BECKER

CERATIZIT GROUP

PcBN

Cutting Tools

SBC ▪ PBC ▪ Sandwich

coated ▪ uncoated

Turning ■ Grooving ■ Boring ■ Milling

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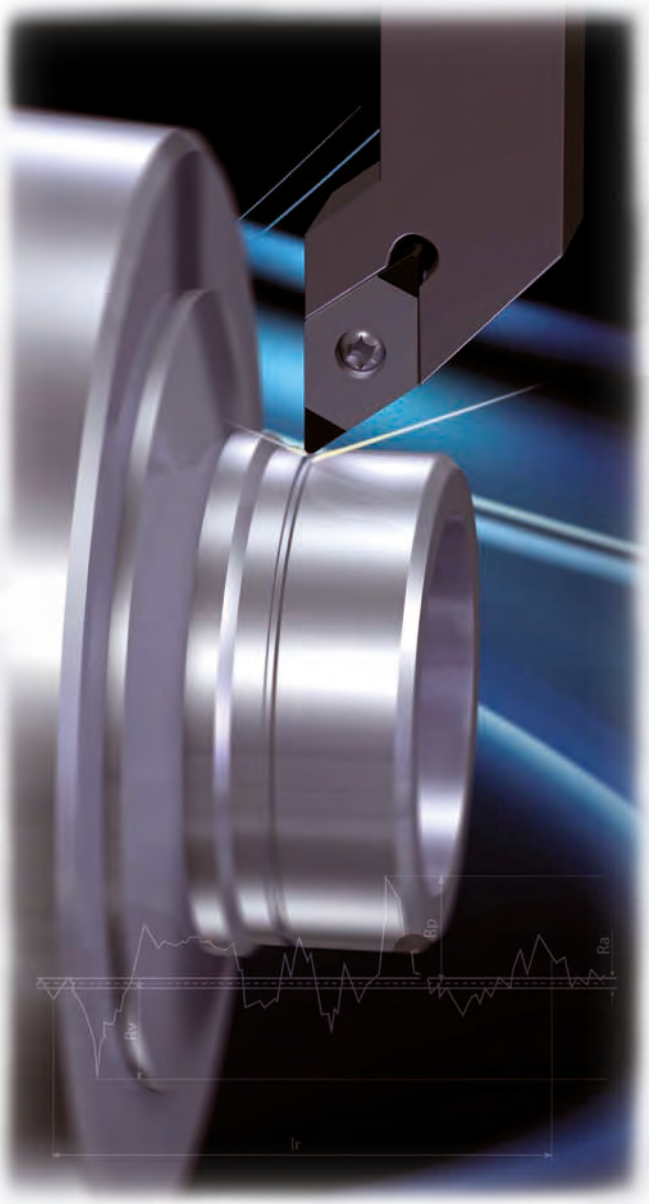
ultrahard

cutting materials



Dear customers and business partners,

The great challenges of future cutting techniques can only be mastered by ultra-hard cutting materials. For decades we have been pioneering the development and production of efficient cutting tools made of diamond and PcBN. Our tools are practically applied in all industries world-wide, for example in automotive engineering and associated suppliers, aircraft and engine construction, mechanical engineering, precision engineering and medical engineering.

On the following pages we will introduce our broad range of PcBN cutting tools. We have uniformly put the coated and uncoated tools together into one catalogue. This adds up to a comprehensive selection covering practically every application possible.

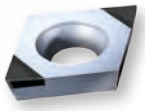
- 14 different PcBN grades
- Instant delivery ex stock
- Please take note of our regrinding service

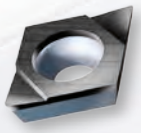
In case of suggestions or queries in order to increase performance and improve your product quality, we will gladly be at your service.

Please take note of our new catalogue on our cutting tools tipped with our 5 different ultrahard diamond cutting materials.

Sincerely,
BECKER Diamantwerkzeuge GmbH

Content





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Important information

Personal assistance

Using the PcBN grades ís a very complex matter. So we would be glad to be of your personal assistance.

Please contact us by email or by phone.

Tel. +49 (0) 89 890 228-16
sales@beckerdiamant.de

Description of chamfer geometries

Please see below our chamfer geometries for all different PcBN grades.

BECKER item description for the chamfer geometry of all uncoated PcBN-grades		
PcBN-grade	**Geometry "ISO"**	**Geometry "BECKER"**
SBC-1	T →	H
SBC-10	F →	A
	T →	G
SBC-25	F →	A
	T →	F
SBC-40	F →	A
	T →	G
PBC-10	F →	A
	T →	F
PBC-15	F →	A
	T →	C
PBC-25	F →	A
	T →	D
PBC-40	F →	A
	T →	E

Cutting length and cutting time

In order to fully exploit the performance of our PcBN cutting materials, measured by the number of parts produced, the following factors are crucial:

The total cutting length of a workpiece has to be calculated and observed. This varies enormously depending on the feed rate. Therefore the required surface finish has to be observed precisely (see page 12 and 19). The real cutting length that can be achieved during hardturning is between 3,000 and 12,000 meters per cutting edge. The real cutting time per item determines the number of parts produced, and is controlled by the cutting speed and the feed rate. Thus the ideal aim for each workpiece to strive for is the lowest possible cutting length, the shortest cutting time at the highest possible cutting speed. Please refer to our diagrams on pages 14 to 17.

Cutting length in meters

$$SCL = \frac{D_m \times 3{,}14 \times l_m}{1000 \times f_n}$$

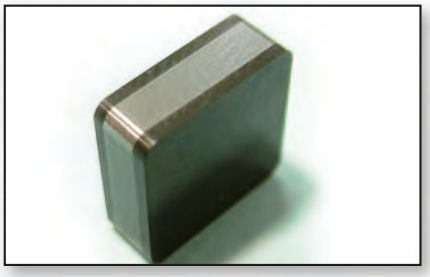
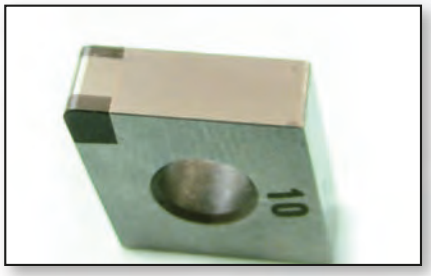
Operating duration in minutes

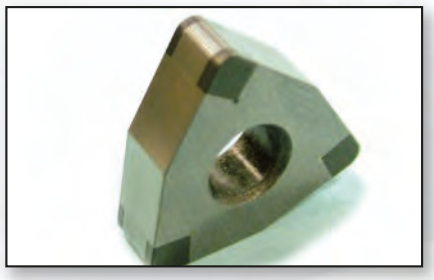
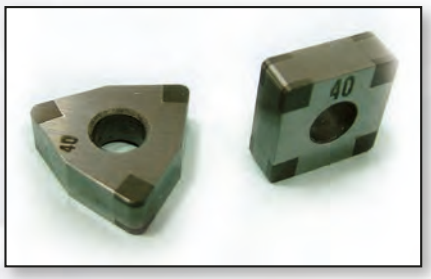
$$T_c = \frac{l_m}{f_n \times n}$$

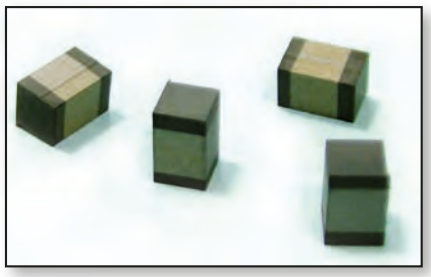
SCL = Cutting length in meters (spiral cutting length)
D_m = Diameter in mm
l_m = Turning length
f_n = Feed rate per revolution in mm
n = Spindle RPM
T_c = Operating duration in minutes

Sandwich – The Cost Killer

Besides the manufacturing of double fullface inserts we cut the new sandwich blanks into rectangular segments and braze them into the correspondingly prepared carbide blanks for negative inserts. Thus we automatically receive 2 cutting edges per brazed segment each of which has a large volume of PcBN cutting material. This manufacturing process both saves a huge amount of resources and makes a lot of sense economically. We also point out the possibility of regrinding



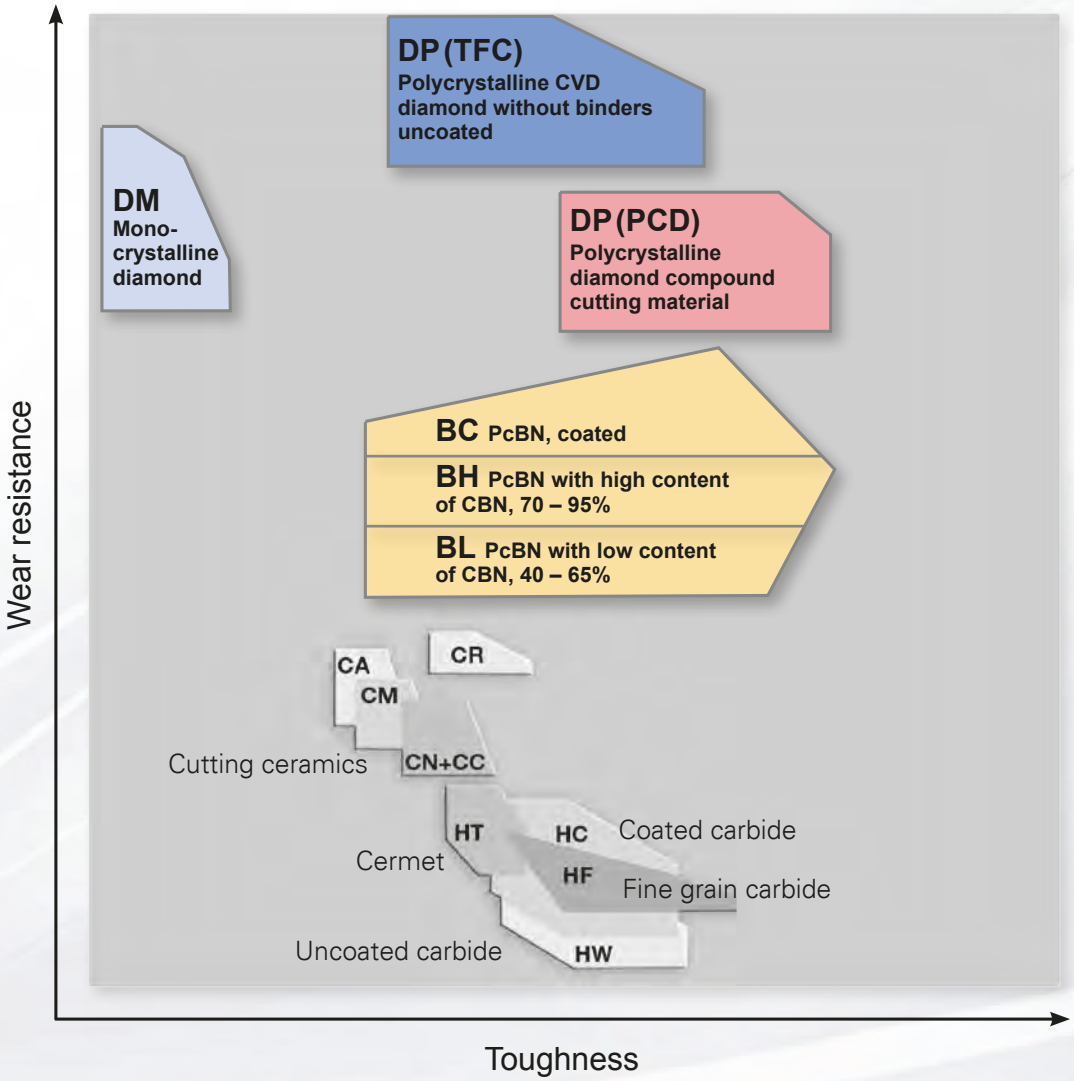
We manufacture all shapes of negative inserts in multiple corner tipping or double fullface type from these blanks. As the production costs of these sandwich blanks are nearly identical to the established, one-sidedly tipped PcBN blanks there is a considerable price advantage per cutting edge or total layer.

The new sandwich blanks are manufactured in 4 different grades:

PBC-10S (BH-C), 95 % content, special grade for machining grey cast iron und super alloys.
PBC-15S (BH-C), 90 % content, special grade for machining nodular cast iron and powder steel.
PBC-25S (BL-C), 65 % content, special grade for hard turning, favoured in continuous cut.
PBC-40S (BL-C), 55 % content, special grade for hard turning, favoured in interrupted cut.

The development of ultrahard cutting materials is practiced intensly on a world-scale and therefore constant progress in the machining is guaranteed. We have committed ourselves to these developments to standardly offer to our customers the most suitable ultrahard cutting materials, tools and tool systems.

Groups of cutting materials (DIN ISO 513)



Additional ISO designation codes for carbide (also Cermet) and ceramics have been added to the DIN ISO 513 (2001) standard. Furthermore new ident letters for the ultahard cutting materials polycrystalline cubic boron nitride, monocrystalline and polycrystalline diamond have been introduced.

HW = Uncoated carbide **HF** = Fine grained carbide **HT** = Cermet, TiC or TiN **HC** = Carbide / Cermet as above, but coated	**DM** = Monocrystalline diamond **DP** = Polycrystalline diamond-compound **PD** = CVD - thickfilm diamond
CA = Ceramics, main content Al_2O_3 **CM** = Mixed ceramics, main content Al_2O_3, plus components other than oxides **CN** = Siliconnitride ceramics, main content Si_3N_4 **CR** = Ceramics, main content Al_2O_3 reinforced **CC** = Ceramics as above, but coated	**BL** = Polycrystalline Cubic Boron Nitride with low content of CBN (40 – 65%) **BH** = Polycrystalline Cubic Boron Nitride with high content of CBN (70 – 95%) **BC** = Polycrystalline Cubic Boron Nitride as above, but coated

Material grade overview

PcBN-BL-(C) with low CBN content of 55% to 70%	PcBN-BH-(C) with high CBN content of 75% to 95%
For high cutting temperatures during hard machining	For best wear resistance + heat hardness during HSC-machining
Cold and hot work steel fully-hardened case-hardened	Grey cast iron
	Nodular cast iron
Hardness HRC 45-70	Chilled cast iron
Tool steel	Powder alloys
Ball-bearing steel	Hard facing alloys
Spring steel	Heat resistance super alloys: Inconel 718, Nimonic, Hastelloy Waspaloy, Titanium

PcBN-cutting materials - coated

Grades - Applications

Becker	ISO	Composition	Application
PBC-10S	**BH-C**	Coated PcBN-grade with very high CBN-content (95%) in sandwich and standard design, fine grit size (1 – 1,5 µm).	Grey cast iron (GG25) Powder steel Super alloys a_p = 0,1 – 0,7 mm
PBC-15S	**BH-C**	Coated PcBN-grade with high CBN content (90%) in sandwich and standard design, super fine grit size (0,75 µm).	Nodular cast iron Grey cast iron Powder steel Super alloys a_p = 0,05 – 0,7 mm
PBC-25S	**BL-C**	Coated PcBN-grade with low CBN content (65%) in sandwich and standard design, fine grit size (1 – 2 µm). Ideal for hard turning in continuous cut.	Hard turning, dry + wet HRC = 48 - 62 a_p = 0,02 – 0,4 mm R_a = 0,2 – 3,2 µm
PBC-40S	**BL-C**	Coated PcBN-grade with low CBN content (55%) in sandwich and standard design, super fine grit size (0,75 µm). Grade for slightly- to heavily-interrupted cut.	Hard turning, dry + wet HRC = 48 - 65 a_p = 0,05 – 0,4 mm R_a = 0,1 – 3,2 µm
SBC-25C	**BL-C**	Coated solid PcBN-grade with low CBN content (65%), fine grit size (3µm). Grade for hard turning in continuous cut and higher depth of cut.	Hard turning, dry + wet HRC = 48 - 65 a_p = 0,04 – 0,8 mm R_a = 0,2 – 3,2 µm
SBC-40C	**BL-C**	Coated solid PcBN-grade with low CBN content (65%), super fine grit size (1 µm). Grade for hard turning in slightly to heavily interrupted cut and higher depth of cut.	Hard turning, dry + wet HRC = 48 - 65 a_p = 0,05 – 0,8 mm R_a = 0,1 – 3,2 µm

PcBN-cutting materials - uncoated

Grades - Applications

Becker	ISO	Composition	Application
SBC- 1	**BH**	Uncoated solid PcBN-grade with high CBN-content (90%), coarse grit size (8 – 12 µm). Highest compression strength and thermal stability of all PcBN-grades.	Chilled cast iron Ni-hard Grey cast iron a_p = 0,5 – 10 mm
SBC-10	**BH**	Uncoated solid PcBN-grade with high CBN content (80%), fine grit size (3 µm).	Grey cast iron Super alloys Powder steel a_p = 0,3 – 8,0 mm
SBC-25	**BL**	Uncoated solid PcBN-grade with low CBN content (65%), fine grit size (3 µm). Favoured application in continuous cut.	Hard turning, dry + wet HRC = 56 – 65 a_p = 0,05 – 6,0 mm R_a = 0,2 – 3,2 µm
SBC-40	**BL**	Uncoated solid PcBN-grade with low CBN content (65%), super fine grit size (1 µm). For slightly- to heavily-interrupted cut.	Hard turning, dry + wet HRc = 56 – 65 a_p = 0,05 – 6,0 mm R_a = 0,2 – 3,2 µm
PBC-10	**BH**	Uncoated PcBN-grade with very high CBN content (95%) in standard design. Fine grit size (1 – 1,5 µm).	Grey cast iron Super alloys Powder steel a_p = 0,1 – 0,4 mm
PBC-15	**BH**	Uncoated PcBN-grade with high CBN content (90%) in standard design. Super fine grit size (0,75 µm).	Nodular cast iron Powder steel Super alloys Grey cast iron a_p = 0,05 – 0,4 mm
PBC-25	**BL**	Uncoated PcBN-grade with low CBN content (65%) in standard design. Fine grit size (3 µm), for continuous and very slightly-interrupted cut.	Hard turning, dry + wet HRC = 52 - 65 a_p = 0,05 – 0,4 mm R_a = 0,2 – 3,2 µm
PBC-40	**BL**	Uncoated PcBN-grade with low CBN content (65%) in standard design. Super fine grit size (1 µm), for continuous to heavily-interrupted cut.	Hard turning, dry + wet HRC = 54 - 65 a_p = 0,05 – 0,4 mm R_a = 0,2 – 3,2 µm

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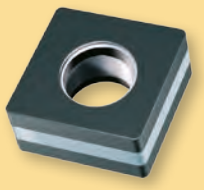
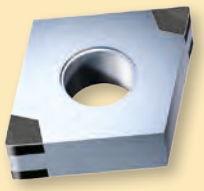
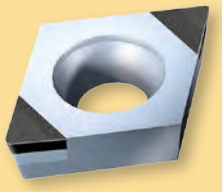
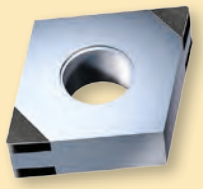
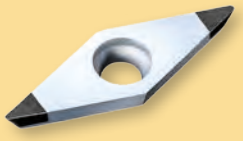
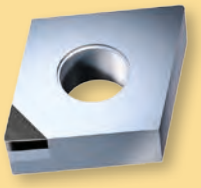
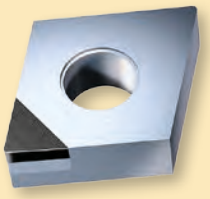
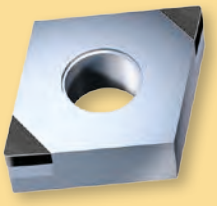
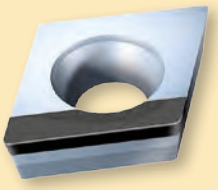
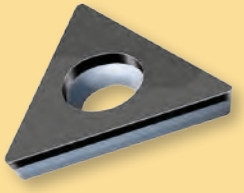
Tipping versions

Of all coated grades - ISO-BECKER

ISO	Becker	Design	Grades	Becker	ISO
E	**SE**		Coated sandwich PcBN grades, double-sided layer thickness approx. 0,7 – 0,8 mm	**PBC-10S** **PBC-15S** **PBC-25S** **PBC-40S**	**BH-C** **BH-C** **BL-C** **BL-C**
C	**SC**		Coated sandwich PcBN grades, layer thickness approx. 0,6 – 0,8 mm	**PBC-10S** **PBC-15S** **PBC-25S** **PBC-40S**	**BH-C** **BH-C** **BL-C** **BL-C**
A	**MC**		Coated standard PcBN grades, layer thickness approx. 0,6 – 0,8 mm	**PBC-10S** **PBC-15S** **PBC-25S** **PBC-40S**	**BH-C** **BH-C** **BL-C** **BL-C**
A-S	**MC-S**		Coated solid PcBN grades, layer thickness approx. 1,2 – 1,3 mm	**SBC-25C** **SBC-40C**	**BL-C** **BL-C**
A-S	**MC-S**		Coated solid PcBN grades, layer thickness approx. 1,3 mm	**SBC-25C** **SBC-40C**	**BL-C** **BL-C**

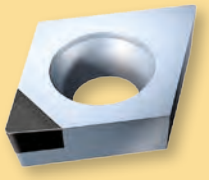
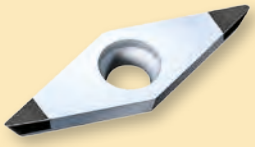
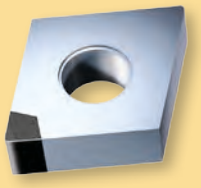
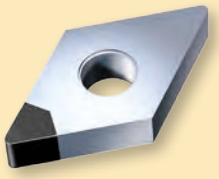
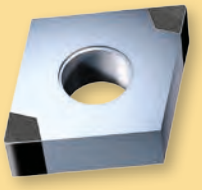
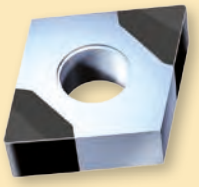
Tipping versions

Of all uncoated grades with carbide layer – ISO-BECKER

ISO	Becker	Design	Grades	Becker	ISO
A	EW		Uncoated standard PcBN grade, carbide reinforced	PBC-10 PBC-15 PBC-25 PBC-40	BH BH BL BL
A	MW		Uncoated standard PcBN grade, carbide reinforced	PBC-10 PBC-15 PBC-25 PBC-40	BH BH BL BL
A	MC		Uncoated standard PcBN grade, carbide reinforced	PBC-10 PBC-15 PBC-25 PBC-40	BH BH BL BL
	GS		Uncoated standard PcBN grade, carbide reinforced	PBC-10 PBC-15 PBC-25 PBC-40	BH BH BL BL
F	VM		Uncoated standard PcBN grade, carbide reinforced	PBC-10 PBC-15 PBC-25 PBC-40	BH BH BL BL

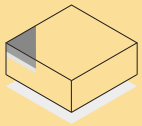
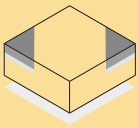
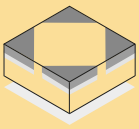
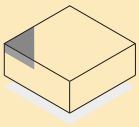
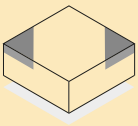
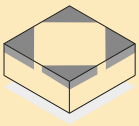
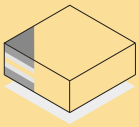
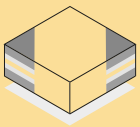
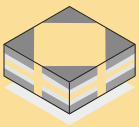
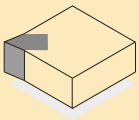
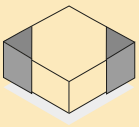
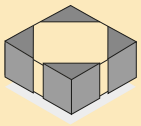
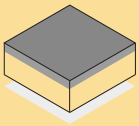
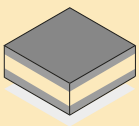
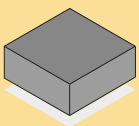
Tipping versions

Of all uncoated solid grades without carbide layer ISO-BECKER

ISO	Becker	Design	Grades	Becker	ISO
A-S	**EWS**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1** **SBC-10** **SBC-25** **SBC-40**	**BH** **BH** **BL** **BL**
A-S	**MC-S**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1** **SBC-10** **SBC-25** **SBC-40**	**BH** **BH** **BL** **BL**
D	**PC-S**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1** **SBC-10** **SBC-25** **SBC-40**	**BH** **BH** **BL** **BL**
D	**PC-S4**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1**	**BH** **BH** **BL** **BL**
D	**PC-M**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1** **SBC-10** **SBC-25** **SBC-40**	**BH** **BH** **BL** **BL**
D	**PC-M4**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1**	**BH** **BH** **BL** **BL**
S	**SBC**		Uncoated solid PcBN grade, without carbide reinforcement	**SBC-1** **SBC-10** **SBC-25** **SBC-40**	**BH** **BH** **BL** **BL**

Tipping versions

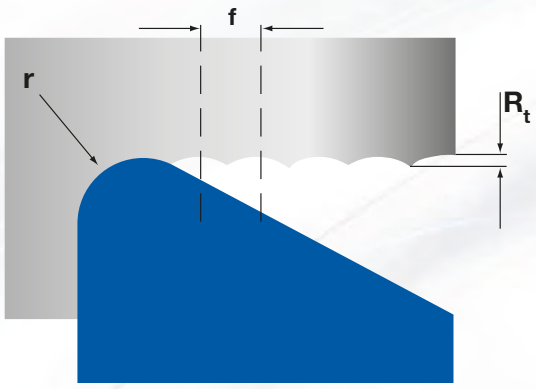
Of all our PcBN grades with the recommended maximum depth of cut

ISO	Becker	Design	Number of tipped corners		Recommended max. depth of cut
			2	4	
A	EW MW MC	 1 tipped corner, carbide reinforced			EW.....a_p = 0,4 mm MW.....a_p = 0,7 mm MC.....a_p = 0,4 mm
A-S	EWS MC-S	 1 tipped corner, solid grades			EWS.....a_p = 0,8 mm MC-S.....a_p = 0,8 mm
C	SC	 2 tipped corners, carbide reinforced			SC.....a_p = 0,7 mm
D	PC-S PC-S4 PC-M PC-M4	 1 tipped edge, solid grades			PC-S.....a_p = 2,0 mm PC-S4....a_p = 3,0 mm PC-M.....a_p = 2,0 mm PC-M4...a_p = 3,0 mm
F	VM	 Fullface			VM.....a_p = 0,7 mm
E	SE	 Double- sided fullface			SE.....a_p = 0,7 mm
S	SBC	 Solid			SBC.....a_p = 10 mm

Wiper Geometry and Surface Finish

The theoretical R_t surface roughness value can be determined with the radius and the feed rates on hand. The required surface finish can be calculated very precisely in advance, provided all relevant peripheral prerequisites are given. As an example instable conditions of machine and/or workpiece, incorrect chucking, faulty or wrong tool system, wrong cutting speed and depth of cut etc. will all impair the results.

The theoretically computed profile height is generally underrun when hardturning with PcBN. A special cutting mechanism with a high cutting pressure is in operation (self-induced hot-cutting process). This smoothes the theoretical profile with a better surface finish.

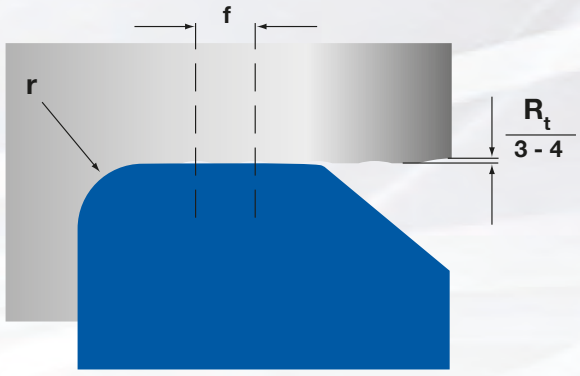


All values converted to µm

$$R_t = \frac{f^2}{8 \times r} \qquad r = \frac{f^2}{8 \times R_t} \qquad f = \sqrt{8 \times r \times R_t}$$

Theoretical surface roughness	Corner radius Feed rate per revolution (f = mm/rev)					
R_a	R_t	r = 0,2	r = 0,4	r = 0,8	r = 1.2	r = 1.6
0,6	1.6	f = 0,05	f = 0,07	f = 0,10	f = 0,12	f = 0,14
1.6	4	f = 0,08	f = 0,11	f = 0,15	f = 0,19	f = 0,23
3.2	10	f = 0,12	f = 0,17	f = 0,24	f = 0,29	f = 0,36
6.3	16	f = 0,16	f = 0,22	f = 0,30	f = 0,37	f = 0,45

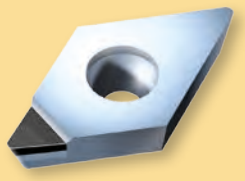
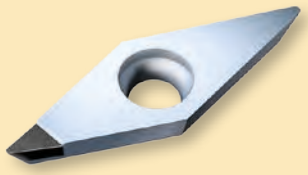
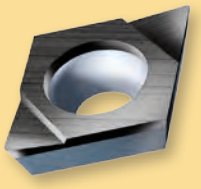
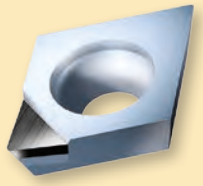
A clear improvement of the theoretical surface roughness can be achieved with our WIPER geometry. For the high-performance cutting of all aspects we have developed a number of inserts with WIPER geometry for internal, external and milling processes. This WIPER edge replaces the minor cutting edge reducing its angle to a minimum, whereas it automatically improves the theoretically computed surface roughness by 2 to 4 times.



In practise these are the two possibilities
for high-performance and high-tech cutting:

1) 2-4x higher feed rate = same surface finish
2) same feed rate = 2-4x improved surface finish

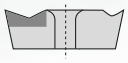
Positive Top Rake Geometries

Top Rake Geometries		PcBN-grades	Applications
	**EW-ISO-insert** Positive Neutral 1 tipped corner	**PBC-10** **PBC-15** **PBC-25** **PBC-40**	**Low cutting pressure** ■ Thin-walled or instable workpieces ■ Internal boring ■ Minor tolerances ■ Lowest depths of cut
	**EWS-ISO-insert** Positive Neutral 1 tipped corner	**SBC-10** **SBC-25** **SBC-40**	**Low cutting pressure** ■ Thin-walled or instable workpieces ■ Internal boring ■ Minor tolerances ■ Lowest depths of cut
	**MiniCut-insert** Positive Neutral Fullface	**PBC-15** **PBC-25**	**Low cutting pressure** ■ Thin-walled or instable workpieces ■ Internal boring ■ Minor tolerances ■ Lowest depths of cut
	**EW-MiniCut-insert** Positive Neutral 1 tipped corner	**PBC-10** **PBC-25** **PBC-40**	**Low cutting pressure** ■ Thin-walled or instable workpieces ■ Internal boring ■ Minor tolerances ■ Lowest depths of cut

Since their introduction our uncoated PcBN-inserts with positive top rake geometries have captured a considerable potential with our customers. Even though these particular positive top rake geometries are disregarded in any global documentation on cutting technology with PcBN cutting materials, we have been offering those positive insert geometries ex stock with great success.

Those positive geometries are applied for very complex cutting operations both for the machining of cast iron and for hardturning. In particular for very thin-walled and instable workpieces. The possible depths of cut are very low and thus minor tolerances are achieved. As a result of the extremely low cutting pressure, these geometries are preferentially applied for internal turning operations, in parts with unusual projecting lengths.

Insert type with positive top rake geometry

T 

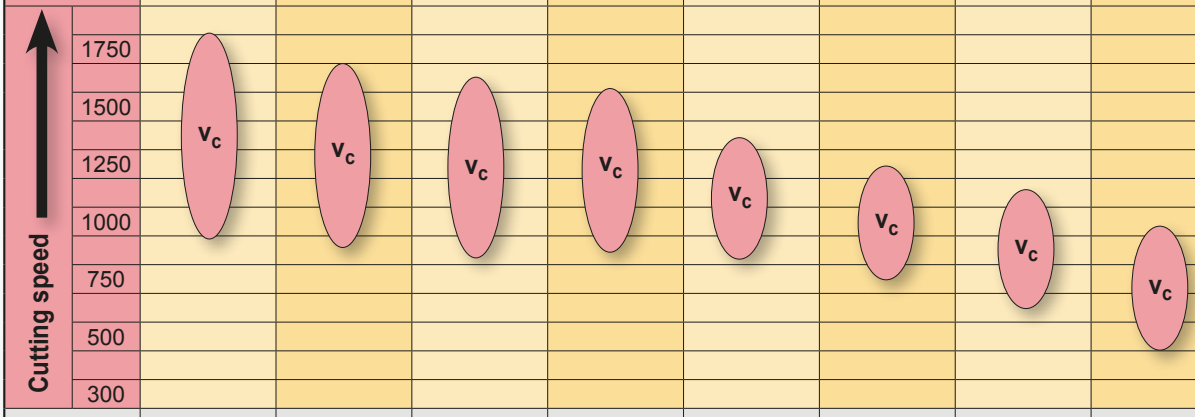
BECKER
CERATIZIT GROUP

ultrahard
cutting materials

Cutting data Application range

Application range for PBC-10, PBC-10S, SBC-1 and SBC-10

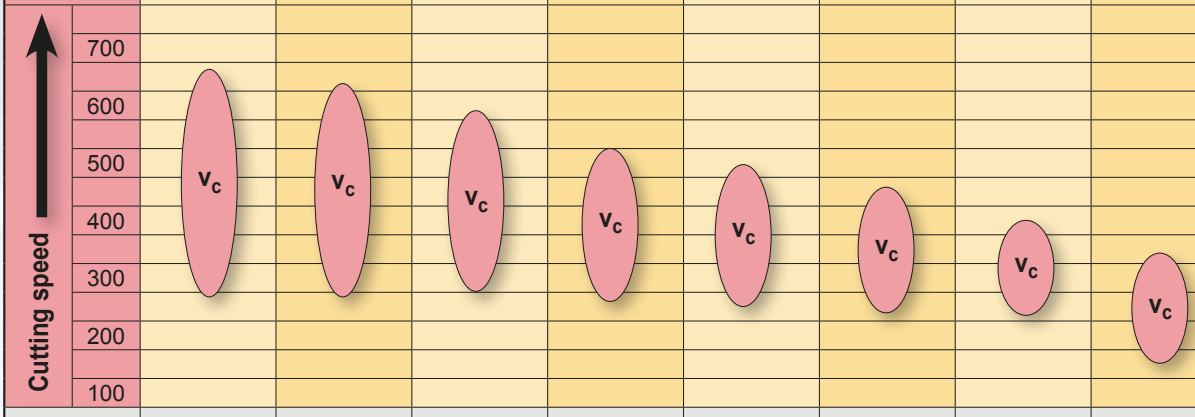
GREY CAST IRON: GG20 - GG25 - GG30 - GG40



	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,25	f: 0,04 - 0,25	f: 0,05 - 0,25	f: 0,05 - 0,40	f: 0,06 - 0,50	f: 0,08 - 0,35	f: 0,10 - 0,35	f: 0,12 - 0,35	Feed rate
Depth of cut PBC-10S	a_p: 0,02 - 0,25	a_p: 0,03 - 0,3	a_p: 0,06 - 0,4	a_p: 0,06 - 0,4	a_p: 0,08 - 0,5	a_p: 0,08 - 0,4	a_p: 0,1 - 0,4	a_p: 0,12 - 0,4	Depth of cut PBC-10S
Depth of cut SBC- 1								a_p: 0,15 - 10	Depth of cut SBC- 1
Depth of cut SBC-10 solid	a_p: 0,05 - 3,0						a_p: 0,3 - 8,0		Depth of cut SBC-10 solid
Cutting conditions	Continuous to heavily interrupted cut								Cutting conditions

Application range for PBC-10, PBC-10S and SBC-10

SUPER ALLOYS: Inconel 718, Nimonic, Hastelloy, Waspaloy

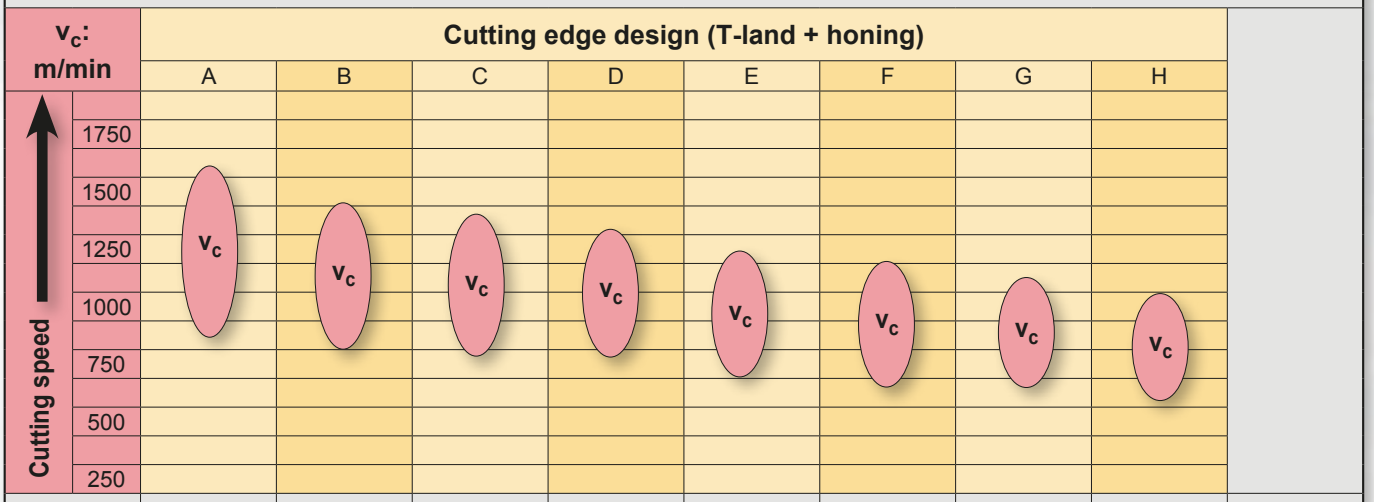


	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,25	f: 0,04 - 0,25	f: 0,05 - 0,25	f: 0,05 - 0,40	f: 0,06 - 0,50	f: 0,08 - 0,35	f: 0,10 - 0,35	f: 0,12 - 0,35	Feed rate
Depth of cut PBC-10S	a_p: 0,02 -0,4	a_p: 0,03 - 0,4	a_p: 0,06 - 0,4	a_p: 0,06 - 0,4	a_p: 0,08 - 0,5	a_p: 0,08 - 0,4	a_p: 0,1 - 0,4	a_p: 0,12 - 0,4	Depth of cut PBC-10S
Depth of cut SBC-10	a_p: 0,02 - 0,3						a_p: 0,05 - 0,4		Depth of cut SBC-10
Cutting conditions	Continuous to medium interrupted cut								Cutting conditions

Cutting data Application range

Application range for PBC-15S and PBC-15

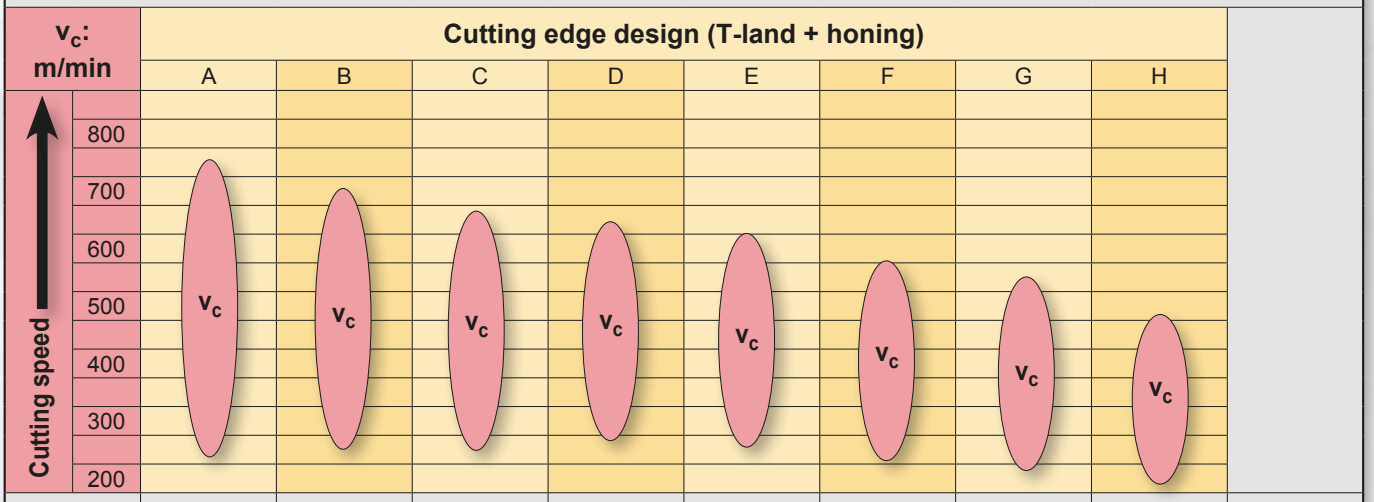
NODULAR CAST IRON: GGG30 - GGG40 - GGG50 - GGG60



	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,25	f: 0,04 - 0,25	f: 0,05 - 0,25	f: 0,05 - 0,35	f: 0,06 - 0,35	f: 0,08 - 0,35	f: 0,10 - 0,35	f: 0,12 - 0,35	Feed rate
Depth of cut PBC-15S	a_p: 0,05 - 0,25	a_p: 0,05 - 0,3	a_p: 0,06 - 0,4	a_p: 0,06 - 0,4	a_p: 0,08 - 0,5	a_p: 0,08 - 0,4	a_p: 0,1 - 0,4	a_p: 0,12 - 0,4	Depth of cut PBC-15S
Depth of cut PBC-15	a_p: 0,04 - 0,25		a_p: 0,04 - 0,4						Depth of cut PBC-15
Cutting conditions	Continuous to medium interrupted cut								Cutting conditions

Application range for PBC-15S and PBC-15

POWDER STEEL: Sint D11- Sint D39

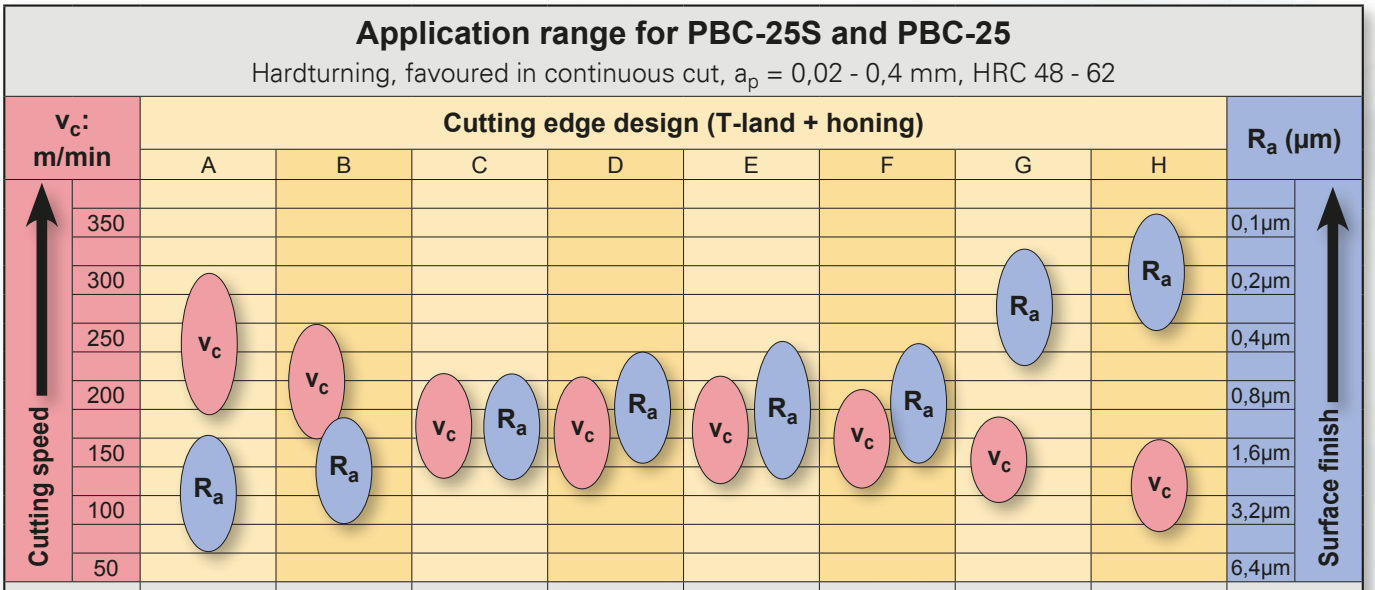


	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,25	f: 0,04 - 0,25	f: 0,05 - 0,25	f: 0,05 - 0,35	f: 0,06 - 0,35	f: 0,08 - 0,35	f: 0,10 - 0,35	f: 0,12 - 0,35	Feed rate
Depth of cut PBC-15S	a_p: 0,02 - 0,4	a_p: 0,03 - 0,4	a_p: 0,06 - 0,4	a_p: 0,06 - 0,4	a_p: 0,08 - 0,4	a_p: 0,08 - 0,4	a_p: 0,1 - 0,4	a_p: 0,12 - 0,4	Depth of cut PBC-15S
Depth of cut PBC-15	a_p: 0,02 - 0,3		a_p: 0,04 - 0,4						Depth of cut PBC-15
Cutting conditions	Continuous to heavily interrupted cut								Cutting conditions

Cutting data Application range

Application range for PBC-25S and PBC-25

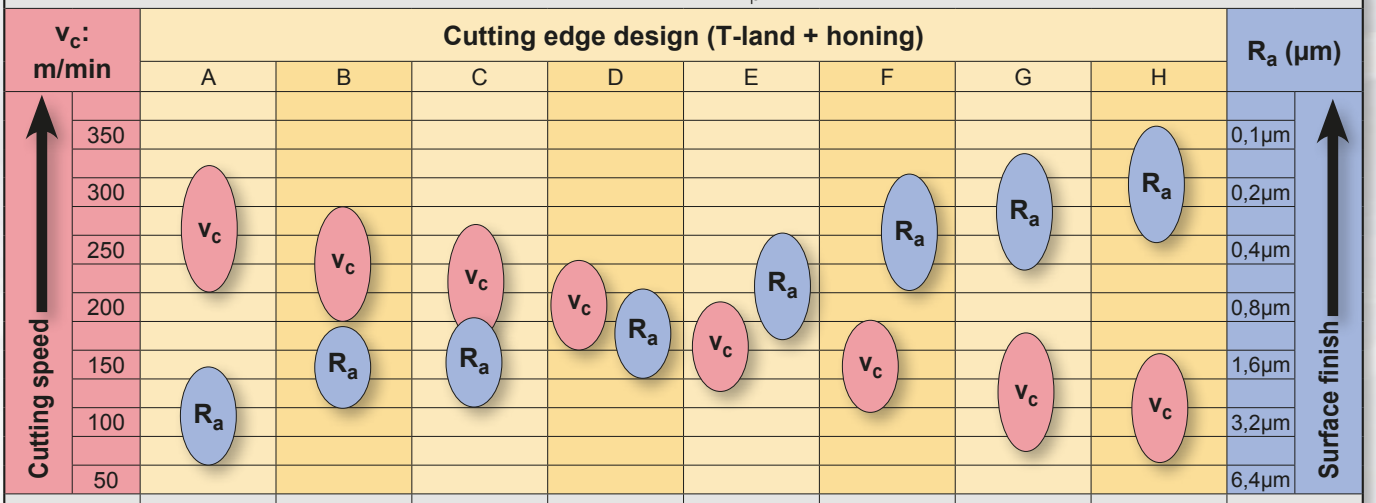
Hardturning, favoured in continuous cut, a_p = 0,02 - 0,4 mm, HRC 48 - 62



	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,15	f: 0,03 - 0,15	f: 0,04 - 0,20	f: 0,05 - 0,25	f: 0,06 - 0,25	f: 0,06 - 0,25	f: 0,06 - 0,20	f: 0,06 - 0,20	Feed rate
Depth of cut PBC-25S	a_p: 0,04 -0,25	a_p: 0,04 - 0,3	a_p: 0,06 - 0,4	a_p: 0,06 - 0,4	a_p: 0,08 - 0,4	a_p: 0,08 - 0,4	a_p: 0,1 - 0,4	a_p: 0,12 - 0,4	Depth of cut PBC-25S
Depth of cut PBC-25	a_p: 0,02 -0,25			a_p: 0,05 - 0,4					Depth of cut PBC-25
Cutting conditions	Continuous cut								Cutting conditions

Application range for SBC-25C and SBC-25

Hardturning, favoured in continuous Cut, a_p = 0,04 - 6,0 mm, HRC 48 - 65

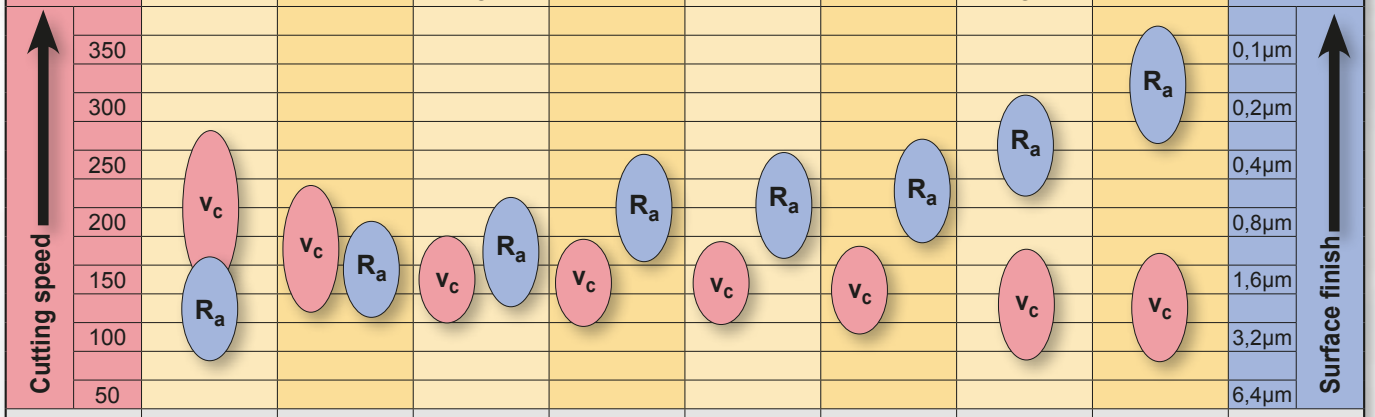


	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,20	f: 0,03 - 0,20	f: 0,03 - 0,20	f: 0,05 - 0,20	f: 0,06 - 0,25	f: 0,08 - 0,25	f: 0,08 - 0,25	f: 0,08 - 0,25	Feed rate
Depth of cut SBC-25C	a_p: 0,04 - 0,5	a_p: 0,05 - 0,5	a_p: 0,05 - 0,8	a_p: 0,08 - 0,8	a_p: 0,08 - 0,8	a_p: 0,12 - 0,8	a_p: 0,15 - 0,8	a_p: 0,2 - 0,8	Depth of cut SBC-25C
Depth of cut SBC-25	a_p: 0,04 - 2,0					a_p: 0,12 - 2,0			Depth of cut SBC-25
Depth of cut SBC-25 solid						a_p: 0,25 - 6,0			Depth of cut SBC-25 solid
Cutting conditions	Continuous cut								Cutting conditions

Cutting data Application range

Application range for PBC-40S and PBC-40

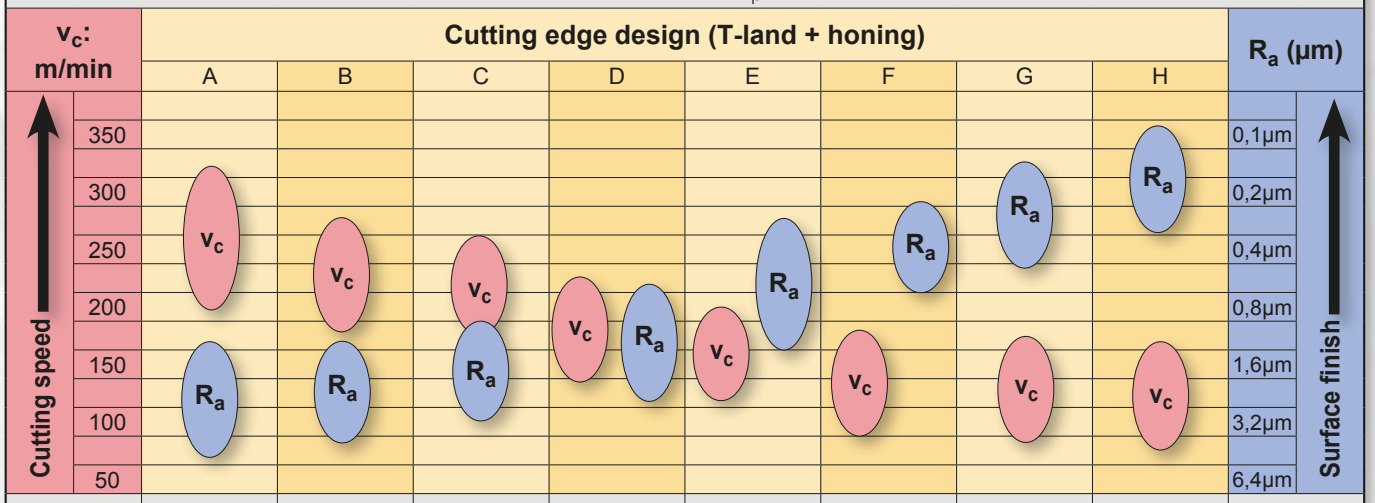
Hardturning, favoured in interruptet cut, a_p: 0,05 - 0,4 mm, HRC 48 - 65



	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,12	f: 0,03 - 0,15	f: 0,05 - 0,20	f: 0,06 - 0,20	f: 0,06 - 0,25	f: 0,06 - 0,25	f: 0,08 - 0,20	f: 0,08 - 0,20	Feed rate
Depth of cut PBC-40S	a_p: 0,05 - 0,25	a_p: 0,06 - 0,3	a_p: 0,08 - 0,3	a_p: 0,08 - 0,3	a_p: 0,10 - 0,4	a_p: 0,10 - 0,4	a_p: 0,15 - 0,4	a_p: 0,20 - 0,4	Depth of cut PBC-40S
Depth of cut PBC-40	a_p: 0,04 - 0,25				a_p: 0,07 - 0,4				Depth of cut PBC-40
Cutting conditions	very slightly		slightly		medium		heavily		Cutting conditions
	Interrupted cut								

Application range for SBC-40C and SBC 40

Hardturning, favoured in interrupted Cut, a_p = 0,05 - 6,0 mm, HRC 48 - 65



	A	B	C	D	E	F	G	H	
Feed rate	f: 0,02 - 0,20	f: 0,03 - 0,20	f: 0,03 - 0,20	f: 0,05 - 0,25	f: 0,06 - 0,25	f: 0,06 - 0,25	f: 0,06 - 0,25	f: 0,06 - 0,25	Feed rate
Depth of cut SBC-40C	a_p: 0,05 - 0,5	a_p: 0,05 - 0,5	a_p: 0,05 - 0,8	a_p: 0,08 - 0,8	a_p: 0,10 - 0,8	a_p: 0,12 - 0,8	a_p: 0,15 - 0,8	a_p: 0,20 - 0,8	Depth of cut SBC-40C
Depth of cut SBC-40	a_p: 0,05 - 2,0						a_p: 0,12 - 2,0		Depth of cut SBC-40
Depth of cut SBC-40 solid							a_p: 0,25 - 6,0		Depth of cut SBC-40 solid
Cutting conditions	very slightly		slightly		medium		heavily		Cutting conditions
	Interrupted cut								

ToolScout

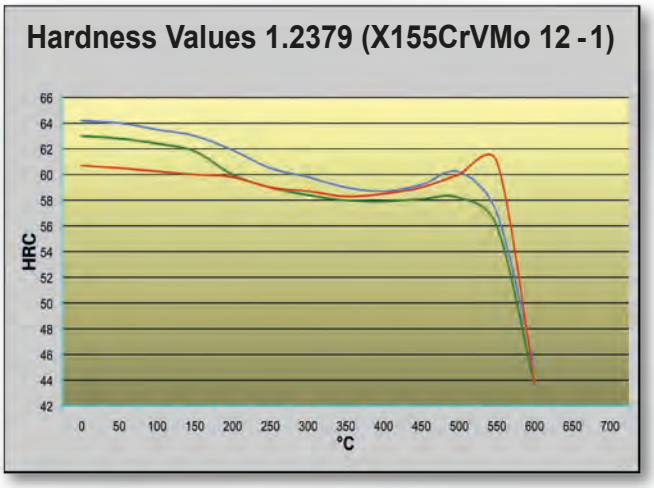
In order for all users to exploit the full potential of our extremely high performance PcBN cutting materials, the following explanations and hints are of importance.

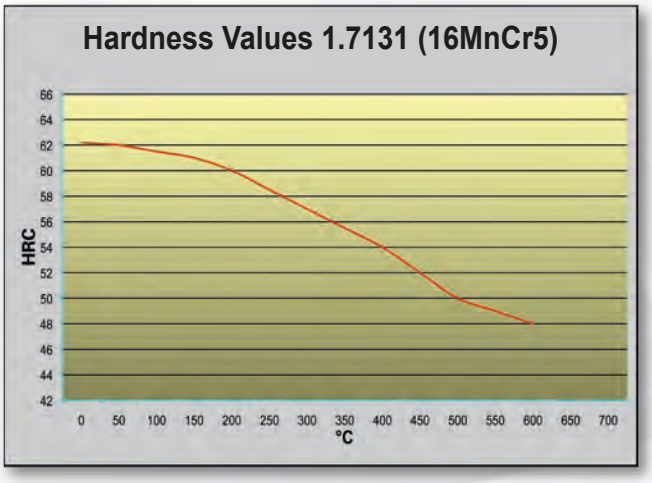
As shown in our previous catalogue supplement we offer our 6 coated PcBN-grades in up to 8 different chamfer geometries per cutting material as well as in various tipping options (see page 8). This large standard range enables us to meet basically all imaginable application profiles ex stock.

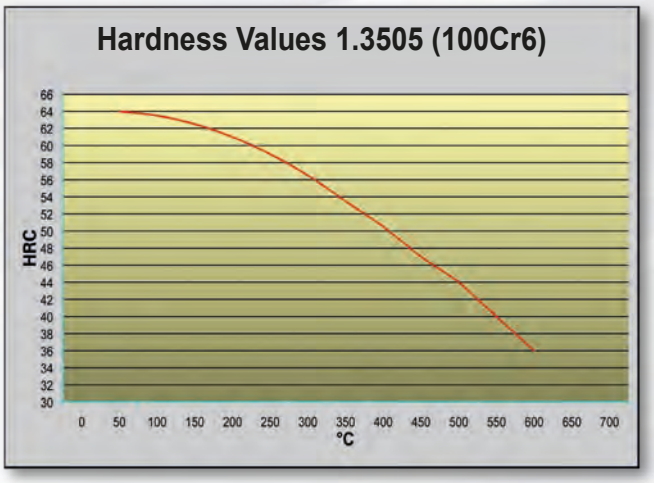
Hard machining with PcBN

The cutting of hardened steel is generally referred to as hard machining. This cutting mechanism is a self-induced hot cutting process. This requires a defined and high temperature of about 550 to 750°C on the cutting zone. This necessary temperature is being produced by the transformation of existing energies into heat. This energy is released in the form of cutting speed v_c, feed rate f, depth of cut a_p as well as the chamfer geometries A-H of the PcBN cutting edges. Cooling is generally not required. Below we have illustrated 3 diagrams of hardness values. You can make out the decreasing hardness with the rising of the temperature. However significant differences are shown.

During the self-induced hot cutting process with our PcBN-grades the ideal hardness in the shear zone is at 40 to 45 HRC. This means that in such a case different cutting temperatures between 550°C up to 750°C are necessary.







At a temperature of approx. 600°C the steel grade 1.2379 still has a hardness of about 58 HRC, the steel grade 1.7131 about 48 HRC, and the steel grade 1.3505 only achieves about 36 HRC. The original hardness of each steel grade had been about 62 HRC.

In order to produce and maintain the ideal cutting temperature in the shear zone, it is obligatory to strictly stick to three particularities.

- the thermal conductivity of the PcBN-grade used (55% - 65% CBN)
- the applied chamfer geometry A-H, and also the positive top rake geometry (see page 13)
- as well as the hardness diagrams (hardness diagram with rising temperature)

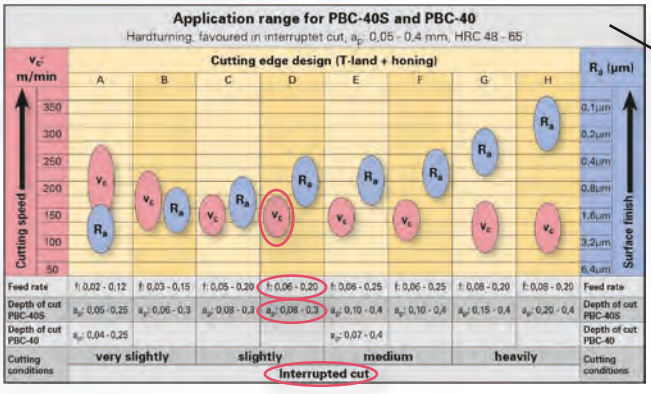
In order to give you professional advice on our standard range for the intended application, the following checklist has to be strictly respected:

- precise specification of the steel grade and its hardness HRC
- the required surface finish R_a has to be determined as well as the depth of cut
- please decide if your cut is continuous to slightly-interrupted or medium to heavily-interrupted

Please select the PcBN grade as described on pages 6 and 7.

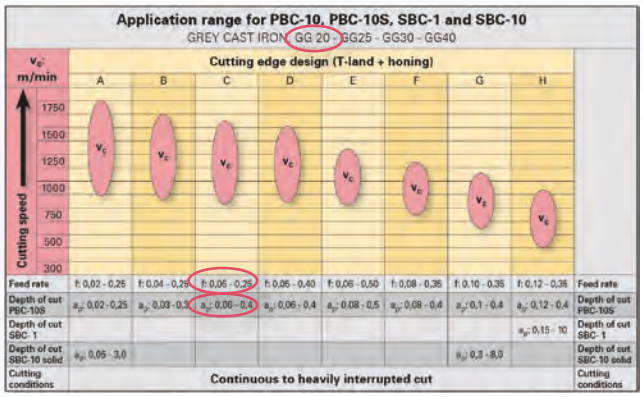
Becker	ISO	Composition	Application
PBC-25S	BL-C	Coated PcBN-grade with low CBN content (65%) in sandwich and standard design, fine grit size (1 – 2 µm). Ideal for hard turning in continuous cut.	Hard turning, dry + wet HRC = 48 - 62 a_p = 0,02 – 0,4 mm R_a = 0,2 – 3,2 µm
PBC-40S Preference	BL-C	Coated PcBN-grade with low CBN content (55%) in sandwich and standard design, super fine grit size (0.75 µm). Grade for slightly- to heavily-interrupted cut.	Hard turning, dry + wet HRC = 48 - 65 a_p = 0,05 – 0,4 mm R_a = 0,1 – 3,2 µm

Now please choose the according chamfer geometry for the required surface finish, as shown in our diagrams on pages 16 and 17.



Soft machining with PcBN

Soft machining encompasses the cutting of all materials in their natural hardness without any hardening process or similar applied. Thus the result means not any microstructural transformation has occurred. However it is absolutely necessary to keep materials in mind (super alloys, titanium etc.) that require a very high cutting temperature of 700 to 1.110 °C, which can only be generated with the cutting material grade PcBN.



On pages 14 and 15 we have listed different application examples each explained by a simple diagram. On the left-hand side we have indicated the recommended cutting speed, and on the lower lines the according feed rate and depth of cut.

Example:

100Cr6 – HRC 62
a_p= 0,25 mm, f = 0,1 mm
interrupted cut
required R_a = 0,6 µm

PcBN grade = PBC-40S
chamfer "D" at v_c 160 m/min
insert: CNGA120408-D-40S-4SC

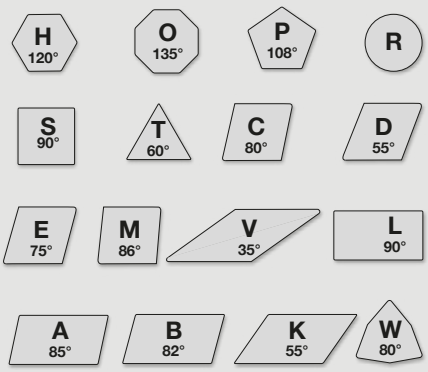
BECKER
CERATIZIT GROUP

ultrahard
cutting materials

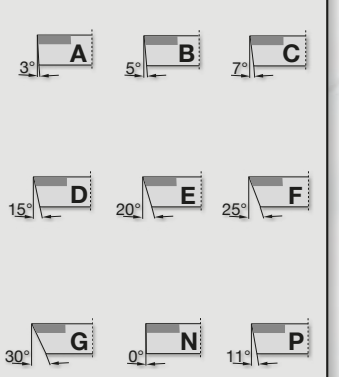
ISO-Insert Nomenclature

Order designation

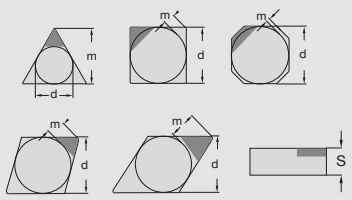
1 Basic shape



2 Clearance



3 Tolerance class



Tolerances in mm

	m	s	d
A	0,005	0,025	0,025
F	0,005	0,025	0,013
C	0,013	0,025	0,025
H	0,013	0,025	0,013
E	0,005	0,025	0,025
G	0,025	0,130	0,025

	m		s		d[1]	
J	0,005		0,025		0,05	0,15
K	0,013		0,025		0,05	0,15
L	0,025		0,025		0,05	0,15
M[1]	0,08	0,20	0,130		0,05	0,15
N[1]	0,08	0,20	0,250		0,05	0,15
U[1]	0,13	0,38	0,130		0,08	0,15

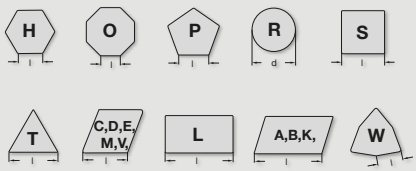
[1]) The exact tolerance is determined by size of insert.

1	2	3	4	5	6
C	N	G	A	12	04

4 Insert type

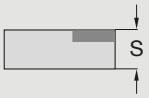
N	
F	
R	
A	
G	
M	
W	
T	
X	Special design

5 Insert size



If less than 10 use 0 in first place, decimals are omitted
(Example: 9,525 mm = 09)

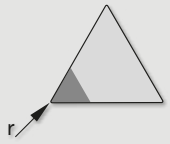
6 Thickness in mm



01 s = 1,59
T1 s = 1,98
02 s = 2,38
03 s = 3,18
T3 s = 3,97
04 s = 4,76
05 s = 5,56
06 s = 6,35

If less than 10 use 0 in first place, decimals are omitted
(Example: 3,18 mm = 03)

7 Corner configuration



Radius
02 = 0,2 mm
04 = 0,4 mm
08 = 0,8 mm
12 = 1,2 mm
16 = 1,6 mm
00 = round insert (inch)
M0 = round insert (metr.)

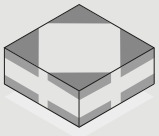
10 Solid-PcBN grades

SBC-1, SBC-10 } Cast iron, powder steel (PM)

SBC-25C, SBC-25, SBC-40C, SBC-40 } Hardtuning

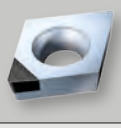
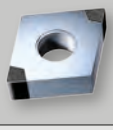
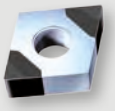
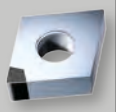
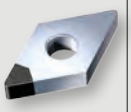
11 Cutting edges

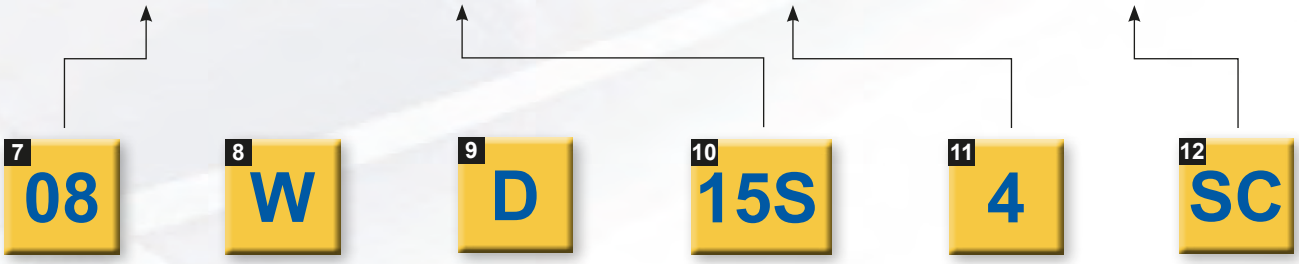
Number of cutting edges:
2 - 8



12 Tipping versions

Solid PcBN grades

EWS		PC-M	
MC-S		PC-M4	
PC-S		SBC	
PC-S4			



8 Wiper edge

W = Wiper-edge, right + left hand

WR = Wiper-edge, right hand

WL = Wiper-edge, left hand

9 Cutting edge design

Cutting edge design
T-land + honing

Conditions
A - H
see pages 14-17

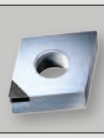
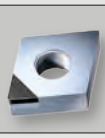
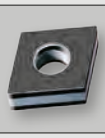
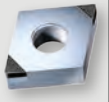
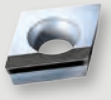
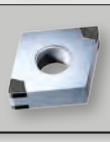
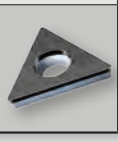
10 Carbide Reinforced PcBN grades

PBC-10S, PBC-10, PBC-15S, PBC-15 } Cast iron, powder steel (PM)

PBC-25S, PBC-25, PBC-40S, PBC-40 } Hardtuning

12 Tipping versions

Carbide reinforced PcBN grades

EW		MW		SE	
MC		GS			
SC		VM			

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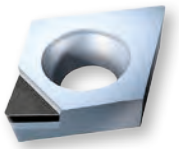
TURNING | ISO

CCGT

Standard tipped corners (positive)

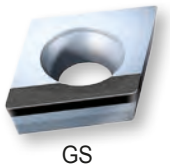


EW

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F A C	A D A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d_1	s	l	r	l_1
060202-EW	●	● ●									0,2	3,4
060204-EW	●	● ●							6,35	2,8	2,38	6,45	0,4	3,1
060208-EW	●	● ●									0,8	2,8
09T302-EW	●	● ●									0,2	3,4
09T304-EW	●	● ●							9,52	4,4	3,97	9,70	0,4	3,1
09T308-EW	●	● ●									0,8	2,8

CCGW

Standard tipped corners



GS

insert size	uncoated				coated				dimensions				
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S	right hand shown				
	A F A C	A D A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d_1	s	r	l_1
060204R/L-GS	● ● ● ●	● ● ● ●							6,35	2,8	2,38	0,4	6,45
060208R/L-GS	● ● ● ●	● ● ● ●										0,8	
09T304R/L-GS	● ● ● ●	● ● ● ●							9,52	4,4	3,97	0,4	9,70
09T308R/L-GS	● ● ● ●	● ● ● ●										0,8	

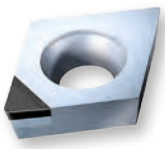
● = ex stock
❍ = on short call

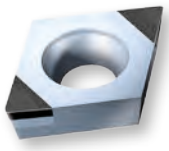
ordering example: CCGW060208ER-40GS

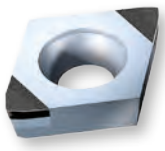
v_c page 2-21

BECKER CERATİZİT GROUP

CCGW
Standard tipped corners


EW

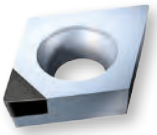

2MC

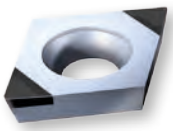

W-2MC

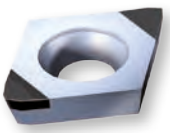
insert size	uncoated				coated																										dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S							PBC-15S								PBC-25S							PBC-40S													
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
060202-EW	●	●	●	●	●	●	●	●																																			0,2	3,4
060204-EW	●	●	●	●	●	●	●	●																																				0,4	3,1
060208-EW	●	●	●	●	●	●	●	●																																				0,8	2,8
060202-2MC										●		●	●				●				●	●					●			●	●	●			●		●	●	●			6,35	2,8	2,38	6,45	0,2	3,4
060204-2MC									●		●	●	●	●	●	●		●	●	●	●	●	●			●	●	●	●	●	●			●	●	●	●	●	●	●						0,4	3,1
060208-2MC											●	●	●	●	●		●	●	●	●		●	●	●	●		●		●	●		●		●		●	●	●	●	●						0,8	2,8
060202-W-2MC*										●	●	●	●	●			●	●	●	●	●	●			●	●	●	●							●	●	●	●								0,2	3,4
060204-W-2MC*									●		●		●	●	●			●	●	●	●	●	●					●	●	●	●					●	●	●	●	●						0,4	3,1
09T304-EW	●	●	●	●	●	●	●	●																																			0,4	2,8
09T308-EW	●	●	●	●	●	●	●	●																																			0,8	2,5
09T312-EW	●	●	●	●		●	●	●																																			1,2	2,5
09T302-2MC	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●		●	●	●				●	●	●		●			●		●		●	●		9,52	4,4	3,97	9,70	0,2	3,4
09T304-2MC	●	●	●	●	●	●	●	●			●		●	●	●		●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					0,4	3,1
09T308-2MC	●	●	●	●	●	●	●	●	●		●	●		●		●		●		●	●	●	●	●			●	●		●	●			●	●	●	●	●		●					0,8	2,8
09T304-W-2MC*	●	●	●	●	●	●	●	●	●	●		●		●	●			●	●	●	●	●	●											●	●	●	●	●							0,4	3,1
09T208-W-2MC*	●	●	●	●	●	●	●	●			●	●	●	●			●	●	●	●	●	●			●	●	●	●	●	●			●	●	●	●	●	●	●					0,8	2,8
120404-EW	●	●	●	●		●	●	●																																			0,4	3,1
120408-EW	●	●	●	●		●	●	●																																			0,8	2,8

* Wiper = 95° holder

CCGW
Solid tipped corners


EWS


2MC/S


W-2MC/S

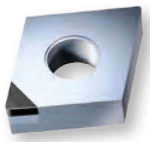
insert size	uncoated							coated																				dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C									SBC-40C																		
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H		A	B	C	D	E	F	G	H											
060202-EWS	●	●	●	●	●	●	●																												
060204-EWS	●	●	●	●	●	●	●																												
060208-EWS	●	●	●	●	●	●	●																												
060202-W-EWS*	●	●	●	●	●	●	●																												
060204-W-EWS*	●	●	●	●	●	●	●																												
060202-2MC/S								●	●	●	●		●		●		●		●	●			●	●											
060204-2MC/S								●	●	●		●	●		●		●	●		●	●		●	●											
060208-2MC/S									●		●	●		●			●		●	●		●	●												
060202-W-2MC/S*								●		●		●	●	●	●		●	●		●	●	●	●	●											
060204-W-2MC/S*								●	●		●	●		●	●		●	●	●		●	●	●	●											
09T302-EWS	●	●	●	●	●	●	●																												
09T304-EWS	●	●	●	●	●	●	●																												
09T308-EWS	●	●	●	●	●	●	●																												
09T312-EWS	●	●	●	●	●	●	●																												
09T302-W-EWS*	●	●	●	●	●	●	●																												
09T304-W-EWS*	●	●	●	●	●	●	●																												
09T308-W-EWS*	●	●	●	●	●	●	●																												
09T302-2MC/S								●	●		●		●		●		●		●	●		●		●											
09T304-2MC/S								●	●	●	●	●	●	●				●	●	●	●	●	●	●											
09T308-2MC/S								●	●			●			●		●		●	●	●	●	●												
09T304-W-2MC/S*								●	●		●	●	●		●		●			●	●	●	●	●											
09T308-W-2MC/S*										●	●	●	●	●	●				●	●	●	●	●	●											

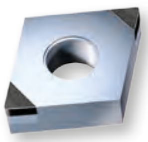
* Wiper = 95° holder

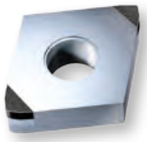
TECHNOLOGY
TURNING
GROOVING
BORING
MILLING

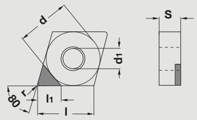
CERATIZIT GROUP

CNGA
Standard tipped corners


EW


2MC

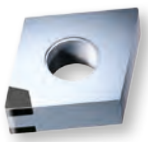

W-2MC

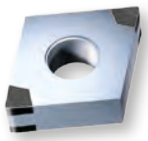


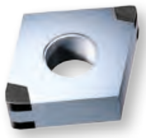
insert size	uncoated PBC-10 A	PBC-10 F	PBC-15 A	PBC-15 C	PBC-25 A	PBC-25 D	PBC-40 A	PBC-40 E	dimensions d	d1	s	l	r	l1
120402-EW	●	●	●	●	●	●	●	●	12,70	5,13	4,76	12,90	0,2	3,4
120404-EW	●	●	●	●	●	●	●	●					0,4	3,1
120408-EW	●	●	●	●	●	●	●	●					0,8	2,8
120412-EW	●	●	●	●	●	●	●	●					1,2	2,5
120404-2MC	●	●	●	●	●	●	●	●					0,4	3,0
120408-2MC	●	●	●	●	●	●	●	●					0,8	2,7
120412-2MC		●		●		●		●					1,2	2,4
120402W-2MC	●	●	●	●	●	●	●	●					0,2	3,4
120404W-2MC	●	●	●	●	●	●	●	●					0,4	3,0
120408W-2MC	●	●	●	●	●	●	●	●					0,8	2,7

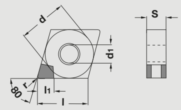
insert size	coated PBC-10S A	B	C	D	E	F	G	H	PBC-15S A	B	C	D	E	F	G	H	PBC-25S A	B	C	D	E	F	G	H	PBC-40S A	B	C	D	E	F	G	H
120402-EW																																
120404-EW																																
120408-EW																																
120412-EW																																
120404-2MC																																
120408-2MC																																
120412-2MC																																
120402W-2MC																																
120404W-2MC																																
120408W-2MC																																

CNGA
Sandwich tipped corners


2SC


4SC


W-4 SC



insert size	uncoated PBC-10 A	PBC-10 F	PBC-15 A	PBC-15 C	PBC-25 A	PBC-25 D	PBC-40 A	PBC-40 E	dimensions d	d1	s	l	r	l1
120404-2SC									12,70	5,13	4,76	12,90	0,4	2,8
120408-2SC													0,8	2,5
120412-2SC													1,2	2,2
120404W-2SC													0,4	2,8
120408W-2SC													0,8	2,5
120404-4SC													0,4	2,8
120408-4SC													0,8	2,5
120412-4SC													1,2	2,2
120404W-4SC													0,4	2,8
120408W-4SC													0,8	2,5

insert size	coated PBC-10S A	B	C	D	E	F	G	H	PBC-15S A	B	C	D	E	F	G	H	PBC-25S A	B	C	D	E	F	G	H	PBC-40S A	B	C	D	E	F	G	H
120404-2SC	●				●	●	●			●	●	●	●	●		●	●	●		●	●	●					●	●	●		●	●
120408-2SC	●			●	●	●	●			●	●	●	●	●		●		●	●	●	●	●			●			●	●	●	●	●
120412-2SC	●				●	●	●			●	●	●	●	●		●	●	●		●	●	●					●	●	●	●	●	●
120404W-2SC	●				●	●	●			●	●	●	●	●		●	●	●		●	●	●					●	●	●		●	●
120408W-2SC	●	●		●	●	●	●		●		●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●
120404-4SC	●				●	●	●			●	●	●	●	●		●	●	●		●	●	●					●	●	●		●	●
120408-4SC	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
120412-4SC	●	●	●	●	●	●	●			●	●	●	●	●		●	●	●		●	●	●					●	●	●	●	●	●
120404W-4SC	●				●	●	●			●	●	●	●	●		●	●	●		●	●	●					●	●	●		●	●
120408W-4SC	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●

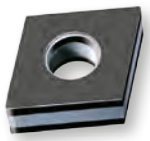
● = ex stock
❍ = on short call

ordering example: CNGA120404-E-40S-4SC

Vc page 2-21

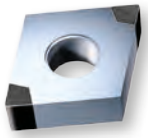
BECKER
CERATİZİT GROUP

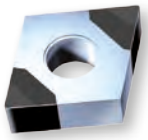
CNGA
Double fullface


SE

insert size	uncoated							coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S													
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
120408-SE									●		●							●		●		●				●		●		●				●		●		●	●	12,70	5,13	4,76	12,90	0,8	
120412-SE									●		●							●		●		●				●		●		●				●		●		●	●					1,2	

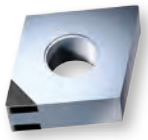
CNGA
Solid tipped corners

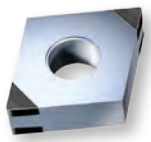

PC-M

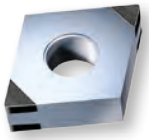

PC-M/4

insert size	uncoated							coated																				dimensions					
	SBC-1		SBC-10		SBC-25		SBC-40	SBC-25C								SBC-40C																			
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
120404-PC-M	●		●		●		●																	12,70	5,13	4,76	12,90	0,4	2,8
120408-PC-M	●		●		●		●																					0,8	2,6
120412-PC-M	●		●		●		●																					1,2	2,4
120408-PC-M/4	●																											0,8	4,2

CNGA
Solid tipped corners


2MC/S


4MC/S


W-4MC/S

insert size	uncoated							coated																				dimensions					
	SBC-1		SBC-10		SBC-25		SBC-40	SBC-25C								SBC-40C																			
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
120404-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●	12,70	5,13	4,76	12,90	0,4	2,8
120408-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,8	2,5
120412-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●					1,2	2,2
120404W-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,4	2,8
120408W-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,8	2,5
120404-4MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,4	2,8
120408-4MC/S									●		●	●	●	●	●			●	●	●	●	●						0,8	2,6
120412-4MC/S									●		●	●	●	●	●			●	●	●	●	●	●					1,2	2,2
120404W-4MC/S								●	●	●	●	●	●	●			●	●	●	●	●	●	●					0,4	2,8
120408W-4MC/S								●	●	●	●	●	●	●			●	●	●	●	●	●	●					0,8	2,6

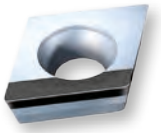
Vc page 2-21

ordering example: CNGA120404W-B-25C-2MC/S

● = ex stock
❍ = on short call

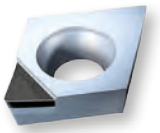
TURNING | ISO

CPGW
Standard tipped corners


GS

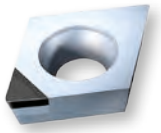
insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S	right hand shown					
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d_1	s	l	r	l_1
050204R/L-GS	● ●	●	● ●	● ●					5,56	2,50	2,38		0,4	5,6
060204R/L-GS	● ●	●	● ●	● ●					6,35	2,80	2,38		0,4	6,5
060208R/L-GS	● ●	●	● ●	● ●									0,8	6,5

CPGT
Standard tipped corners (positive)


EW

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d_1	s	l	r	l_1
04T102-EW	●		●	●					4,76	2,10	1,98	4,80	0,2	2,2
04T104-EW	●		●	●									0,4	2,0
05T102-EW	●		●	●					5,56	2,50	1,98	5,60	0,2	2,4
05T104-EW	●		●	●									0,4	2,2
050202-EW	●	●	●	●					5,56	2,50	2,38	5,60	0,2	2,4
050204-EW	●	●	●	●									0,4	2,2
060204-EW	●	●	●	●					6,35	2,80	2,38	6,45	0,4	3,4
060208-EW	●	●	●	●									0,8	2,8

CPGW
Standard tipped corners


EW

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d_1	s	l	r	l_1
04T102-EW	● ●	● ●	● ●	● ●					4,76	2,10	1,98	4,80	0,2	2,2
04T104-EW	● ●	● ●	● ●	● ●									0,4	2,0
05T102-EW	● ●	● ●	● ●	● ●					5,56	2,50	1,98	5,60	0,2	2,4
05T104-EW	● ●	● ●	● ●	● ●									0,4	2,2
050202-EW	● ●	● ●	● ●	● ●					5,56	2,50	2,38	5,60	0,2	2,4
050204-EW	● ●	● ●	● ●	● ●									0,4	2,2
060202-EW	● ●	● ●	● ●	● ●					6,35	2,80	2,38	6,45	0,2	3,4
060204-EW	● ●	● ●	● ●	● ●									0,4	3,1
060208-EW	● ●	● ●	● ●	● ●									0,8	2,8

● = ex stock
❍ = on short call

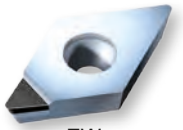
ordering example: CPGW060208-E-40-EW

v_c page 2-21

BECKER
CERATİZİT GROUP

DCGT

Standard tipped corners (positive)

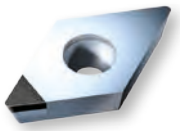


EW

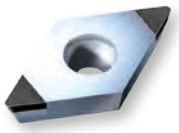
insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1
070202-EW	●	●	●	●					6,35	2,80	2,38	7,75	0,2	3,9
070204-EW	●	●	●	●									0,4	3,5
070208-EW	●	●	●	●									0,8	3,0
11T302-EW	●	●	●	●					9,52	4,40	3,97	11,60	0,2	3,9
11T304-EW	●	●	●	●									0,4	3,5
11T308-EW	●	●	●	●									0,8	3,0

DCGW

Standard tipped corners



EW



2MC

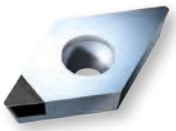
insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1
070202-EW	● ●	● ●	● ●	● ●					6,35	2,80	2,38	7,75	0,2	3,9
070204-EW	● ●	● ●	● ●	● ●									0,4	3,5
070208-EW	● ●	● ●	● ●	● ●									0,8	3,0
070202-2MC	●		●	● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ●	● ● ● ● ●					0,2	3,9
070204-2MC	●	●	●	● ●	● ● ● ● ● ●	● ● ● ● ● ●	● ● ● ● ●	● ● ● ● ● ●					0,4	3,5
070208-2MC	●		●	●	● ● ● ● ●	● ● ● ● ● ●	● ● ● ● ●	● ● ● ● ● ●					0,8	3,0
11T302-EW	● ●	● ●	● ●	● ●					9,52	4,40	3,97	11,60	0,2	3,9
11T304-EW	● ●	● ●	● ●	● ●									0,4	3,5
11T308-EW	● ●	● ●	● ●	● ●									0,8	3,0
11T302-2MC	● ●		● ●	● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●					0,2	3,9
11T304-2MC	● ●	●	● ●	● ●	● ● ● ● ● ●	● ● ● ● ● ●	● ● ● ● ● ●	● ● ● ● ● ●					0,4	3,5
11T308-2MC	● ●		● ●	● ●	● ● ● ● ● ●	● ● ● ● ● ●	● ● ● ● ●	● ● ● ● ● ●					0,8	3,0
150404-EW	● ●		● ●						12,70	5,50	4,76	15,50	0,4	3,5
150408-EW	● ●		● ●										0,8	3,0

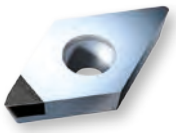
ordering example: DCGW11T304-E-40S-2MC

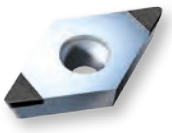
● = ex stock
❍ = on short call

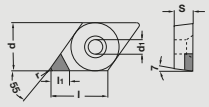
DCGW

Solid tipped corners


EWS


W-EWS


2MC/S

insert size	uncoated							coated																dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C													
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
070202-EWS		●	●	●	●	●	●																					0,2	3,9
070204-EWS		●	●	●	●	●	●																					0,4	3,5
070208-EWS		●	●	●	●	●	●																					0,8	3,0
070201R/L-W-EWS*		●	●	●	●	●	●																					0,1	3,0
070202R/L-W-EWS*		●	●	●	●	●	●																	6,35	2,80	2,38	7,75	0,2	3,0
070204R/L-W-EWS*		●	●	●	●	●	●																					0,4	3,0
070202-2MC/S								●	●		●	●		●	●	●		●			●		●					0,2	3,4
070204-2MC/S								●	●		●	●			●	●		●			●	●	●					0,4	3,0
070208-2MC/S								●			●	●	●		●		●	●		●		●	●					0,8	2,6
11T301R/L-W-EWS*		●	●	●	●	●	●																					0,1	3,0
11T302R/L-W-EWS*		●	●	●	●	●	●																					0,2	3,0
11T304R/L-W-EWS*		●	●	●	●	●	●																					0,4	3,0
11T308R/L-W-EWS*		●	●	●	●	●	●																	9,52	4,40	3,97	11,60	0,8	3,0
11T302-2MC/S								●	●	●		●	●		●	●	●	●		●		●	●					0,2	3,4
11T304-2MC/S									●		●	●	●	●	●	●		●	●	●	●	●	●					0,4	3,0
11T308-2MC/S								●		●	●	●	●	●		●	●	●		●	●	●	●					0,8	2,6

* Wiper = 93° holder

● = ex stock
❍ = on short call

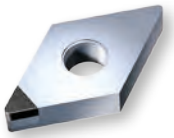
ordering example: DCGW11T304-B-25C-2MC/S

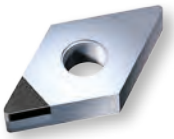
v_c page 2-21

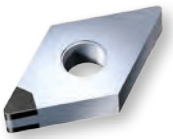
BECKER
CERATIZIT GROUP

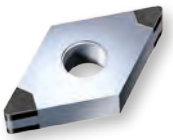
DNGA

Standard tipped corners
Sandwich tipped corners


EW


MW


2SC


4SC

insert size	uncoated							coated																												dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S							PBC-15S							PBC-25S							PBC-40S													
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
110402-EW	●	●		●	●	●	●																																		9,52	3,81	4,76	11,60	0,2	3,9
110404-EW	●	●	●	●	●	●	●	●																																				0,4	3,5
110408-EW	●	●			●	●	●	●																																				0,8	3,0
150402-EW	●	●			●	●	●	●																																				0,2	3,9
150404-EW	●	●		●	●	●	●	●																																				0,4	3,5
150408-EW	●	●			●	●	●	●																																				0,8	3,0
150408-MW		●		●		●		●																																				0,8	5,0
150412-MW		●		●		●		●																																		12,70	5,13	4,76	15,50	1,2	4,5
150404-2SC									●			●	●	●			●	●	●	●	●		●		●	●			●	●	●			●	●			●	●						0,4	2,8
150408-2SC									●		●	●	●	●			●	●	●	●	●	●	●		●	●			●	●	●	●		●	●			●	●						0,8	2,6
150404-4SC									●			●	●	●			●	●	●	●	●		●		●	●			●	●	●			●	●			●	●						0,4	2,8
150408-4SC									●		●	●	●	●			●	●	●	●	●	●	●		●	●			●	●	●	●		●	●			●	●						0,8	2,6
150604-EW	●	●	●	●	●	●	●	●																																				0,4	3,5
150608-EW	●	●	●	●	●	●	●	●																																				0,8	3,0
150604-MW	●	●			●	●	●	●																																				0,4	5,5
150608-MW	●	●		●	●	●	●	●																																				0,8	5,0
150612-MW	●	●		●	●	●	●	●																																		12,70	5,13	6,35	15,50	1,2	4,5
150604-2SC									●			●	●	●			●	●	●	●	●		●		●	●			●	●	●			●	●			●	●						0,4	2,8
150608-2SC									●		●	●	●	●			●	●	●	●	●	●	●		●	●			●	●	●	●		●	●			●	●						0,8	2,6
150604-4SC									●			●	●	●			●	●	●	●	●		●		●	●			●	●	●			●	●			●	●						0,4	2,8
150608-4SC									●		●	●	●	●			●	●	●	●	●	●	●		●	●			●	●	●	●		●	●			●	●						0,8	2,6

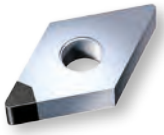
ordering example: DNGA150608-D-25MW

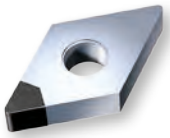
● = ex stock
❍ = on short call

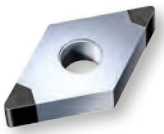
TURNING | ISO

DNGA

Solid tipped corners


PC-S

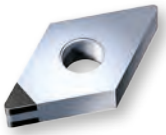

PC-S/4

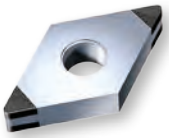

PC-M

insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
150404-PC-S	●	●	●	●	●	●	●																	12,70	5,13	4,76	15,50	0,4	2,8
150408-PC-S	●	●	●	●	●	●	●																					0,8	2,6
150412-PC-S	●	●	●	●	●	●	●																					1,2	2,4
150404-PC-M	●		●		●		●																					0,4	2,8
150408-PC-M	●		●		●		●																					0,8	2,6
150412-PC-M	●		●		●		●																					1,2	2,4
150604-PC-S	●	●	●	●	●	●	●																					0,4	2,8
150608-PC-S	●	●	●	●	●	●	●																					0,8	2,6
150612-PC-S	●	●	●	●	●	●	●																					1,2	2,4
150604-PC-S/4	●																											0,4	4,0
150608-PC-S/4	●																							12,70	5,13	6,35	15,50	0,8	3,6
150612-PC-S/4	●																											1,2	3,2
150604-PC-M	●		●		●		●																					0,4	2,8
150608-PC-M	●		●		●		●																					0,8	2,6
150612-PC-M	●		●		●		●																					1,2	2,4

DNGA

Solid tipped corners


2MC/S


4MC/S

insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
150604-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●	12,70	5,13	6,35	15,50	0,4	2,8
150608-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,8	2,5
150612-2MC/S									●		●	●	●	●	●			●	●	●	●	●	●					1,2	2,2
150604-4MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,4	2,8
150608-4MC/S									●		●	●	●	●	●			●	●	●	●	●	●					0,8	2,5
150612-4MC/S									●		●	●	●	●	●			●	●	●	●	●	●					1,2	2,2

● = ex stock
❍ = on short call

ordering example: DNGA150604-B-40C-4MC/S

v_c page 2-21

BECKER CERATIZIT GROUP

RCGW

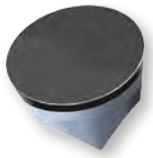
Fullface

VM

insert size	uncoated							coated																								dimensions					
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E		A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
0602M0-VM	●	●		●	●	●	●	●																																	6,00	2,80	2,38			
0803M0-VM	●	●		●	●	●	●	●																																	8,00	3,40	3,18			
1003M0-VM		●				●		●																																	10,00	4,40	3,18			
10T3M0-VM		●				●		●																																			3,97			
1204M0-VM		●				●		●																																	12,00	4,40	4,76			

RCGX

Fullface



VM

insert size	uncoated							coated																								dimensions					
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E		A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
060600-VM			●	●	●	●	●	●																																	6,35		6,35			
090700-VM				●		●		●																																	9,52		7,94			
120700-VM				●		●																																			12,70		7,94			

RNGA

Fullface
Double fullface

VM

SE

insert size	uncoated							coated																								dimensions					
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E		A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
090300-VM	●	●			●	●																																			9,52	3,81	3,18			
120400-VM	●	●			●	●																																			12,70	5,13	4,76			
120400-SE										●	●	●						●	●			●	●			●	●	●								●	●				●						

ordering example: RCGX060600-E-40VM

● = ex stock
❍ = on short call

BECKER
CERATIZIT GROUP

TURNING | ISO

RNGN

Fullface
Double fullface


VM


SE

insert size	uncoated				coated				dimensions						
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S							
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1	
090300-VM	● ●		● ●	● ●					9,52		3,18				
090300-SE					● ● ●	● ● ● ●	● ● ●	● ● ● ●							
120300-SE					● ● ●	● ● ● ●	● ● ●	● ● ● ●	12,70		3,18				
120400-VM	● ●		● ●	● ●					12,70		4,76				
120400-SE					● ● ●	● ● ● ●	● ● ●	● ● ● ●							

RNGN

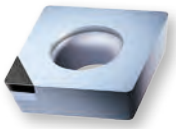
Solid

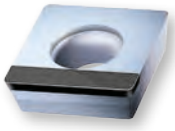

SBC

insert size	uncoated							coated													dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C										
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
090300-SBC	●		●		●		●																	9,52		3,18			
120300-SBC	●		●		●		●																	12,70		3,18			
120400-SBC	●																							12,70		4,76			

SCGW

Standard tipped corners


EW


GS

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1
09T304-EW	● ●	● ●	● ●	● ●					9,52	4,40	3,97	9,52	0,4	3,5
09T308-EW	● ●	●	● ●	●									0,8	3,4
09T304-GS	● ●	● ●	● ●	● ●									0,4	9,5
09T308-GS	● ●	● ●	● ●	● ●									0,8	9,5
120404-EW	● ●		● ●	●					12,70	5,50	4,76	12,70	0,4	3,5
120408-EW	● ●		● ●	●									0,8	3,4
120412-EW	● ●		● ●	●									1,2	3,2

● = ex stock
❍ = on short call

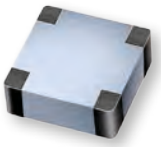
ordering example: SCGW09T308-D-25EW

VC page 2-21

BECKER CERATİZİT GROUP

SNGN

Solid tipped corners

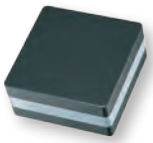


PC-M

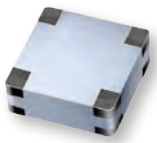
insert size	uncoated							coated																dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C													
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
090304-PC-M	●				●		●																	9,52		3,18	9,52	0,4	3,0
090308-PC-M	●			●	●	●	●																					0,8	2,8
090312-PC-M	●				●		●																					1,2	2,6
120404-PC-M	●	●	●		●		●																	12,70		4,76	12,70	0,4	3,0
120408-PC-M	●	●	●	●	●	●	●																					0,8	2,8
120412-PC-M	●	●	●		●		●																					1,2	2,6

SNGN

Sandwich tipped corners
Double fullface



SE



8SC

insert size	uncoated							coated																								dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
090308-SE									●		●		●					●		●			●	●		●		●							●		●		●	●	9,52		3,18	9,52	0,8	
120308-SE									●		●		●					●		●			●	●		●		●							●		●		●	●	12,70		3,18	12,70	0,8	
120408-8SC									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					0,8	2,8
120412-8SC									●			●	●	●	●		●	●	●	●	●		●		●	●	●	●								●	●	●	●	●	●					1,2	2,6
120408-SE									●		●		●					●		●			●	●		●		●							●		●		●	●					0,8	
120412-SE									●				●					●		●			●	●		●		●							●		●		●	●					1,2	

SNGN

Solid

SBC

insert size	uncoated							coated																dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C													
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
090304-SBC	●		●		●		●																	9,52		3,18		0,4	9,5
090308-SBC	●		●		●		●																					0,8	9,5
090312-SBC	●		●		●		●																					1,2	9,5

v_c page 2-21

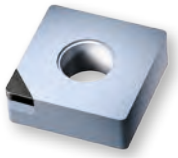
ordering example: SNGN090312-F-SBC25

● = ex stock
❍ = on short call

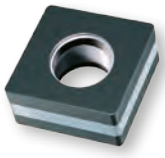
TURNING | ISO

SNGA

Standard/ Sandwich tipped corners
Double fullface


EW

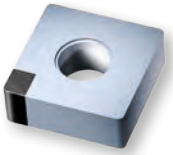

8SC


SE

insert size	uncoated				coated																										dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S							PBC-15S								PBC-25S							PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
120404-EW	●	●		●	●	●	●	●																																	12,70	5,13	4,76	12,70	0,4	3,5
120408-EW	●	●	●	●	●	●	●	●																																					0,8	3,4
120412-EW	●	●		●	●	●	●	●																																					1,2	3,2
120408-8SC									●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					0,8	2,8
120412-8SC									●			●	●	●	●			●	●	●	●	●				●	●	●	●	●	●					●	●	●	●	●	●					1,2	2,6
120408-SE									●		●		●					●		●			●	●		●		●		●					●		●		●	●					0,8	
120412-SE									●		●		●					●		●			●	●		●		●		●					●		●		●	●					1,2	

SNGA

Solid tipped corners


PC-S


PC-M

insert size	uncoated							coated																	dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C															
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
120404-PC-S	●	●	●	●	●	●	●																	12,70	5,13	4,76	12,70	0,4	3,0
120408-PC-S	●	●	●	●	●	●	●																					0,8	2,8
120412-PC-S	●	●	●	●	●	●	●																					1,2	2,6
120404-PC-M	●		●		●		●																					0,4	3,0
120408-PC-M	●		●		●		●																					0,8	2,8
120412-PC-M	●		●		●		●																					1,2	2,6

● = ex stock
❍ = on short call

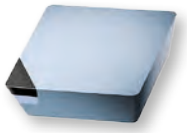
ordering example: SNGA1204012-G-10PC-M

V_C page 2-21

BECKER CERATIZIT GROUP

SPGN

Standard tipped corners

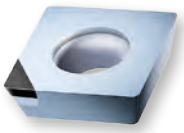


EW

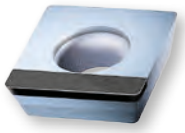
insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F A C	A D A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1
120308-EW	● ● ●	● ●					12,70		3,18	12,70	0,8	3,4
120312-EW	● ●	● ●									1,2	3,2

SPGW

Standard tipped corners



EW



GS

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F A C	A D A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1
09T304-EW	● ●	● ● ●					9,52	4,40	3,97	9,52	0,4	3,5
09T308-EW	● ● ●	● ●									0,8	3,4
09T304-GS	● ● ●	● ●									0,4	9,5
09T308-GS	● ● ●	● ●									0,8	9,5
120404-EW	● ●	● ● ●					12,70	5,50	4,76	12,70	0,4	3,5
120408-EW	● ● ●	● ●									0,8	3,4
120412-EW	● ●	● ●									1,2	3,2

TBGN

Fullface

VM

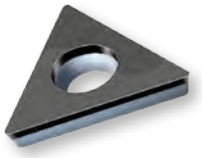
insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	A F A C	A D A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	d	d1	s	l	r	l1
060102-VM	● ●	● ● ●					3,97		1,59		0,2	6,5
060104-VM	● ●	● ● ●									0,4	6,5
060108-VM	● ●	● ● ●									0,8	6,5

ordering example: TBGN060102-A-10VM

● = ex stock
❍ = on short call

TBGW

Fullface

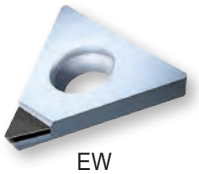


VM

insert size	uncoated								coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
060102-VM	●	●			●	●		●																																3,97	2,30	1,59		0,2	6,5
060104-VM	●	●			●	●		●																																				0,4	6,5
060108-VM	●	●			●	●		●																																				0,8	6,5

TCGT

Standard tipped corners (positive)



EW

insert size	uncoated								coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
090202-EW	●		●		●		●																																	5,56	2,50	2,38	9,60	0,2	3,8
090204-EW	●		●		●		●																																					0,4	3,5
110202-EW	●		●		●		●																																	6,35	2,80	2,38	11,00	0,2	3,8
110204-EW	●		●		●		●																																					0,4	3,5

● = ex stock
❍ = on short call

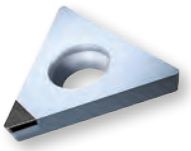
ordering example: TCGT110202-A-40EW

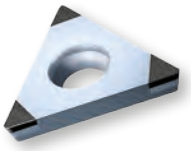
Vc page 2-21

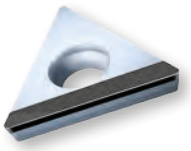
BECKER
CERATİZİT GROUP

TCGW

Standard tipped corners


EW

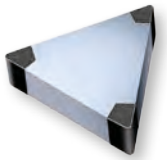

3MC


GS

insert size	uncoated							coated																									dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S							PBC-15S							PBC-25S							PBC-40S							d	d1	s	l	r	l1
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H						
090202-EW	●	●			●	●	●	●																																	5,56	2,50	2,38	9,60	0,2	3,8
090204-EW	●	●	●	●	●	●	●	●																																					0,4	3,5
090208-EW	●	●			●	●	●	●																																					0,8	3,0
090202-3MC									●		●		●					●	●	●	●				●	●									●	●		●						0,2	2,6
090204-3MC										●	●	●					●	●	●		●	●				●									●		●		●	●	●	●			0,4	2,2
090208-3MC										●		●	●	●				●	●	●					●										●		●	●	●					0,8	1,8
090204-GS	●	●			●	●	●	●																																					0,4	9,6
110202-EW	●	●			●	●	●	●																																	6,35	2,80	2,38	11,00	0,2	3,8
110204-EW	●	●	●	●	●	●	●	●																																					0,4	3,5
110208-EW	●	●			●	●	●	●																																					0,8	3,0
110202-3MC									●		●		●					●	●	●	●				●	●									●	●		●						0,2	2,9
110204-3MC										●	●	●		●			●	●	●	●		●	●				●									●		●	●	●	●			0,4	2,5
110208-3MC										●		●	●	●				●	●	●	●				●	●									●	●		●	●	●				0,8	2,1
110204-GS	●	●			●	●	●	●																																					0,4	11,0
110208-GS		●				●		●																																					0,8	11,0
16T304-3MC									●		●	●	●					●	●						●	●		●		●						●	●	●	●		●	9,52	4,40	3,97	16,50	0,4	3,2
16T308-3MC											●	●	●	●				●	●	●		●	●		●	●		●		●	●	●			●	●	●	●	●						0,8	2,7
16T304-GS		●				●		●																																					0,4	16,5
16T308-GS		●				●		●																																					0,8	16,5

TNGN

Solid tipped corners


PC-M

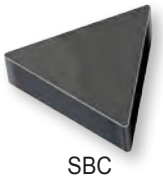
insert size	uncoated							coated																				dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C																				
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
160404-PC-M	●		●		●		●																	9,52		4,76	16,50	0,4	3,0
160408-PC-M	●		●		●		●																					0,8	2,6
160412-PC-M	●		●		●		●																					1,2	2,4

ordering example: TCGW110204-D-15S-3MC

● = ex stock
❍ = on short call

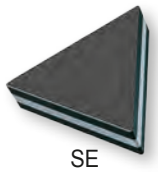
TURNING | ISO

TNGN
Solid


SBC

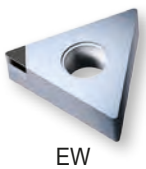
insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
110304-SBC	●		●		●		●																	6,35		3,18	11,00	0,4	
110308-SBC	●		●		●		●																					0,8	
110312-SBC	●		●		●		●																					1,2	

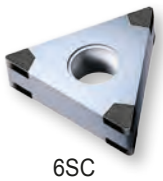
TNGN
Double fullface

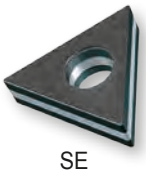

SE

insert size	uncoated							coated																									dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
110304-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●				6,35		3,18	11,00	0,4	
110308-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								0,8	
160404-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●				9,52		4,76	16,50	0,4	
160408-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								0,8	
160412-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								1,2	

TNGA
Standard- / Sandwich tipped corners
Double fullface


EW


6SC


SE

insert size	uncoated							coated																									dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
110304-EW	●	●		●	●	●	●	●																																	6,35	2,26	3,18	11,00	0,4	2,8
110308-EW	●	●		●	●	●	●	●																																					0,8	2,5
110304-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								0,4	
110308-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								0,8	
160404-EW	●	●			●	●	●	●																																	9,52	3,81	4,76	16,50	0,4	3,5
160408-EW	●	●		●	●	●	●	●																																					0,8	3,0
160412-EW	●	●			●	●	●	●																																					1,2	2,6
160404-6SC									●			●	●	●			●	●	●	●	●		●		●	●		●	●	●				●	●	●		●	●							0,4	2,8
160408-6SC									●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●					0,8	2,5
160412-6SC									●			●	●	●			●	●	●	●	●		●		●	●		●	●	●				●	●	●		●	●							1,2	2,2
160404-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								0,4	
160408-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								0,8	
160412-SE									●	●		●					●	●		●	●				●	●		●					●	●		●	●								1,2	

● = ex stock
❍ = on short call

ordering example: TNGA160404-E-40EW

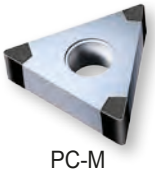
vc page 2-21

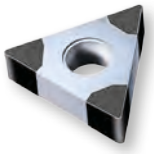
BECKER CERATİZİT GROUP

TNGA

Solid tipped corners


PC-S

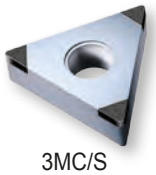

PC-M

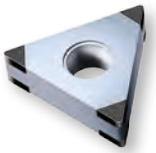

PC-M/4

insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
160404-PC-S	●	●	●	●	●	●	●																	9,52	3,81	4,76	16,50	0,4	3,0
160408-PC-S	●	●	●	●	●	●	●																					0,8	2,6
160412-PC-S	●	●	●	●	●	●	●																					1,2	2,4
160404-PC-M	●		●		●		●																					0,4	3,0
160408-PC-M	●		●		●		●																					0,8	2,6
160412-PC-M	●		●		●		●																					1,2	2,4
160404-PC-M/4	●																											0,4	4,5
160408-PC-M/4	●																											0,8	4,2
160412-PC-M/4	●																											1,2	4,0

TNGA

Solid tipped corners


3MC/S


6MC/S

insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
160404-3MC/S								●	●		●	●	●					●	●	●	●	●	●	9,52	3,81	4,76	16,50	0,4	3,0
160408-3MC/S								●	●	●	●	●	●	●			●	●	●	●	●	●	●					0,8	2,6
160412-3MC/S								●	●		●	●	●	●				●	●	●	●	●	●					1,2	2,4
160404-6MC/S								●	●		●	●	●				●	●	●	●	●	●	●					0,4	3,0
160408-6MC/S								●	●	●	●	●	●	●		●	●	●	●	●	●	●	●					0,8	2,6
160412-6MC/S								●	●		●	●	●	●			●	●	●	●	●	●	●					1,2	2,4

TPGA

Standard tipped corners


EW

insert size	uncoated							coated																									dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
110302-EW		●				●		●																																	6,35	3,40	3,18	11,00	0,2	3,8
110304-EW	●	●	●	●	●	●	●	●																																					0,4	3,5
110308-EW		●				●		●																																					0,8	3,0

page 2-21

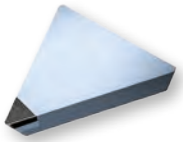
ordering example: TNGA160408-B-40C-6MC/S

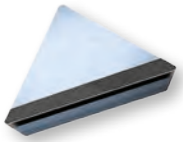
● = ex stock
❍ = on short call

TURNING | ISO

TPGN

Standard tipped corners

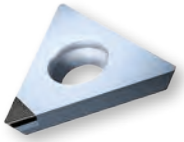

EW

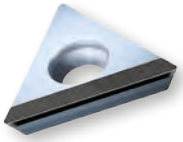

GS


VM

insert size	uncoated							coated																										dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S													
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
110302-EW	●	●			●	●	●	●																																			0,2	3,8
110304-EW	●	●	●	●	●	●	●	●																																			0,4	3,5
110308-EW	●	●			●	●	●	●																																			0,8	3,0
110304-GS		●		●		●		●																																	6,35		3,18	11,00	0,4	11,0
110308-GS		●				●		●																																				0,8	11,0
110304-VM		●		●		●		●																																				0,4	11,0
110308-VM		●				●		●																																				0,8	11,0
160304-EW	●	●		●	●	●	●	●																																			0,4	3,5
160308-EW	●	●			●	●	●	●																																			0,8	3,0
160304-GS		●		●		●		●																																	9,52		3,18	16,50	0,8	16,5
160308-GS		●				●		●																																				0,8	16,5

Standard tipped corners


EW


GS

insert size	uncoated							coated																										dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S													
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
090202-EW		●			●	●		●																																			0,2	3,8
090204-EW	●	●		●	●	●	●	●																																			0,4	3,5
090204-GS		●		●		●		●																																	5,56	2,50	2,38	9,60	0,4	9,6
110202-EW		●			●	●		●																																			0,2	3,8
110204-EW		●			●	●	●	●																																	6,35	2,80	2,38	11,00	0,4	3,5
110208-GS		●				●		●																																				0,8	11,0
110302-EW	●	●			●	●	●	●																																			0,2	3,8
110304-EW	●	●		●	●	●	●	●																																			0,4	3,5
110308-EW	●	●			●	●	●	●																																	6,35	2,80	3,18	11,00	0,8	3,0
110304-GS	●	●	●	●	●	●	●	●																																			0,4	11,0
110308-GS	●	●			●	●	●	●																																			0,8	11,0
160404-EW	●	●		●	●	●	●	●																																			0,4	3,5
160408-EW	●	●			●	●	●	●																																	9,52	4,40	4,76	16,50	0,8	3,0
160408-GS		●				●		●																																				0,8	16,5

● = ex stock
❍ = on short call

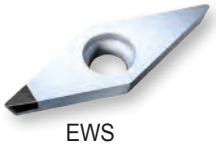
ordering example: TPGW160308-F-10GS

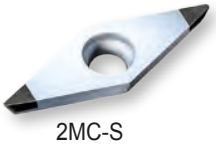
v_c page 2-21

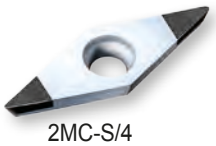
BECKER CERATİZİT GROUP

VBGW

Solid tipped corners


EWS

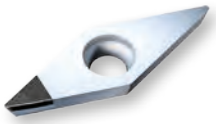

2MC-S

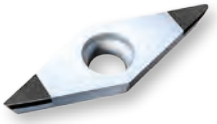

2MC-S/4

insert size	uncoated							coated																dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C								d	d_1	s	l	r	l_1
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H						
110202-EWS		●	●	●	●	●	●																	6,35	2,90	2,38	11,10	0,2	3,5
110204-EWS		●	●	●	●	●	●																					0,4	3,1
160402-EWS		●	●	●	●	●	●																					0,2	3,5
160404-EWS		●	●	●	●	●	●																					0,4	3,1
160408-EWS		●	●	●	●	●	●																					0,8	2,8
160402-2MC-S		●	●	●	●	●	●																					0,2	3,5
160404-2MC-S		●	●	●	●	●	●																	9,52	4,40	4,76	16,60	0,4	3,1
160408-2MC-S		●	●	●	●	●	●																					0,8	2,8
160404-2MC-S/4	●																											0,4	4,4
160408-2MC-S/4	●																											0,8	4,2
160412-2MC-S/4	●																											1,2	4,0

VBGW

Standard tipped corners


MW


2MC

insert size	uncoated							coated																								dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
110202-MW	●	●		●	●	●	●	●																																	6,35	2,90	2,38	11,00	0,2	4,7
110204-MW	●	●	●	●	●	●	●	●																																					0,4	4,5
110208-MW	●	●			●	●	●	●																																					0,8	4,2
160402-MW	●	●			●	●		●																																					0,2	5,3
160404-MW	●	●	●	●	●	●		●																																					0,4	5,0
160408-MW	●	●			●	●		●																																					0,8	4,4
160412-MW	●	●			●	●		●																																		9,52	4,40	4,76	16,50	1,2	3,9
160416-MW		●				●		●																																					1,6	3,5
160404-2MC									●		●	●	●	●				●	●	●	●		●			●	●		●	●	●					●	●	●	●		●	0,4	3,1
160408-2MC											●	●	●	●			●	●	●		●	●	●			●		●	●	●	●	●	●			●	●	●	●	●	●	0,8	2,5

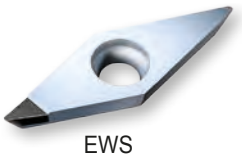
page 2-21

ordering example: VBGW160404-E-10S-2MC

● = ex stock
❍ = on short call

VCGT

Solid tipped corners (positive)

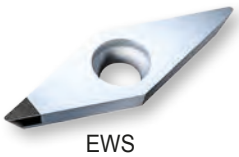


EWS

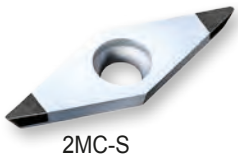
insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
070202-EWS		●		●		●																		3,97	2,20	2,38	6,90	0,2	3,5
070204-EWS		●		●		●																						0,4	3,2
110302-EWS		●		●		●																		6,35	2,90	3,18	11,10	0,2	3,5
110304-EWS		●		●		●																						0,4	3,2
130302-EWS		●		●		●																		7,94	3,40	3,18	13,30	0,2	3,5
130304-EWS		●		●		●																						0,4	3,2
160402-EWS		●		●		●																		9,52	4,40	4,76	16,60	0,2	3,5
160404-EWS		●		●		●																						0,4	3,2
160408-EWS		●		●		●																						0,8	2,8

VCGW

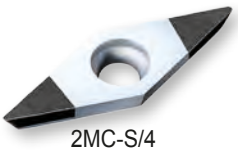
Solid tipped corners



EWS



2MC-S



2MC-S/4

insert size	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C												
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
070202-EWS		●	●	●	●	●																		3,97	2,20	2,38	6,90	0,2	3,5
070204-EWS		●	●	●	●	●																						0,4	3,2
110302-MC-S		●	●	●	●	●																		6,35	2,90	3,18	11,10	0,2	3,5
110304-MC-S		●	●	●	●	●																						0,4	3,2
130302-2EWS		●	●	●	●	●																		7,94	3,40	3,18	13,30	0,2	3,5
130304-2EWS		●	●	●	●	●																						0,4	3,2
160402-EWS		●	●	●	●	●																		9,52	4,40	4,76	16,60	0,2	3,5
160404-EWS		●	●	●	●	●																						0,4	3,2
160408-EWS		●	●	●	●	●																						0,8	2,8
160402-2MC-S		●	●	●	●	●																						0,2	3,5
160404-2MC-S		●	●	●	●	●																						0,4	3,2
160408-2MC-S		●	●	●	●	●																						0,8	2,8
160404-2MC-S/4	●																											0,4	4,4
160408-2MC-S/4	●																											0,8	4,2
160412-2MC-S/4	●																											1,2	4,0

● = ex stock
❍ = on short call

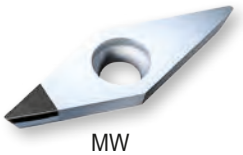
ordering example: VCGW070202-F-25EWS

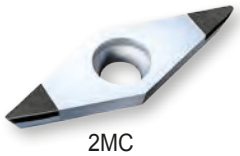
Vc page 2-21

CERATİZİT GROUP

VCGW

Standard tipped corners

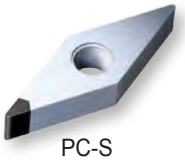

MW

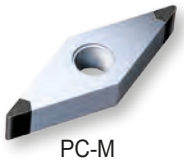

2MC

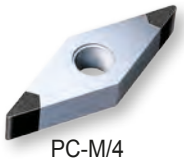
insert size	uncoated				coated																										dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S							PBC-15S							PBC-25S							PBC-40S							d	d1	s	l	r	l1
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H						
070202-MW	●	●		●	●	●	●	●																																	3,97	2,20	2,38	6,90	0,2	3,8
070204-MW	●	●	●	●	●	●	●	●																																					0,4	3,5
110302-MW	●	●		●	●	●	●	●																																					0,2	4,7
110304-MW	●	●	●	●	●	●	●	●																																					0,4	4,5
110308-MW	●	●			●	●	●																																		6,35	2,90	3,18	11,00	0,8	4,2
110304-2MC									●		●	●	●	●				●	●	●	●		●		●	●			●	●					●	●	●	●		●					0,4	3,1
110308-2MC											●	●	●	●			●	●	●		●	●	●			●			●	●			●			●	●	●	●	●	●					0,8	2,5
160402-MW	●	●		●	●	●	●	●																																					0,2	5,3
160404-MW	●	●	●	●	●	●	●	●																																					0,4	5,0
160408-MW	●	●	●	●	●	●	●	●																																					0,8	4,4
160412-MW	●	●	●	●	●	●	●	●																																	9,52	4,40	4,76	16,50	1,2	3,9
160404-2MC									●		●	●	●	●				●	●	●	●		●			●	●		●	●					●	●	●	●		●					0,4	3,1
160408-2MC											●	●	●	●			●	●	●		●	●	●			●			●	●			●			●	●	●	●	●	●					0,8	2,5

VNGA

Solid tipped corners


PC-S


PC-M


PC-M/4

insert size	uncoated							coated																	dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C								d	d1	s	l	r	l1
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H						
160402-PC-S	●	●	●	●	●	●	●																	9,52	3,81	4,76	16,60	0,2	3,0
160404-PC-S	●	●	●	●	●	●	●																					0,4	2,8
160408-PC-S	●	●	●	●	●	●	●																					0,8	2,4
160412-PC-S	●	●	●	●	●	●	●																					1,2	2,2
160404-PC-M	●		●		●		●																					0,4	2,8
160408-PC-M	●		●		●		●																					0,8	2,4
160412-PC-M	●		●		●		●																					1,2	2,2
160404-PC-M/4	●																											0,4	4,4
160408-PC-M/4	●																											0,8	4,2
160412-PC-M/4	●																											1,2	4,0

ordering example: VNGA160408-F-10-PC-M

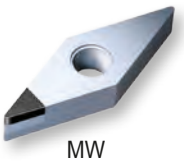
● = ex stock
❍ = on short call

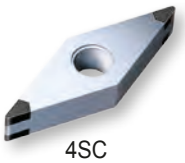
BECKER
CERATIZIT GROUP

TURNING | ISO

VNGA

Standard tipped corners
Sandwich tipped corners

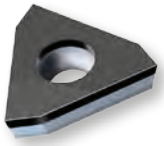

MW


4SC

insert size	uncoated				coated																										dimensions					
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S							PBC-40S															
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
160404-MW	●	●	●	●	●	●	●	●																																	9,52	3,81	4,76	16,50	0,4	5,0
160408-MW	●	●	●	●	●	●	●	●																																					0,8	4,4
160412-MW		●				●		●																																					1,2	3,9
160404-4SC									●			●	●	●	●			●	●	●	●			●	●			●	●	●						●	●	●	●	●	●					0,4	2,8
160408-4SC									●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●					0,8	2,2

WBGW

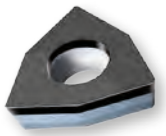
Fullface


VM

insert size	uncoated				coated																										dimensions					
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S							PBC-40S															
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
020102L-VM	●	●	●		●	●	●	●																																	3,97	2,30	1,59		0,2	4,8
020104L-VM	●	●		●	●	●	●	●																																					0,4	4,8

WCGW

Fullface


VM

insert size	uncoated				coated																										dimensions					
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S							PBC-40S															
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
020102-VM	●	●	●		●	●	●	●																																	3,97	2,30	1,59		0,2	2,7
020104-VM	●	●		●	●	●	●	●																																					0,4	2,7

● = ex stock
❍ = on short call

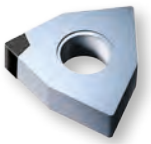
ordering example: WCGW020104-A-40VM

v_c page 2-21

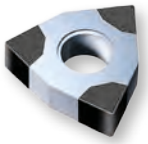
BECKER CERATIZIT GROUP

WNGA

Solid tipped corners


PC-S

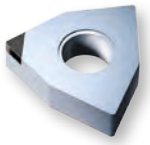

PC-M

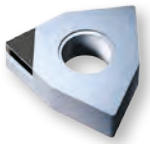

PC-M/4

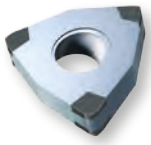
insert size	uncoated							coated																dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C													
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
080404-PC-S	●	●	●	●	●	●	●																					0,4	2,8
080408-PC-S	●	●	●	●	●	●	●																					0,8	2,6
080412-PC-S	●	●	●	●	●	●	●																					1,2	2,4
080404-PC-M	●		●		●		●																					0,4	2,8
080408-PC-M	●		●		●		●																	12,70	5,13	4,76	8,50	0,8	2,6
080412-PC-M	●		●		●		●																					1,2	2,4
080404-PC-M/4	●																											0,4	4,5
080408-PC-M/4	●																											0,8	4,2
080412-PC-M/4	●																											1,2	4,0

WNGA

Standard tipped corners
Sandwich tipped corners


EW


MW


6SC

insert size	uncoated							coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40	PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
080404-EW	●	●		●	●	●	●	●																																			0,4	3,1
080408-EW	●	●	●	●	●	●	●	●																																			0,8	2,8
080412-EW	●	●			●	●	●	●																																			1,2	2,5
080404-MW	●	●		●	●	●	●	●																																			0,4	5,3
080408-MW	●	●		●	●	●	●	●																																			0,8	5,0
080412-MW	●	●			●	●	●	●																																			1,2	4,7
080404-6SC									●			●	●	●			●	●	●	●	●		●		●	●		●	●	●					●	●	●		●	●			0,4	2,8
080408-6SC									●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●			0,8	2,5
080412-6SC									●			●	●	●			●	●	●	●	●		●		●	●		●	●	●					●	●	●		●	●			1,2	2,2
080404W-6SC									●			●	●	●			●	●	●	●	●		●		●	●		●	●	●					●	●	●		●	●			0,4	2,8
080408W-6SC									●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●			0,8	2,5

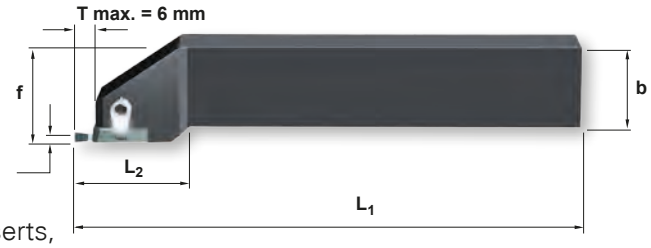
ordering example: WNGA080404-A-10S-6SC

● = ex stock
❍ = on short call

GROOVING | FormCut

BSAFR/L

Toolholder, external radial grooving



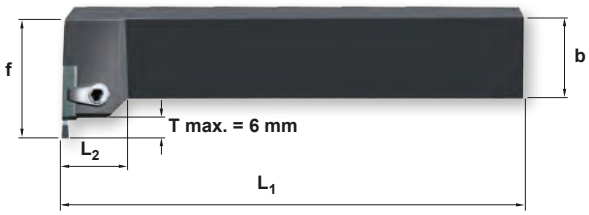
right hand shown

Note: For right-hand toolholders use right-hand inserts, for left-hand toolholders use left-hand inserts only.

designation		dimensions					
right-hand	left-hand	h_1	h_2	b	f	L_1	L_2
BSAFR 1616 - 12	BSAFL 1616 - 12	16	16	16	20	106	31
BSAFR 2020 - 12	BSAFL 2020 - 12	20	20	20	24	131	31
BSAFR 2525 - 12	BSAFL 2525 - 12	25	25	25	30	156	31
BSAFR 3225 - 12	BSAFL 3225 - 12	32	32	25	30	176	31

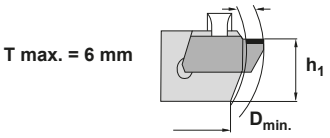
BSIFR/L

Toolholder, internal radial grooving



right hand shown

Note: For right-hand toolholders use left-hand inserts, for left-hand toolholders use right-hand inserts only.



designation		dimensions						
right-hand	left-hand	h_1	h_2	b	f	L_1	L_2	$D_{min.}$
BSIFR 1616 - 12	BSIFL 1616 - 12	16	16	16	28	100	18	50
BSIFR 2020 - 12	BSIFL 2020 - 12	20	20	20	32	125	18	72
BSIFR 2525 - 12	BSIFL 2525 - 12	25	25	25	37	150	18	110
BSIFR 3225 - 12	BSIFL 3225 - 12	32	32	25	37	170	18	110

Spare parts

			
CLA-3103	SCR-1303	KEY-2104	VAR-5101

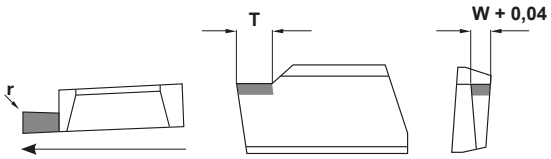
● = ex stock
❍ = on short call

v_c page 2-21

CERATIZIT GROUP

BFSN

External grooving

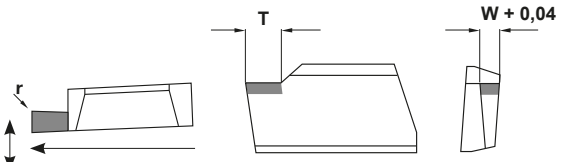


right hand shown

insert size	uncoated				coated				dimensions			
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S				
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	W	T	r	r
BFSN-2,5-R/L	●		●						2,5	5	0,2	
BFSN-3,0-R/L	●		●						3,0	6	0,2	
BFSN-3,5-R/L	●		●						3,5	6	0,2	
BFSN-4,0-R/L	●		●						4,0	6	0,2	0,4
BFSN-4,5-R/L	●		●						4,5	6	0,2	
BFSN-5,0-R/L	●		●						5,0	6	0,2	0,4

BFSV

External grooving and turning

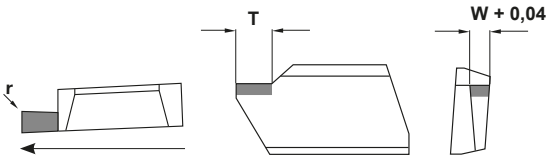


right hand shown

insert size	uncoated				coated				dimensions			
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S				
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	W	T	r	r
BFSV-3,0-R/L	●		●						3,0	6	0,2	
BFSV-3,5-R/L	●		●						3,5	6	0,2	
BFSV-4,0-R/L	●		●						4,0	6	0,2	
BFSV-4,5-R/L	●		●						4,5	6	0,2	
BFSV-5,0-R/L	●		●						5,0	6	0,2	

BFIN

Internal grooving



right hand shown

insert size	uncoated				coated				dimensions			
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S				
	A F	A C	A D	A E	A B C D E F G H	A B C D E F G H	A B C D E F G H	A B C D E F G H	W	T	r	r
BFIN-2,5-R/L			● ●						2,5	5	0,2	
BFIN-3,0-R/L	●		● ●						3,0	6	0,2	
BFIN-3,5-R/L	●		● ●						3,5	6	0,2	
BFIN-4,0-R/L			● ●						4,0	6	0,2	0,4
BFIN-4,5-R/L			● ●						4,5	6	0,2	

Vc page 2-21

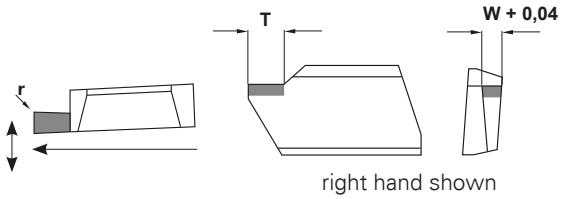
ordering example: BFSN2,5LF-PBC10 R=0,2

● = ex stock
❍ = on short call

GROOVING | FormCut

BFIV

Internal grooving
and turning

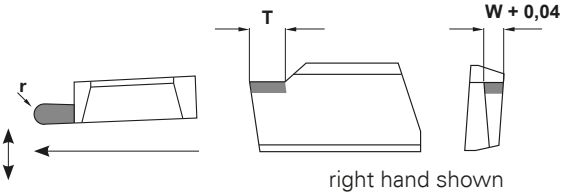


right hand shown

insert size	uncoated							coated																								dimensions			
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S											
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	W	T	r	r
BFIV-3,0-R/L					●	●																																			3,0	6	0,2	0,4
BFIV-3,5-R/L		●			●	●																																			3,5	6	0,2	0,4
BFIV-4,0-R/L		●			●	●																																			4,0	6	0,2	0,5
BFIV-4,5-R/L						●																																			4,5	6	0,2	0,5
BFIV-5,0-R/L						●																																			5,0	6	0,2	0,6

BFRV

External copying

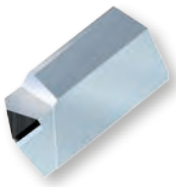


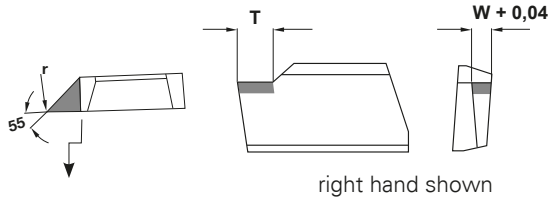
right hand shown

insert size	uncoated							coated																								dimensions			
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S											
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	W	T	r	r
BFRV-3,0-R/L		●			●	●																																			3,0	6	1,50	
BFRV-3,5-R/L		●			●	●																																			3,5	6	1,75	
BFRV-4,0-R/L		●			●	●																																			4,0	6	2,00	
BFRV-4,5-R/L		●			●	●																																			4,5	6	2,25	
BFRV-5,0-R/L		●			●	●																																			5,0	6	2,50	

BFDV

External profiling





right hand shown

insert size	uncoated							coated																								dimensions			
	PBC-10		PBC-15		PBC-25			PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S											
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	W	T	r	r
BFDV-0,2-R/L		●				●																																			5	5	0,2	
BFDV-0,4-R/L		●				●																																			5	5	0,4	
BFDV-0,8-R/L		●				●																																			5	5	0,8	
BFDV-1,2-R/L		●				●																																			5	5	1,2	

● = ex stock
❍ = on short call

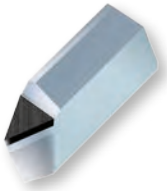
ordering example: BFDV1,2R-D-PBC25

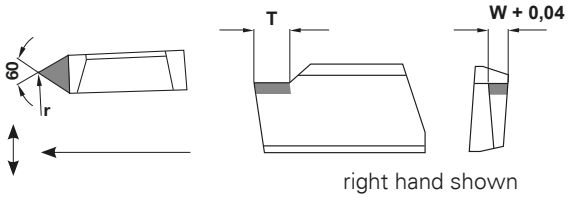
vc page 2-21

CERATIZIT GROUP

BFTV

External threading
(partial profile)





right hand shown

insert size	uncoated				coated																										dimensions			
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S								PBC-40S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	W	T	r	r
BFTV-0,10-R/L		●				●		●																									5	5	0,10	
BFTV-0,14-R/L		●				●		●																									5	5	0,14	
BFTV-0,18-R/L		●				●		●																									5	5	0,18	
BFTV-0,21-R/L		●				●		●																									5	5	0,21	
BFTV-0,25-R/L		●				●		●																									5	5	0,25	
BFTV-0,28-R/L		●				●		●																									5	5	0,28	
BFTV-0,36-R/L						●		●																									5	5	0,36	
BFTV-0,43-R/L						●		●																									5	5	0,43	

Size of radius for metric ISO-thread.

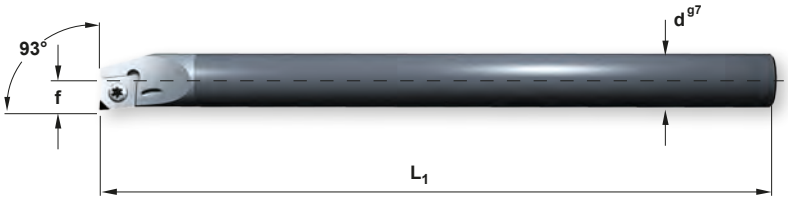
Size of radius	Pitch P (max.)	Pitch P (min.)	Pitch P (average)
r = 0,10	P = 0,80	P = 0,69	P = 0,75
r = 0,14	P = 1,12	P = 0,97	P = 1,00
r = 0,18	P = 1,44	P = 1,25	P = 1,35
r = 0,21	P = 1,68	P = 1,46	P = 1,55
r = 0,25	P = 2,00	P = 1,74	P = 1,87
r = 0,28	P = 2,24	P = 1,95	P = 2,10
r = 0,36	P = 2,99	P = 2,50	P = 2,70
r = 0,43	P = 3,44	P = 2,99	P = 3,20

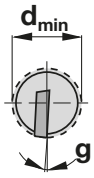
ordering example: BFTV0,25R-D-PBC25

● = ex stock
❍ = on short call

Boring bars solid carbide

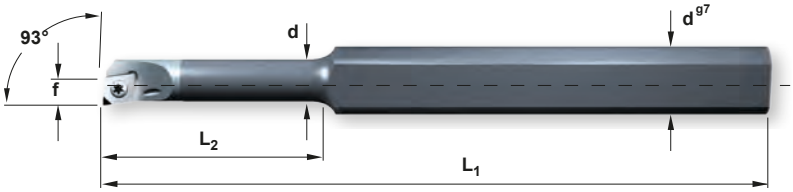
Design E...SEUP L/R

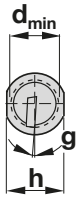




right hand shown
Right-hand boring bar with cylindrical solid carbide shank and internal coolant feed.

order number	insert	dimensions				
		d_{min}	d^{g7}	f	L_1	g
E 06 F - SEUP L/R 04	EPH.. 0401..	6,8	6	3,4	80	9°
E 07 H - SEUP L/R 04	EPH.. 0401..	8,4	7	4,4	100	5°
E 08 H - SEUP L/R 04	EPH.. 0401..	9,5	8	4,9	100	5°
E 10 K - SEUP L/R 06	EPH.. 06T1..	11,5	10	5,8	125	5°
E 12 M - SEUP L/R 06	EPH.. 06T1..	13,5	12	6,9	150	3°
E 16 R - SEUP L/R 06	EPH.. 06T1..	18,5	16	9,8	200	0°





right hand shown
Right-hand boring bar with cylindrical solid carbide shank, two clamping surfaces and internal coolant feed.

order number	insert	dimensions							
		d_{min}	d	f	L_1	L_2	d^{g7}	h	g
E 06 10 H - SEUP L/R 04	EPH.. 0401..	6,8	6	3,4	100	36	10	8	9°
E 07 10 K - SEUP L/R 04	EPH.. 0401..	8,4	7	4,4	125	42	10	8	5°
E 08 10 K - SEUP L/R 04	EPH.. 0401..	9,5	8	4,9	125	48	10	8	5°

Spare parts

screws and keys					
order number	**SCR-1101**	**SCR-1102**	**KEY-2101**	**KEY-2102**	**VAR-5101**
suitable for	**EPH 0401..**	**EPH 06T1..**	**SCR-1101**	**SCR-1102**	

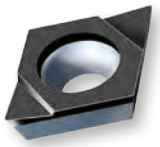
● = ex stock
❍ = on short call

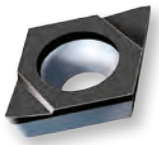
VC page 2-21

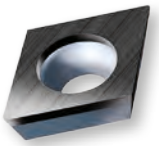
CERATIZIT GROUP

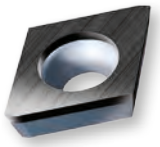
EPHT
EPHW

Fullface


positive-VM


Wiper-VM

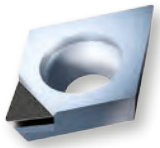

VM

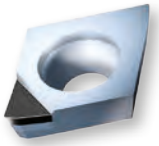

Wiper-VM

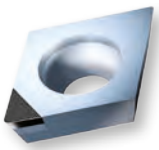
insert size	uncoated				coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
EPHT040102-VM			●		●																												4,76	2,2	1,59	4,9	0,2	
EPHT040103-VM			●		●																																0,3	
EPHT040104-VM			●		●																																0,4	
EPHT040102R/L-W-VM					●																																0,2	
EPHW040102-VM	●	●			●																																0,2	
EPHW040103-VM	●	●			●	●																															0,3	
EPHW040104-VM	●	●			●	●																															0,4	
EPHW040102R/L-W-VM					●	●	●	●																													0,2	
EPHW040103R/L-W-VM					●	●	●	●																													0,3	
EPHW040104R/L-W-VM					●	●	●	●																													0,4	

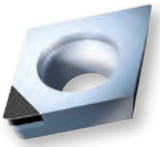
EPHT
EPHW

Standard tipped corners


positive-EW


Wiper-EW


EW


Wiper-EW

insert size	uncoated				coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d1	s	l	r	l1
EPHT06T102-EW	●				●		●																										6,35	2,8	1,98	6,6	0,2	3,0
EPHT06T104-EW	●				●		●																														0,4	2,8
EPHT06T102R/L-W-EW					●		●																														0,2	3,0
EPHW06T101-EW	●	●			●	●	●	●																													0,1	3,1
EPHW06T102-EW	●	●			●	●	●	●																													0,2	3,0
EPHW06T104-EW	●	●			●	●	●	●																													0,4	2,8
EPHW06T108-EW	●	●			●	●	●	●																													0,8	2,4
EPHW06T102R/L-W-EW					●	●																															0,2	3,0

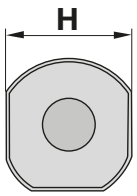
page 2-21

ordering example: EPHT06T102A-10EW

● = ex stock
❍ = on short call

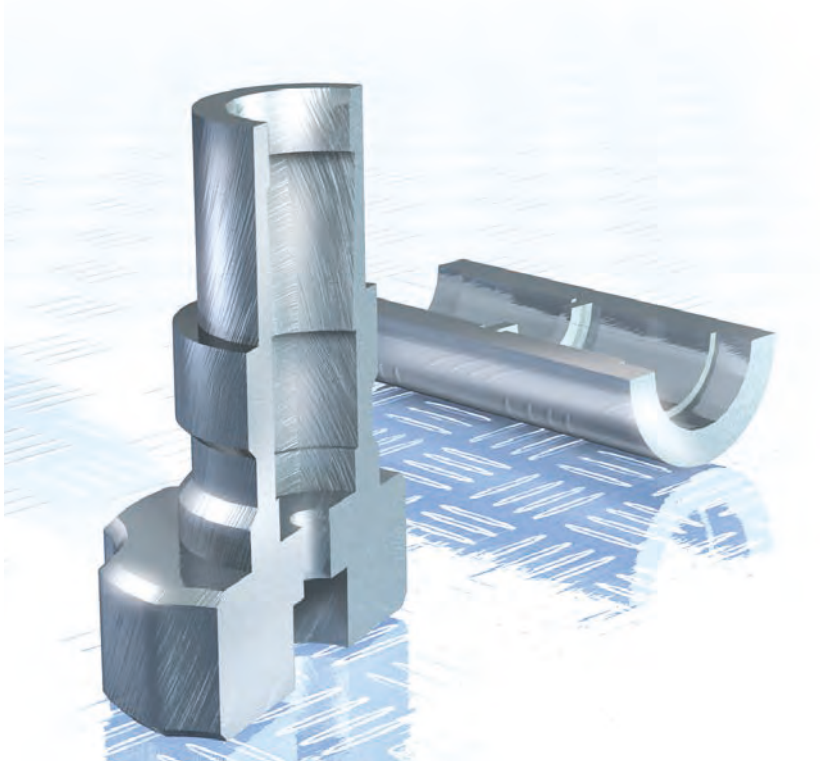
Adapter sleeve

For boring bars design X...GEUP



Adapter sleeves enable versatile use of the boring bars in all areas.
Coolant feed is provided through the adapter.

order number	for boring bars	dimensions				
		D	d	D^{H7}	H	L
Adap - 1635	X 3,5 F-GEUP L/R	16	4	3,5	14	100
Adap - 1640	X 04 F-GEUP L/R	16	5	4,0	14	100
Adap - 1650	X 05 H-GEUP L/R	16	6	5,0	14	100
Adap - 1660	X 06 H-GEUP L/R	16	8	6,0	14	100



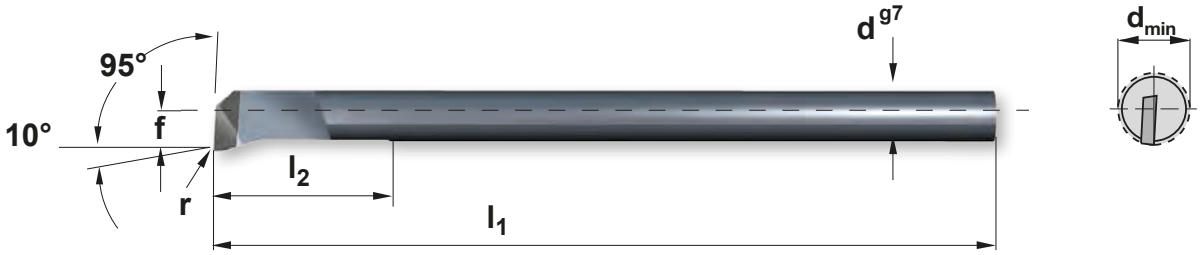
● = ex stock
❍ = on short call

ordering example: Adap-1640

v_c page 2-21

X-GE R/L

Solide carbide boring bars with one clamping surface, brazed cutting edges and internal coolant feed.
Adapter sleeve refer to page 52.



right hand shown

order number	uncoated							coated															dimensions					
	SBC-1	SBC-10		SBC-25		SBC-40		SBC-25C								SBC-40C													
	H	A	G	A	F	A	G	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d^{g7}	d_{min}	f	l_1	l_2	r
X3,5F-GEUP-R/L		●	●	●	●																			3,5	4,0	2,0	80	12	0,1
X3,5F-GEUP-R/L		●	●	●	●																								0,2
X04F-GEUP-R/L		●	●	●	●																			4,0	5,0	2,5	80	14	0,1
X04F-GEUP-R/L		●	●	●	●																								0,2
X04F-GEUP-R/L		●	●	●	●																								0,4
X05H-GEUP-R/L		●	●	●	●																			5,0	6,0	3,0	100	18	0,1
X05H-GEUP-R/L		●	●	●	●																								0,2
X05H-GEUP-R/L		●	●	●	●																								0,4
X06H-GEUP- R/L		●	●	●	●																			6,0	7,0	3,5	100	20	0,1
X06H-GEUP- R/L		●	●	●	●																								0,2
X06H-GEUP- R/L		●	●	●	●																								0,4

ordering example: X04F-GEUP-L-SBC-10 , R=0,2

● = ex stock
❍ = on short call

RDHX

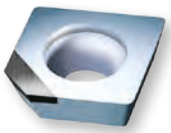
Fullface

VM

insert size	uncoated				coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
0702M0-VM		●		●		●																											7,0	2,7	2,38			
1003M0-VM		●		●		●																											10,0	3,8	3,18			
12T3M0-VM		●		●		●																											12,0	3,8	3,97			

SDHW-AEN

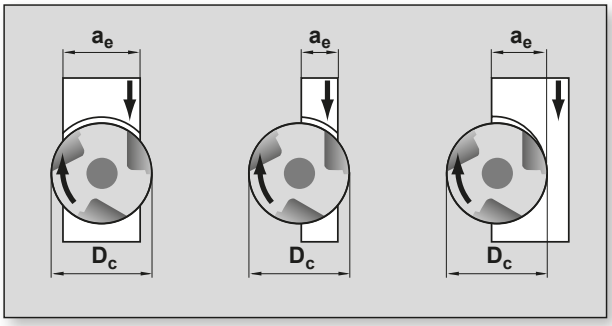
Standard tipped corners



MW

insert size	uncoated				coated																				dimensions					
	PBC-10		PBC-15		PBC-25		PBC-40		PBC-10S								PBC-15S								PBC-25S							
	A	F	A	C	A	D	A	E	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	d	d_1	s	l	r	l_1
1204AEN-MW		●				●																											12,7	5,5	4,76	12,70		4,0

milling Ø D_c mm	milling width a_e mm
40	20 - 30
50	30 - 40
63	40 - 55
80	60 - 75
100	80 - 95
125	100 - 115
160	120 - 145
200	140 - 180



Down-cut milling shown
We recommend for PcBN down-cut milling

● = ex stock
❍ = on short call

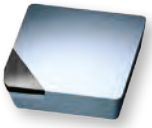
ordering example: SDHW1204AEN-F-10MW

v_c page 2-21

BECKER
CERATIZIT GROUP

SPKN-EDR

Standard tipped corners

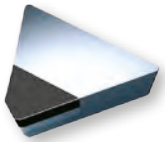


MW

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	AF AC AD AE				AB CD EF GH	AB CD EF GH	AB CD EF GH	AB CD EF GH	d	d1	s	l	r	l1
1203EDR-MW	●		●						12,7		3,18	12,7		4,0

TPKN-PDR

Standard tipped corners



MW

insert size	uncoated				coated				dimensions					
	PBC-10	PBC-15	PBC-25	PBC-40	PBC-10S	PBC-15S	PBC-25S	PBC-40S						
	AF AC AD AE				AB CD EF GH	AB CD EF GH	AB CD EF GH	AB CD EF GH	d	d1	s	l	r	l1
1603PDR-MW	●		●						9,52		3,18	16,50		4,0

Recommended values for milling

PcBN-grade	v_c m/min		a_p mm	f_z mm
PBC-10 PBC-15	continuous	1200 - 2500	0,25 - 2,0	0,1 - 0,3
	interrupted			
PBC-25	continuous	450 - 900	0,2 - 2,0	0,1 - 0,25
	interrupted	550 - 1200		

v_c page 2-21

ordering example: TPKN1603RDR-D-25MW

● = ex stock
❍ = on short call

Trouble Shooting

Trouble Shooting with PcBN diamond cutting edges		
Problem	**Possible cause**	**Suggested action**
Poor surface finish	- Vibration	Check rigidity of application (toolholder, clamping-system and machine)
	- Too high feed rate	Lower feed rate, increase corner radius or change to a wiper edge
	- Too sharp cutting edge	Increase chamfer by reducing cutting speed (page 14-17)
	- Wrong CBN grade	Use CBN grade with finer grain size (eg. PBC15 instead of 10 and PBC 40 instead of 25)
Premature wear	- Too low cutting speed (no glowing of chips)	Increase speed or increase chamfer angle (page 14-17)
	- Too high cutting speed (flying sparks)	Decrease speed or decrease chamfer angle (page 14-17)
	- Cutting material not homo-geneous	Make sure the cutting material is of the same batch
	- Punctual excessive wear	Vary feed position during cutting process (if possible), in order to shift wear stress
	- Coolant	In case of hard turning do not use coolant if possible. Or adapt coolant according to the CBN grade (binder of CBN tends to be reactive)
Edge chipping	- Vibration	Check rigidity of application (toolholder, clamping-system and machine)
	- Disruptions	Increase chamfer of cutting edge
	- Wrong CBN grade	Use CBN grade with coarser grain size (eg. PBC10 instead of 15 and PBC 25 instead of 40)
Vibration	- Poor cutting conditions	Check stability of machine, toolholder and clamping system, keep working close to clamping system
	- Too low feed rate	Increase feed rate or cutting depth
	- Too high cutting pressure	Select a positiv geometry, reduce radius, don‘t use wiper geometry
	- Wrong chamfer	Reduce chamfer ancle

In addition to the recommendations in this catalogue, the follwoing general rules apply to diamond cutting edge applications:

- Rigid set-up of machines and tools
- Work close to clamping system
- Select the largest possible edge radius
- If possible, prefer inserts with negative geometry

Please observe our full range of tools with ultrahard cutting materials

Imprint

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PcBN

Cutting Tools

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8/17