCMT09					
	CCMT09T304N-...-	1.5 - 3.0		30966062		
		1.5 - 4.0				
	CCMT09T308N-...-	1.5 - 3.0	31265843	30985462		
		1.5 - 4.0				
	CCMT12					
	CCMT120408N-...-	1.5 - 4.0	31265844	30985477		
		1.5 - 5.0				
	CCMT120412N-...-	1.5 - 4.0	31265846	30985485		
		1.5 - 5.0				
	Cutting edge design	MGP	MGP	MGP	MGP	MGP
	CCMT06	a_p max. [mm]				
Medium machining	CCMT060202N-...-...	0.25 - 2.0				
	CCMT060204N-...-...	0.5 - 2.0	30985423			30985422
	CCMT060208N-...-...	0.75 - 2.0	30985443			30985442
	CCMT09					
	CCMT09T302N-...-...	0.25 - 3.0	30985451			
	CCMT09T304N-...-...	0.5 - 3.0	30985455	31092654	30966057	30966058
	CCMT09T308N-...-...	0.75 - 3.0	31265842	30985892	30985461	30985891	30985460
	CCMT12					
	CCMT120404N-...-...	0.5 - 3.0	30985470			
	CCMT120408N-...-...	0.75 - 3.0	30985473		30985474	
	CCMT120412N-...-...	1.0 - 3.0	31265845		31092655	
	Cutting edge design	MMM		MMM	MMM	MMM
	CCMT06	a_p max. [mm]				
Finishing	CCMT060202N-...-...	0.5 - 1.0	30985415			30985414
	CCMT060204N-...-...	0.5 - 1.0	30985435		30985436	30985432	30985433
	CCMT060208N-...-...	0.5 - 1.0				30985448
	CCMT09					
	CCMT09T302N-...-...	0.5 - 1.0	30985453			30985452
	CCMT09T304N-...-...	0.5 - 1.0	30985887		30966053	30966070	30955706
	CCMT09T308N-...-...	0.5 - 1.0	30985465		30985896	30985894	30985895

Specified a_p ranges are recommendations and may vary depending on the material being machined.

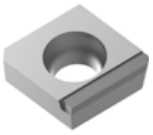
	M					K	
	Austenitic ← Wear-resistant	Ferritic → Tough/Ductile	Austenitic ← Wear-resistant		Ferritic → Tough/Ductile	GJL ← Wear-resistant	GJS → Tough/Ductile
	Carbide					Carbide	
	CVD		PVD			CVD	
	HC875	HC885	HP880	HP885	HP895	HC820	HC830
						MKM	MKM
						30985425	30985427
						30966120	30985884
						30966113	30985893
						30985475	30985476
						30985481	30985483
	MGP	MGP	MGP	MGP	MGP	MGP	MGP
						30985413	
	30985420	30985421		31245556	30985422	30985417	30985419
				31245557	30985442	30985439	30985441
						30985450	
	30985883	30966056	30966057	31245558	30966058	30985882	30985454
	30985459	30985890	30985891	31245559	30985460	30985888	30985889
						30985467	30985469
	30985899					30985472	30985898
						30985479	
			MMM	MMM	MMM	MMM	MMM
					30985414		
			30985432	31245539	30985433	30985429	30985431
				31245541	30985448	30985445	30985447
					30985452		
			30966070	31245543	30955706	30985885	30985886
			30985894	31245545	30985895	30985463	30985464

CCGT

Radial indexable insert, two cutting edges, neutral design

Carbide/Cermet

Tipped variants, single edged:



6LA

5LA

C1A

C2A

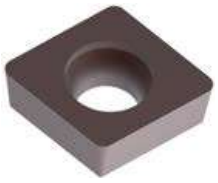
Workpiece material		P		M	N		
					Al alloyed ← Wear-resistant		Cu alloyed → Tough/Ductile
Substrate		Cermet	Carbide	Carbide	PCD		
Coating		CVD	PVD	PVD	-		
Cutting material type		CC112	HP895	HP895	PU617	PU660	PU670
	Cutting edge design			MGP	MGP	6LA		C2A
	CCGT06	a_p max. [mm]						
Medium machining	CCGT060202N-...-...	0.25 – 2.0		30985376	30985376			
	CCGT060204F01L-...-...	0.1 – 3.0				30708850		
	CCGT060204F01R-...-...	0.1 – 3.0				31277722		
	CCGT060204N-...-...	0.5 – 2.0		30985378	30985378			
	CCGT060208F01L-...-...	0.1 – 3.0				30375239		
	CCGT060208F01R-...-...	0.1 – 3.0				31204099		
	CCGT060208N-...-...	0.75 – 2.0		30985393	30985393			
	CCGT09							
	CCGT09T302N-...-...	0.25 – 3.0		30985398	30985398			
	CCGT09T304F01L-...-...	0.1 – 4.5				30370125		
	CCGT09T304F01R-...-...	0.1 – 4.5				30497774		
	CCGT09T304F01N-...-...	0.4 – 1.6						30234061
	CCGT09T304N-...-...	0.5 – 3.0		30985400	30985400			
	CCGT09T308F01L-...-...	0.1 – 4.5				30370124		
	CCGT09T308F01R-...-...	0.1 – 4.5				30370397		
	CCGT09T308F01N-...-...	0.5 – 2.0						30234062
	CCGT09T308N-...-...	0.75 – 3.0		30985406	30985406			
	CCGT12							
	CCGT120404N-...-...	0.5 – 3.0		30985410	30985410			
	CCGT120404F01L-...-...	0.1 – 7.0				31025433		
	CCGT120408N-...-...	0.5 – 3.0		30985411	30985411			
	CCGT120408F01L-...-...	0.1 – 7.0				30589862		

	Cutting edge design		U19			5LA	C1A	
	CCGT06	a_p max. [mm]						
Finishing	CCGT060204N-...-...	0.1 – 0.5	30874908					
	CCGT060204F01N-...-...	0.1 – 1.0				30708851	10104313	
	CCGT060208N-...-...	0.2 – 0.5	30799422					
	CCGT060208F01N-...-...	0.1 – 1.5				31277724		
	CCGT09							
	CCGT09T304F01N-...-...	0.1 – 2.0				31079089		
	CCGT09T304F01N-...-...	0.1 – 1.0					10099042	
	CCGT09T308F01N-...-...	0.1 – 2.0				31277725		
	CCGT09T308F01N-...-...	0.15 – 1.4					30234050	

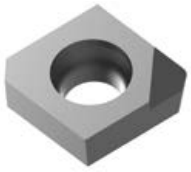
Specified a_p ranges are recommendations and may vary depending on the material being machined.

CCGW

Radial indexable inserts, double edged, neutral design



Tipped variant, single edged:



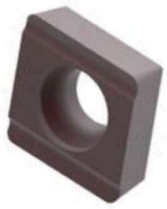
0AA

Workpiece material			K						N
			GJL Wear-resistant	GJS Tough/Ductile	GJL Wear-resistant	GJS Tough/Ductile	GJL Wear-resistant	GJS Tough/Ductile	
Substrate			Carbide				PcBN		PCD
Coating			CVD		PVD		-		-
Cutting material type			HC740		HP930		FU430		PU617
	Cutting edge design		0A		0A		0AA		
	CCGW06	a_p max. [mm]							
Medium machining	CCGW060204E04N-...-...	0.5 – 3.2	31317178		30950259				
	CCGW060204T51N-...-...	0.5 – 2.0					10105523		
	CCGW060208E04N-...-...	0.5 – 3.2	31317202		30950280				
	CCGW09								
	CCGW09T304E04N-...-...	0.5 – 4.0	31027805		30950281				
	CCGW09T304T51N-...-...	0.5 – 2.5					10105636		
	CCGW09T308E04N-...-...	0.5 – 4.0	31023434		30950282				
	CCGW09T308T51N-...-...	0.5 – 2.5					10105650		
	CCGW09T312E04N-...-...	0.5 – 4.0	31317207		30950283				
	Cutting edge design				0A		0AA		0AA
	CCGW06	a_p max. [mm]							
Finishing	CCGW060202F01N-...-...	0.1 – 1.0							31277730
	CCGW060204F01N-...-...	0.1 – 1.0							30492177
	CCGW060204E01N-...-...	0.1 – 1.0					10105520		
	CCGW060204E02N-...-...	0.2 – 1.0			30950284				
	CCGW060208E02N-...-...	0.2 – 1.0			30950285				
	CCGW09								
	CCGW09T304F01N-...-...	0.1 – 1.0							30418983
	CCGW09T304E01N-...-...	0.1 – 1.0					10105634		
	CCGW09T304E02N-...-...	0.2 – 2.0			30950286				
	CCGW09T308F01N-...-...	0.1 – 1.0							30492178
	CCGW09T308E01N-...-...	0.1 – 1.0					10105648		
	CCGW09T308E02N-...-...	0.2 – 2.0			30950287				

Specified a_p ranges are recommendations and may vary depending on the material being machined.

CCHT

Radial indexable inserts, double edged, left design



Workpiece material			K		N	
Substrate			Carbide		Carbide	
Coating			CVD	PVD	–	PVD
Cutting material type			HC740	HP930	HU616	HP615
	Cutting edge design		1L	1L		1R
	CCHT06	a_p max. [mm]				
Medium machining	CCHT060204E04L-...-...	0.5 – 3.2	31041976	30950288		
	CCHT060208E04L-...-...	0.5 – 3.2	31115820	30950289		
	CCHT09					
	CCHT09T302F01L-...-...	0.5 – 4.0				30492197
	CCHT09T304F01L-...-...	0.5 – 4.0				30478168
	CCHT09T304E04L-...-...	0.5 – 4.0	30963744	30950290		
	CCHT09T308F01L-...-...	0.5 – 4.0				30484471
	CCHT09T308E04L-...-...	0.5 – 4.0	30884324	30950291		
	CCHT09T312E04L-...-...	0.5 – 4.0	30884469	30950292		
	CCHT12					
	CCHT120404E04L-...-...	0.5 – 5.0	30963715	30950293		
	CCHT120408E04L-...-...	0.5 – 5.0	30894700	30950294		
	CCHT120412E04L-...-...	0.5 – 5.0	31317213	30950295		
	Cutting edge design			1L	1R	1R
	CCHT06	a_p max. [mm]				
Finishing	CCHT060202F01L-...-...	0.1 – 1.0			30010702	
	CCHT060204F01L-...-...	0.1 – 1.4			30010703	
	CCHT060204E02L-...-...	0.1 – 1.0		30950296		
	CCHT060208F01L-...-...	0.1 – 1.8			30010704	
	CCHT060208E02L-...-...	0.1 – 1.0		30950297		
	CCHT09					
	CCHT09T302F01L-...-...	0.1 – 2.0			30010705	30492197
	CCHT09T304F01L-...-...	0.1 – 2.0			30010706	30478168
	CCHT09T304E02L-...-...	0.1 – 2.0		30950298		
	CCHT09T308F01L-...-...	0.1 – 2.0			30010707	30484471
	CCHT09T308E02L-...-...	0.1 – 2.0		30950299		
	CCHT09T312F01L-...-...	0.1 – 2.0			30084580	
	CCHT12					
	CCHT120402F01L-...-...	0.1 – 3.0			30010708	
	CCHT120404F01L-...-...	0.1 – 3.0			30010709	
	CCHT120408F01L-...-...	0.1 – 3.0			30010710	
	CCHT120412F01L-...-...	0.1 – 3.0			30010711	

Specified a_p ranges are recommendations and may vary depending on the material being machined.

CCHT

Radial indexable inserts, double edged, right design

Workpiece material			K		N	
Substrate			Carbide		Carbide	
Coating			CVD	PVD	–	PVD
Cutting material type			HC740	HP930	HU616	HP615
	Cutting edge design		1L	1L		1R
	CCHT06	a_p max. [mm]				
Medium machining	CCHT060204E04R-...-...	0.5 – 3.2	31317208	30950300		
	CCHT060208E04R-...-...	0.5 – 3.2	31317209	30950301		
	CCHT09					
	CCHT09T304F01R-...-...	0.5 – 4.0				30478169
	CCHT09T304E04R-...-...	0.5 – 4.0	31115392	30950302		
	CCHT09T308F01R-...-...	0.5 – 4.0				30492211
	CCHT09T308E04R-...-...	0.5 – 4.0	31041977	30950303		
	CCHT09T312E04R-...-...	0.5 – 4.0	31317210	30950304		
	CCHT12					
	CCHT120404E04R-...-...	0.5 – 5.0	31317211	30950305		
	CCHT120408E04R-...-...	0.5 – 5.0	31317212	30950306		
	CCHT120412E04R-...-...	0.5 – 5.0	31317214	30950307		

	Cutting edge design			1L	1R	1R
	CCHT06	a_p max. [mm]				
Finishing	CCHT060202F01R-...-...	0.1 – 1.0			30010732	
	CCHT060204F01R-...-...	0.1 – 1.4			30010733	
	CCHT060204E02R-...-...	0.1 – 1.0		30950308		
	CCHT060208F01R-...-...	0.1 – 1.8			30010734	
	CCHT060208E02R-...-...	0.1 – 1.0		30950309		
	CCHT09					
	CCHT09T302F01R-...-...	0.1 – 2.0			30010735	
	CCHT09T304F01R-...-...	0.1 – 2.0			30010736	30478169
	CCHT09T304E02R-...-...	0.1 – 2.0		30950310		
	CCHT09T308F01R-...-...	0.1 – 2.0			30010737	30492211
	CCHT09T308E02R-...-...	0.1 – 2.0		30950311		
	CCHT09T312F01R-...-...	0.1 – 2.0			30492212	
	CCHT12					
	CCHT120402F01R-...-...	0.1 – 3.0			30010738	
	CCHT120404F01R-...-...	0.1 – 3.0			30010739	
	CCHT120408F01R-...-...	0.1 – 3.0			30010740	
	CCHT120412F01R-...-...	0.1 – 3.0			30010741	

Specified a_p ranges are recommendations and may vary depending on the material being machined.

DCMT | DCGT | DCGW

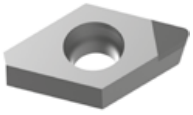
Radial indexable insert, two cutting edges, neutral design

Workpiece material			P					
			Unalloyed ← Wear-resistant		Alloyed → Tough/Ductile	Unalloyed ← Wear-resistant		Alloyed → Tough/Ductile
Substrate			Carbide					
Coating			CVD			PVD		
Cutting material type			HC850	HC855	HC865	HP880	HP895	
	Cutting edge design				MKM			
	DCMT11	a_p max. [mm]						
Roughing	DCMT11T304N-...-...	1.5 – 2.5			30966087			
		1.5 – 3.0						
	DCMT11T308N-...-...	1.5 – 3.0			30966078			
		1.5 – 4.0						
	Cutting edge design		MGP	MGP	MGP	MGP	MGP	
	DCMT07	a_p max. [mm]						
Medium machining	DCMT070202N-...-...	0.25 – 1.8						
	DCMT070204N-...-...	0.5 – 2.0	30985499				30985498	
	DCMT070208N-...-...	0.75 – 2.0			31092658			
	DCMT11							
	DCMT11T304N-...-...	0.25 – 2.0	31092656	30985510	30966101	30966092	30966093	
	DCMT11T308N-...-...	0.5 – 2.5	30966103	30985518		30966082	30966083	
	DCGT11							
	DCGT11T304F01N-...-...	0.4 – 1.5						
	DCGT11T308F01N-...-...	0.5 – 1.8						
	DCMT15							
	DCMT150404N-...-...	0.5 – 2.5						
	DCMT150408N-...-...	0.5 – 3.0						
	DCMT150412N-...-...	0.5 – 3.0						

	Cutting edge design		MMM		MMM	MMM	MMM	
	DCMT07	a_p max. [mm]						
Finishing	DCMT070202N-...-...	0.5 – 1.0			30985495		30985494	
	DCMT070204N-...-...	0.5 – 1.0	30986033				30985500	
	DCMT070208N-...-...	0.5 – 1.0						
	DCMT11							
	DCMT11T302N-...-...	0.5 – 1.5	30966100				30985505	
	DCMT11T304N-...-...	0.5 – 1.5	30985902		30966088	30966095	30966096	
	DCMT11T308N-...-...	0.5 – 1.5	30966104		30966079	30966085	30966086	
	DCGT11							
	DCGT11T304F01N-...-...	0.1 – 1.0						
	DCGT11T308F01N-...-...	0.15 – 1.4						
	DCGW11							
	DCGW11T304F01N-...-...	0.1 – 2.0						
	DCGW11T304E01N-...-...	0.1 – 1.0						
	DCGW11T308F01N-...-...	0.1 – 2.0						
	DCGW11T308F01N-...-...	0.1 – 1.0						

Specified a_p ranges are recommendations and may vary depending on the material being machined.

Tipped variant, single edged:


0AA


C1A


C2A

	M					K			N		
	Austenitic ← Wear-resistant / Ferritic → Tough/Ductile		Austenitic ← Wear-resistant / Ferritic → Tough/Ductile			GJL ← Wear-resistant / GJS → Tough/Ductile			Al alloyed ← Wear-resistant / Cu alloyed → Tough/Ductile		
	Carbide					Carbide		PcBN	PCD		
	CVD		PVD			CVD		-	-		
	HC875	HC885	HP880	HP885	HP895	HC815	HC825	FU430	PU617	PU660	PU670
						MKM	MKM				
						30985511	30985512				
						30985519	30985520				
	MGP	MGP	MGP	MGP	MGP	MGP	MGP				C2A
						30985493					
					30985498	30985496	30985497				
						30985501	30985502				
	30985508	30966091	30966092	31245560	30966093	30985506	30985507				
	30985517		30966082	31245562	30966083	30985515	30985516				
											30234066
											30234067
						30985522					
						30985523					
						30985524					
	MMM		MMM	MMM	MMM	MMM		0AA	0AA	1CA	
	30966105				30985494						
	30966107			31245546	30985500						
				31245547							
					30985505						
			30966095	31245548	30966096	30985513					
	30985903		30966085	31245549	30966086						
										30234052	
										30234053	
									31212079		
								10105921			
									31277726		
								10105952			

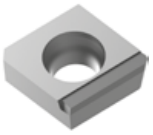
SCMT | SPMT | SCGT | SPGT

Radial indexable inserts, four cutting edges, neutral design

Workpiece material			P					
				Unalloyed ← Wear-resistant		Alloyed → Tough/Ductile	Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile
Substrate			Cermet	Carbide				
Coating			CVD	CVD			PVD	
Cutting material type			CC112	HC850	HC855	HC865	HP880	HP895
	Cutting edge design			MKM		MKM		
	SCMT09	a_p max. [mm]						
Roughing	SCMT09T308N-...-...	1.5 – 3.0		31265847		30966072		
		1.5 – 4.0						
	SCMT12							
	SCMT120408N-...-...	1.5 – 4.0		31265848		30985564		
		1.5 – 5.0						
	SCMT120412N-...-...	1.5 – 4.0		31265849				
		1.5 – 5.0						
	Cutting edge design			MGP	MGP	MGP		MGP
	SPMT06	a_p max. [mm]						
Medium machining	SPMT060304N-...-...	0.5 – 2.0		30985573		30985575		
	SPMT060308N-...-...	0.75 – 2.0				31265851		
	SCMT09							
	SCMT09T304N-...-...	0.5 – 3.0		31085129		31085141		30985536
	SCMT09T308N-...-...	0.75 – 3.0		31085140	30985543	30966127		
	SCMT09T312N-...-...	1 – 3.0		31276723		31273621		
	SCGT09							
	SCGT09T308F01N-...-...	0.5 – 2.0						
	SCMT12							
	SCMT120404N-...-...	0.5 – 3.0						
	SCMT120408N-...-...	0.75 – 3.0		31085142	30985560	31085143		
	Cutting edge design		U19	MMM		MMM	MMM	MMM
	SPMT06	a_p max. [mm]						
Finishing	SPMT060304N-...-...	0.5 – 2.0		30985579		30985580	30985577	30985913
	SPGT06							
	SPGT060304F01N-...-...	0.1 – 0.8						
	SPGT060304F01L-...-...	0.1 – 3.0						
	SPGT060304F01R-...-...	0.1 – 3.0						
	SPGT060308F01N-...-...	0.1 – 0.8						
	SPGT060308F01L-...-...	0.1 – 3.0						
	SPGT060308F01R-...-...	0.1 – 3.0						
	SCMT09							
	SCMT09T304N-...-...	0.5 – 1.5		31085144		31085145		30985540
	SCMT09T308N-...-...	0.5 – 1.5		30983531		30966073	30966076	30955704
	SCGT09							
	SCGT09T304N-...-...	0.1 – 0.5	30647885					
	SCGT09T304F01N-...-...	0.1 – 0.5						
	SCGT09T304F01L-...-...	0.1 – 4.5						
	SCGT09T304F01R-...-...	0.1 – 4.5						
	SCGT09T308N-...-...	0.1 – 0.5	10102893					
	SCGT09T308F01N-...-...	0.1 – 0.5						
	SCGT09T308F01N-...-...	0.15 – 1.4						
	SCGT09T308F01L-...-...	0.1 – 4.5						
	SCGT09T308F01R-...-...	0.1 – 4.5						

Specified a_p ranges are recommendations and may vary depending on the material being machined.

Tipped variants, single edged:


6LA


5LA

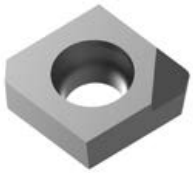

C1A


C2A

	M				K		N			
	Austenitic ← Wear-resistant / Ferritic → Tough/Ductile		Austenitic ← Wear-resistant / Ferritic → Tough/Ductile		GJL ← Wear-resistant / GJS → Tough/Ductile		Al alloyed ← Wear-resistant / Cu alloyed → Tough/Ductile			
	Carbide						PCD			
	CVD		PVD				–			
	HC875	HC885	HP880	HP895	HC820	HC830	PU617		PU660	PU670
					MKM	MKM				
					30985545	31092659				
					30985562	31092660				
					30985566	31092661				
	MGP			MGP	MGP	MGP				C2A
					30985574	30985576				
					30985914	30985915				
	30985535			30985536	30985908	30985534				
	31092662				30985911	30985912				
										30249457
					30985552	30985554				
	30985559				30985556	30985558				
		MMM	MMM	MMM	MMM	MMM	5LA	6LA	C1A	
		30972033	30985577	30985913	30985578	31084646				
							31277727			
								30373268		
								31279699		
							31279698			
								31217111		
								31279720		
				30985540	30985538	30985539				
			30966076	30955704	30985548	30985550				
							30374908			
								30546951		
								31279721		
							30692832			
									30250261	
								30568596		
								31279723		

SCGW | SPGW

Radial indexable inserts, four cutting edges



Tipped variant, single edged: 0AA

Workpiece material			K			N
			GJL ← Wear-resistant / GJS → Tough/Ductile	GJL ← Wear-resistant / GJS → Tough/Ductile	GJL ← Wear-resistant / GJS → Tough/Ductile	
Substrate			Carbide		PcBN	PCD
Coating			CVD	PVD	-	-
Cutting material type			HC740	HP930	FU430	PU617
	Cutting edge design		0A	0A	0AA	
	SPGW06	a_p max. [mm]				
Medium machining	SPGW060304E04N-...-...	0.5 – 3.2	31070945	30950312		
	SPGW060308E04N-...-...	0.5 – 3.2	31050739	30950313		
	SCGW09					
	SCGW09T304E04N-...-...	0.5 – 4.0	31022296	30950314		
	SCGW09T304T51N-...-...	0.5 – 2.5			10106285	
	SCGW09T308E04N-...-...	0.5 – 4.0	31022297	30950315		
	SCGW09T308T51N-...-...	0.5 – 2.5			10106299	
	SCGW12					
	SCGW120404E04N-...-...	0.5 – 5.0	31317220	30950316		
	SCGW120408E04N-...-...	0.5 – 5.0	30939413	30950317		
	Cutting edge design			0A	0AA	0AA
	SPGW06	a_p max. [mm]				
Finishing	SPGW060304F01N-...-...	0.1 – 1.2				31277731
	SPGW060304E02N-...-...	0.2 – 1.0		30950318		
	SPGW060308F01N-...-...	0.1 – 1.0				31279738
	SPGW060308E02N-...-...	0.2 – 1.0		30950319		
	SCGW09					
	SCGW09T304F01N-...-...	0.1 – 1.4				31277732
	SCGW09T304E01N-...-...	0.1 – 1.0			10106283	
	SCGW09T304E02N-...-...	0.2 – 2.0		30950320		
	SCGW09T308F01N-...-...	0.1 – 1.8				30429723
	SCGW09T308E01N-...-...	0.1 – 1.0			10106297	
	SCGW09T308E02N-...-...	0.2 – 2.0		30950321		
	SCGW12					
	SCGW120404F01N-...-...	0.1 – 1.4				31279752
	SCGW120408F01N-...-...	0.1 – 1.8				31279753

Specified a_p ranges are recommendations and may vary depending on the material being machined.

SCHT | SPHT

Radial indexable inserts, double edged, neutral design

	Workpiece material		K				N
			GJL ← Wear-resistant	GJS → Tough/Ductile	GJL ← Wear-resistant	GJS → Tough/Ductile	
	Substrate		Carbide				Carbide
	Coating		CVD		PVD		
	Cutting material type		HC740		HP930		HU616
	Cutting edge design		1L		1L		
	SPHT06	a_p max. [mm]					
Medium machining	SPHT060304E04X-...-...	0.5 – 3.2	31042317		30953122		
	SPHT060308E04X-...-...	0.5 – 3.2	31317315		30953126		
	SCHT09						
	SCHT09T304E04X-...-...	0.5 – 4.0	31121604		30953127		
	SCHT09T308E04X-...-...	0.5 – 4.0	30963756		30953128		
	SCHT09T312E04X-...-...	0.5 – 4.0	31317219		30953150		
	SCHT12						
	SCHT120404E04X-...-...	0.5 – 5.0	31081857		30953151		
	SCHT120408E04X-...-...	0.5 – 5.0	31317304		30953152		
	SCHT120412E04X-...-...	0.5 – 5.0	31317308		30953154		
	Cutting edge design				1L		1R
	SPHT06	a_p max. [mm]					
Finishing	SPHT060304E02X-...-...	0.1 – 1.0			30953158		
	SPHT060308E02X-...-...	0.1 – 1.0			30953164		
	SCHT09						
	SCHT09T302F01X-...-...	0.1 – 2.0					30141062
	SCHT09T304F01X-...-...	0.1 – 2.0					30010681
	SCHT09T304E02X-...-...	0.1 – 2.0			30953159		
	SCHT09T308F01X-...-...	0.1 – 2.0					30010682
	SCHT09T308E02X-...-...	0.1 – 2.0			30953168		
	SCHT09T312F01X-...-...	0.1 – 2.0					30492274
	SCHT12						
	SCHT120404F01X-...-...	0.1 – 3.0					30010683
	SCHT120408F01X-...-...	0.1 – 3.0					30010684

Specified a_p ranges are recommendations and may vary depending on the material being machined.

SCHT | SPHT

Radial indexable inserts, four cutting edges

Left design

Right design

			K		N	
Workpiece material			GJL ← Wear-resistant / GJS → Tough/Ductile	GJL ← Wear-resistant / GJS → Tough/Ductile		
Substrate			Carbide		Carbide	
Coating			CVD	PVD	–	PVD
Cutting material type			HC740	HP930	HU616	HP615
	Cutting edge design		2L	2L		2R
	SPHT06	a_p max. [mm]				
Medium machining	SPHT060302F01L-...-...	0.5 – 3.2				30492231
	SPHT060302F01R-...-...	0.5 – 3.2				30492248
	SPHT060304F01L-...-...	0.5 – 3.2				30239958
	SPHT060304F01R-...-...	0.5 – 3.2				30492249
	SPHT060304E04L-...-...	0.5 – 3.2	31044035	30950322		
	SPHT060304E04R-...-...	0.5 – 3.2	30939004	30950346		
	SPHT060308F01L-...-...	0.5 – 3.2				30492232
	SPHT060308F01R-...-...	0.5 – 3.2				30492250
	SPHT060308E04L-...-...	0.5 – 3.2	31317311	30950323		
	SPHT060308E04R-...-...	0.5 – 3.2	31317314	30950347		
	SCHT09					
	SCHT09T304F01L-...-...	0.5 – 4.0				30492235
	SCHT09T304F01L-...-...	0.5 – 4.0				30492252
	SCHT09T304E04L-...-...	0.5 – 4.0	31043583	30950324		
	SCHT09T304E04R-...-...	0.5 – 4.0	30812298	30950348		
	SCHT09T308F01L-...-...	0.5 – 4.0				30042582
	SCHT09T308F01R-...-...	0.5 – 4.0				30492253
	SCHT09T308E04L-...-...	0.5 – 4.0	31039585	30950325		
	SCHT09T308E04R-...-...	0.5 – 4.0	31317215	30950349		
	SCHT09T312E04L-...-...	0.5 – 4.0	31317216	30950326		
	SCHT09T312E04R-...-...	0.5 – 4.0	31317217	30950350		
	SCHT12					
	SCHT120404E04L-...-...	0.5 – 5.0	31317284	30950327		
	SCHT120404E04R-...-...	0.5 – 5.0	31317287	30950351		
	SCHT120408E04L-...-...	0.5 – 5.0	31317300	30950328		
	SCHT120408E04R-...-...	0.5 – 5.0	31317301	30950352		
	SCHT120412E04L-...-...	0.5 – 5.0	31317305	30950329		
	SCHT120412E04R-...-...	0.5 – 5.0	31317307	30950353		

Next table:
Finishing

Specified a_p ranges are recommendations and may vary depending on the material being machined.

SCHT | SPHT

Radial indexable inserts, four cutting edges

Left design

Right design

Workpiece material			K	N	
				Al alloyed ← Wear-resistant	Cu alloyed → Tough/Ductile
Substrate				Carbide	
Coating			PVD	–	PVD
Cutting material type			HP930	HU616	HP615
	Cutting edge design		2L	2R	2R
	SPHT06	a_p max. [mm]			
Finishing	SPHT060302F01L-...-...	0.1 - 1.0		30092077	30492231
	SPHT060302F01R-...-...	0.1 - 1.0		30089678	30492248
	SPHT060304F01L-...-...	0.1 - 1.0		30010644	30239958
	SPHT060304F01R-...-...	0.1 - 1.0		30010662	30492249
	SPHT060304E02L-...-...	0.1 - 1.0	30950330		
	SPHT060304E02R-...-...	0.1 - 1.0	30950354		
	SPHT060308F01L-...-...	0.1 - 1.0		30057636	30492232
	SPHT060308F01R-...-...	0.1 - 1.0		30438143	30492250
	SPHT060308E02L-...-...	0.1 - 1.0	30950331		
	SPHT060308E02R-...-...	0.1 - 1.0	30950355		
	SCHT09				
	SCHT09T304F01L-...-...	0.1 - 2.0		30010645	30492235
	SCHT09T304F01R-...-...	0.1 - 2.0		30010663	30492252
	SCHT09T304E02L-...-...	0.1 - 2.0	30950332		
	SCHT09T304E02R-...-...	0.1 - 2.0	30950356		
	SCHT09T308F01L-...-...	0.1 - 2.0		30010646	30042582
	SCHT09T308F01R-...-...	0.1 - 2.0		30010664	30492253
	SCHT09T308E02L-...-...	0.1 - 2.0	30950333		
	SCHT09T308E02R-...-...	0.1 - 2.0	30950357		

Specified a_p ranges are recommendations and may vary depending on the material being machined.

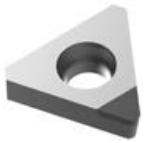
TCMT | TCGW

Radial indexable insert, three cutting edges, neutral design

Workpiece material			P			
			Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile	Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile
Substrate			Carbide			
Coating			CVD		PVD	
Cutting material type			HC850	HC865	HP880	HP895
	Cutting edge design			MKM		
	TCMT11	a_p max. [mm]				
Roughing	TCMT110204N-...-...	1.5 – 3.0		30985591		
		1.5 – 4.0				
	TCMT16					
	TCMT16T304N-...-...	1.5 – 3.0		30985608		
		1.5 – 5.0				
	TCMT16T308N-...-...	1.5 – 3.0		30985615		
		1.5 – 5.0				
	Cutting edge design		MGP	MGP		MGP
	TCMT09	a_p max. [mm]				
Medium machining	TCMT090204N-...-...	0.5 – 2.0	30985582			
	TCMT11					
	TCMT110204N-...-...	0.5 – 2.5	30945048	30985589		30985588
	TCMT110208N-...-...	0.75 – 2.5	30985599	30985600		30985601
	TCGW11					
	TCGW110204T51N-...-...	0.5 – 2.5				
	TCGW110208T51N-...-...	0.75 – 2.5				
	TCMT16					
	TCMT16T304N-...-...	0.5 – 2.5	30985605	31092663		30985604
	TCMT16T308N-...-...	0.75 – 2.5	30985613	31092665		30985612
	TCMT16T312N-...-...	1.0 – 2.5		31092666		
	TCMT22					
	TCMT220408N-...-...	0.75 – 3.0				
	Cutting edge design		MMM	MMM	MMM	MMM
	TCMT11	a_p max. [mm]				
Finishing	TCMT110202N-...-...	0.5 – 1.5	30985584	30985585		30985583
	TCMT110204N-...-...	0.5 – 1.5	30985595	30985596	30985593	30985594
	TCMT110208N-...-...	0.5 – 1.5				
	TCGW11					
	TCGW110204F01N-...-...	0.1 – 1.0				
	TCGW110204E01N-...-...	0.1 – 1.0				
	TCGW110208F01N-...-...	0.1 – 1.5				
	TCGW110208E01N-...-...	0.1 – 1.0				
	TCMT16					
	TCMT16T304N-...-...	0.5 – 1.5				30985609
	TCMT16T308N-...-...	0.5 – 1.5				30985617

Specified a_p ranges are recommendations and may vary depending on the material being machined.

Tipped variant, single edged:



0AA

	M				K			N
		Austenitic ← Wear-resistant		Ferritic → Tough/Ductile	GJL ← Wear-resistant	GJS → Tough/Ductile		
	Carbide				Carbide		PcBN	PCD
	CVD	PVD			CVD		-	-
	HC875	HP880	HP885	HP895	HC815	HC825	FU430	PU617
					MKM			
					30985590			
					30985607			
					30985614			
	MGP			MGP	MGP	MGP	0AA	
					30985917			
	30985587			30985588	30985586			
	30985598		31245563	30985601	30985597			
							30227880	
							30227892	
				30985604	30985602	30985603		
				30985612	30985610	30985611		
			31245564		30985618	30985619		
					30985622	30985623		
	MMM	MMM	MMM	MMM	MMM		0AA	0AA
				30985583				
		30985593	31245550	30985594	30985592			
			31245551					
								31279724
							30227878	
								31279725
							30227890	
			31245552	30985609				
	30985616		31245553	30985617				

TCHT

Radial indexable inserts, three-cutting edges, left/right design

Left design

Right design

Workpiece material			K		N
Substrate			Carbide		Carbide
Coating			CVD	PVD	
Cutting material type			HC740	HP930	HU616
	Cutting edge design		2L	2L	
	TCHT09	a_p max. [mm]			
Medium machining	TCHT090204E04L-...-...	0.5 – 2.5	31317317	30950224	
	TCHT090204E04R-...-...	0.5 – 2.5	31317318	30950235	
	TCHT090208E04L-...-...	0.5 – 2.5	31317319	30950225	
	TCHT090208E04R-...-...	0.5 – 2.5	31317320	30950236	
	TCHT11				
	TCHT110204E04L-...-...	0.5 – 3.0	31317321	30950226	
	TCHT110204E04R-...-...	0.5 – 3.0	31317322	30950237	
	TCHT110208E04L-...-...	0.5 – 3.0	31317325	30950227	
	TCHT110208E04R-...-...	0.5 – 3.0	31317326	30950238	
	TCHT16				
	TCHT16T304E04L-...-...	0.5 – 4.0	31317327	30950228	
	TCHT16T304E04R-...-...	0.5 – 4.0	31317328	30950239	
	TCHT16T308E04L-...-...	0.5 – 4.0	31317340	30950229	
	TCHT16T308E04R-...-...	0.5 – 4.0	31317342	30950240	
	Cutting edge design			2L	2R
	TCHT06	a_p max. [mm]			
Finishing	TCHT06T104F01L-...-...	0.1 – 1.0			30492290
	TCHT06T104F01R-...-...	0.1 – 1.0			30492307
	TCHT06T104E02L-...-...	0.1 – 1.0		30950230	
	TCHT06T104E02R-...-...	0.1 – 1.0		30950241	
	TCHT09				
	TCHT090204F01L-...-...	0.1 – 1.0			30010759
	TCHT090204F01R-...-...	0.1 – 1.0			30010777
	TCHT090204E02L-...-...	0.1 – 1.0		30950231	
	TCHT090204E02R-...-...	0.1 – 1.0		30950242	
	TCHT090208E02L-...-...	0.1 – 1.0		30950232	
	TCHT090208E02R-...-...	0.1 – 1.0		30950243	
	TCHT11				
	TCHT110202F01L-...-...	0.1 – 1.5			30010761
	TCHT110202F01R-...-...	0.1 – 1.5			30010779
	TCHT110204F01L-...-...	0.1 – 1.5			30010762
	TCHT110204F01R-...-...	0.1 – 1.5			30010780
	TCHT110204E02L-...-...	0.1 – 1.5		30950233	
	TCHT110204E02R-...-...	0.1 – 1.5		30950244	
	TCHT110208F01L-...-...	0.1 – 1.5			30010763
	TCHT110208F01R-...-...	0.1 – 1.5			30478186
	TCHT110208E02L-...-...	0.1 – 1.5		30950234	
	TCHT110208E02R-...-...	0.1 – 1.5		30950245	
	TCHT16				
	TCHT16T304F01L-...-...	0.1 – 2.5			30478187
	TCHT16T304F01R-...-...	0.1 – 2.5			30478188
	TCHT16T308F01L-...-...	0.1 – 2.5			30019882
	TCHT16T308F01R-...-...	0.1 – 2.5			30478189

Specified a_p ranges are recommendations and may vary depending on the material being machined.

TCHT

Radial indexable inserts, single edged, neutral design

	Workpiece material		K		N
	Substrate		Carbide		Carbide
	Coating		CVD	PVD	
	Cutting material type		HC740	HP930	HU616
	Cutting edge design		1L	1L	
	TCHT09	a_p max. [mm]			
Medium machining	TCHT090204E04X-...-...	0.5 – 2.5	31319106	30950246	
	TCHT090208E04X-...-...	0.5 – 2.5	31319107	30950247	
	TCHT11				
	TCHT110204E04X-...-...	0.5 – 3.0	31319108	30950248	
	TCHT110208E04X-...-...	0.5 – 3.0	31319109	30950249	
	TCHT16				
	TCHT16T304E04X-...-...	0.5 – 4.0	31039581	30950250	
	TCHT16T308E04X-...-...	0.5 – 4.0	31319140	30950251	
	Cutting edge design			1L	1R
	TCHT06	a_p max. [mm]			
Finishing	TCHT06T104F01X-...-...	0.1 – 1.0			30492325
	TCHT06T104E02X-...-...	0.1 – 1.0		30950252	
	TCHT09				
	TCHT090204F01X-...-...	0.1 – 1.0			30010795
	TCHT090204E02X-...-...	0.1 – 1.0		30950253	
	TCHT090208E02X-...-...	0.1 – 1.0		30950254	
	TCHT11				
	TCHT110202F01X-...-...	0.1 – 1.5			30010797
	TCHT110204F01X-...-...	0.1 – 1.5			30010798
	TCHT110204E02X-...-...	0.1 – 1.5		30950255	
	TCHT110208F01X-...-...	0.1 – 1.5			30010799
	TCHT110208E02X-...-...	0.1 – 1.5		30950256	
	TCHT16				
	TCHT16T304F01X-...-...	0.1 – 2.5			30019940
	TCHT16T308F01X-...-...	0.1 – 2.5			30019941

Specified a_p ranges are recommendations and may vary depending on the material being machined.

VCMT | VCGT | VBGW | VCGW

Radial indexable inserts, double edged, neutral design

Workpiece material			P		
			Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile	
Substrate			Carbide		
Coating			CVD		PVD
Cutting material type			HC850	HC865	HP880
	Cutting edge design			MKM	
	VCMT16	**a_p max. [mm]**			
Roughing	VCMT160408N-...-...	1.5 – 3.0		30985630	
	Cutting edge design		MGP	MGP	MGP
	VCGT11	**a_p max. [mm]**			
Medium machining	VCGT110304N-...-...	0.25 – 2.0			30966122
	VCMT16				
	VCMT160404N-...-...	0.5 – 2.0	30966097	30966098	
	VCMT160408N-...-...	0.75 – 2.0	31093307	30985629	
	Cutting edge design				
	VBGW16	**a_p max. [mm]**			
Finishing	VBGW160404E01N-...-...	0.1 – 1.0			
	VBGW160408E01N-...-...	0.1 – 1.0			
	VCGW16				
	VCGW160404E01N-...-...	0.1 – 1.0			
	VCGW160408E01N-...-...	0.1 – 1.0			

Specified a_p ranges are recommendations and may vary depending on the material being machined.

Tipped variant, single edged: 0AA

	M	K	
	Carbide	Carbide	PcBN
	PVD	CVD	–
	HP880	HC815	FU430
	MGP	MGP	
	30966122		
		30985627	
		30985628	
			0AA
			10106686
			10106698
			10106768
			10106780

Specified a_p ranges are recommendations and may vary depending on the material being machined.

CCHT | Mixed machining

Radial indexable inserts, double edged, mixed machining

Right design

Left design

Workpiece material			N + K		N + P	
			GJL ← Wear-resistant	GJS → Tough/Ductile	Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile
Substrate			Carbide		Carbide	
Coating			PVD		PVD	
Cutting material type			HP525-P	HP530-P	HP540-P	HP545-P
	Cutting edge design		1W	1W	1R	1R
	CCHT09	a_p max. [mm]				
Radius	CCHT09T304E02L-...-...	0.1 - 2.0 *	30909374	30909375	30907411	30909351
	CCHT09T304E02R-...-...	0.1 - 2.0	30909376	30909377	30909352	30909353
	CCHT09T308E02L-...-...	0.1 - 2.0	30909378	30909379	30909354	30909355
	CCHT09T308E02R-...-...	0.1 - 2.0	30909380	30909381	30909356	30909357

* Depending on the thrust bearing.
Also possible for custom inserts.

Specified a_p ranges are recommendations and may vary depending on the material being machined.

SCHT | Mixed machining

Radial indexable inserts, four cutting edges, mixed machining

with radius, left design

with radius, right design

Workpiece material			N + K		N + P	
			GJL ← Wear-resistant	GJS → Tough/Ductile	Unalloyed ← Wear-resistant	Alloyed → Tough/Ductile
Substrate			Carbide		Carbide	
Coating			PVD		PVD	
Cutting material type			HP525-P	HP530-P	HP540-P	HP545-P
	Cutting edge design		2W	2W	2R	2R
	SCHT09	a_p max. [mm]				
Radius	SCHT09T304E02L-...-...	0.1 – 2.0	30909366	30909367	30909345	30909346
	SCHT09T304E02R-...-...	0.1 – 2.0	30909368	30909369	30909347	30909348
	SCHT09T308E02L-...-...	0.1 – 2.0	30909370	30909371	30909349	30909350
	SCHT09T308E02R-...-...	0.1 – 2.0	30909372	30909373	30903215	30907589

Specified a_p ranges are recommendations and may vary depending on the material being machined.