



# Chip breaker



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**2200 years of research and development from engraver to high-tech-tool.**



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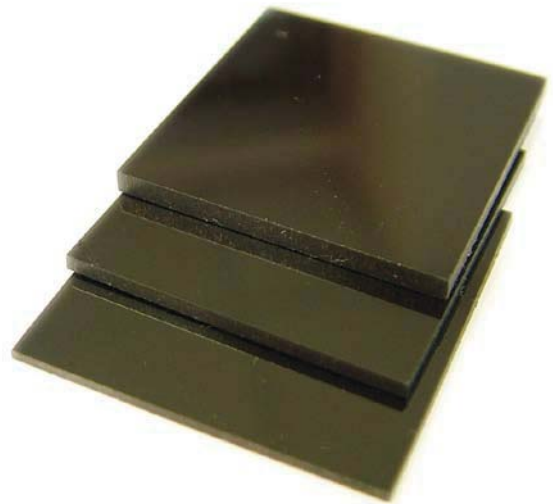


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## **New ultrahard Diamond cutting materials and their processing**

Technical advancement never stands still. Fortunately we can present different new developments concerning cutting tools. The diamond cutting edges will expedite the processing of nonferrous metals and plastics of all kinds into unknown dimensions.

First off all we would like to introduce new monocrystalline diamonds manufactured in HPHT processing. The diamonds have a weight between 0,8 and 1,2 carat and substitute the well known natural diamond to cutting edge lengths of 4mm completely.



Furthermore we have the producing and professional processing of polycrystalline thickfilm CVD-diamond with a thickness between 0,8 and 1,8 mm. Since this pure diamond material without any foreign binder cannot be eroded or ground economically the only remaining machining procedure is the newly developed laser technology.

The necessary segments are cut by laser. After the high vacuum brazing the cutting edges are completely machined by laser both in the periphery and on the top rake with or without a chip control geometry.

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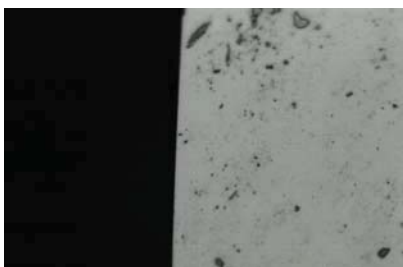


## Cutting edge quality in comparison

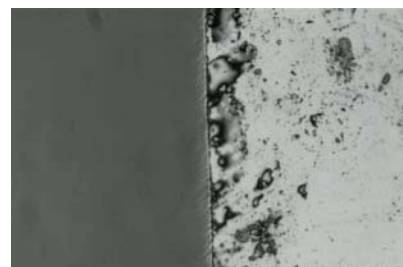
The extreme cutting edge sharpness and a maximum diamond volume per cutting edge have a big influence on the tool life of the diamond cutting edge, which insures an extremely high thermal conductivity.

The newly developed laser technology offers ideal possibilities by the processing of such diamond cutting tools with CVD thick film and PDC diamond. Additionally all 3D geometries can be produced with the same cutting edge sharpness.

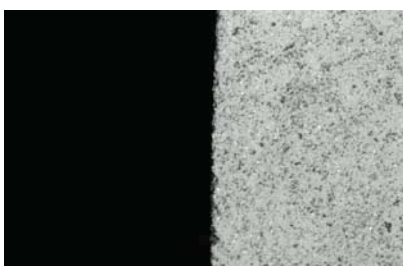
By this development in the laser technology and by the production of the therefore required diamond cutting materials we can enable the production of all necessary diamond cutting edges of highest quality with every optional chip control geometry without using a diamond grinding wheel.



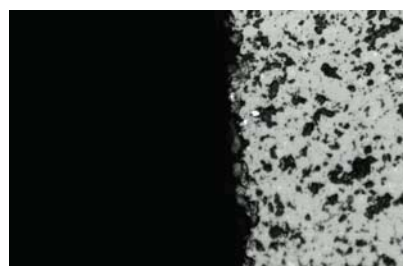
Magnification 500 x:  
Monocrystalline Diamond cutting edge, ground



Magnification 500 x:  
CVD-Thickfilm-Diamond, Laser processing



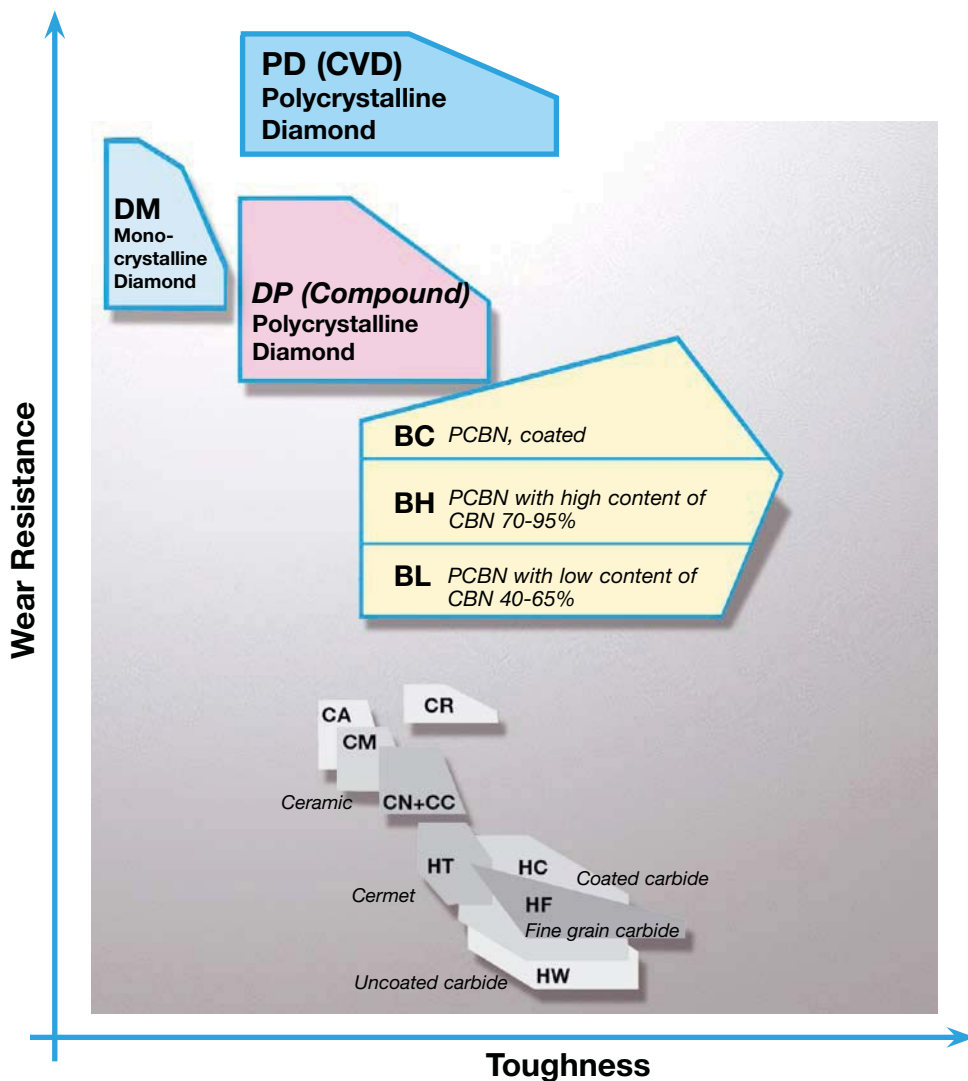
Magnification 500 x:  
PDC-Finest grain size, ground super fine



Magnification 500 x:  
PDC-mixed grain size, nomally ground



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## General cutting material allocation

As for Norm DIN ISO 513 (2001) there are now additional ISO nomenclature for carbide (also cermet) and ceramic.

Furthermore new ident letters for the ultrahard cutting materials Polycrystalline Cubic Boron Nitride, Monocrystalline and Polycrystalline Diamond have been introduced.

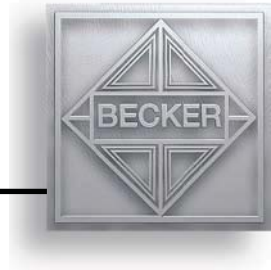
### Groups of Cutting Materials (DIN ISO 513)

<p><b>HW</b> = Uncoated carbide</p> <p><b>HF</b> = Fine grained carbide</p> <p><b>HT</b> = Cermet, TiC or TiN</p> <p><b>HC</b> = As above, but coated</p>	<p><b>DM</b> = Monocrystalline Diamond</p> <p><b>DP</b> = Polycrystalline Diamond</p>
<p><b>CA</b> = Ceramic, main content <math>Al_2O_3</math></p> <p><b>CM</b> = Mixed ceramic, main content <math>Al_2O_3</math>, plus components other than oxides</p> <p><b>CN</b> = Siliconnitride ceramic, main content <math>Si_3N_4</math></p> <p><b>CR</b> = Ceramic, main content <math>Al_2O_3</math> reinforced</p> <p><b>CC</b> = Ceramics as above, but coated</p>	<p><b>BL</b>= Polycrystalline Cubic Boron Nitride with low content of CBN</p> <p><b>BH</b>= Polycrystalline Cubic Boron Nitride with high content of CBN</p> <p><b>BC</b>= Polycrystalline Cubic Boron Nitride as above, but coated</p>



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## Ultrahard cutting materials

BECKER	ISO	Composition - Performance	Application
<b>MDC</b>	<b>DM</b>	<p>Solid monocrystalline diamond with no structure. Cutting edge extremely sharp and without microdamages, generating no cutting pressure, allowing burr free results with tolerances close to zero.</p> <p>Flank extremely wear resistant and maximum thermal conductivity, low toughness.</p>	<p>Superfinishing of all pure nonferrous metals and nonmetals with no abrasive reinforcement or silicon. (HSC-High Tech )</p>
<b>CVD</b>	<b>DP (CVD)</b>	<p>Solid polycrystalline diamond without binder and without carbide reinforcement, perfect cutting edge sharpness and cutting edges without any micro damage.</p> <p>No cutting pressure and smallest tolerances. Highest wear resistance and very high thermal conductivity (HSC and HPC), higher toughness.</p>	<p>From super finishing to semi finishing of all nonferrous metals and nonferrous-composites with low content of abrasive reinforcement or silicon.</p>
<b>PDC</b>	<b>DP Compound</b>	<p>Polycrystalline diamond, carbide reinforced diamond of fine grit size, good cutting edge sharpness and low cutting pressure allowing small tolerances.</p> <p>Lower wear resistance at higher toughness</p>	<p>Finishing and general purpose of all nonferrous metals and nonmetals with low content of abrasive reinforcement or silicon.</p>
<b>PDC-S</b>	<b>DP Compound</b>	<p>Polycrystalline diamond, carbide reinforced diamond of coarse grit size, good edge sharpness and low cutting pressure allowing small tolerances. Ideal for milling.</p> <p>Low wear resistance at higher toughness.</p>	<p>Finishing and general purpose and milling of all nonmetals with medium to high content of abrasive reinforcement or silicon.</p>



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### Chip Breaker Design

Besides the manufacturing of extremely sharp cutting edges the new laser technology allows to manufacture all imaginable 3D chip geometries with and without chip breaker function, also for all diamond cutting materials.

Thereby all machining situations are very well controlled because besides the pure 3D chip geometries also finest positive and negative chamfer geometries along the cutting edges can be lasered at the same time. With this combination and a special surface structure in the range of chip design we succeeded with all diamond cutting materials in the dry processing of all NE-metals.

In combination with the ideal chip design and the exclusive machining with the new laser technology the polycrystalline CVD thick film diamond demonstrates its real strength.

During the dry processing with chip breaker function the tool life time is 3 to 5 times higher than with all known PDC grades.

Even the monocrystalline diamond – no matter whether manufactured in natural or HPHT processing – is beaten as expected by the polycrystalline CVD thick film diamond during a lot of applications by 2 to 3 times regarding the tool life.

In the following we show a few chip breaker designs in PDC and CVD diamond:







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## Cutting Data - Range of application

Due to the new possibilities to manufacture all diamond cutting edges with chip breaker design the fields of application for all diamond cutting materials are considerably extended.

In a first step we offer two designs planned for different applications:

### CB 1:

Positive geometry for finish and super finish machining, ap: 0,05 mm to 1,5 mm. Applicable for smallest tolerances at lowest cutting pressure.

**Application: thin-walled and instable work pieces.**

### CB 2:

Slightly negative edge preparation for semi finish, finish and super finish machining, ap: 0,5 mm to 2 mm. Due to an increased cutting pressure a better surface quality at smallest tolerances can be reached.

**Application: thick-walled solid work pieces at stable circumstances.**

For more details about the machining technique please see our valid main catalogue.

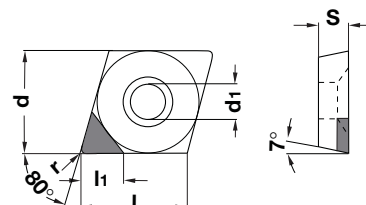
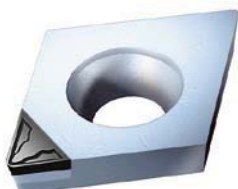
3D-chip breaker design CB1 and CB2									
Cutting radius	Geometry CB 1				Geometry CB 2				Cutting radius
	ap in mm		fz in mm/U		ap in mm		fz in mm/U		
	min.	max.	min.	max.	min.	max.	min.	max.	
0,1 mm	0,05	0,30	0,02	0,05					0,1 mm
0,2 mm	0,06	0,40	0,03	0,08	0,50	0,80	0,08	0,12	0,2 mm
0,4 mm	0,10	0,80	0,04	0,15	0,60	1,50	0,08	0,20	0,4 mm
0,8 mm	0,15	1,00	0,08	0,20	0,70	1,50	0,15	0,30	0,8 mm
1,2 mm	0,30	1,50	0,12	0,25	0,80	2,00	0,20	0,40	1,2 mm

The indicated cutting data are recommended values resulting from a chip breaker with the geometries CB 1 and CB 2. Using PDC and PDC-S cutting edges the machining performance should run without emulsion cooling.



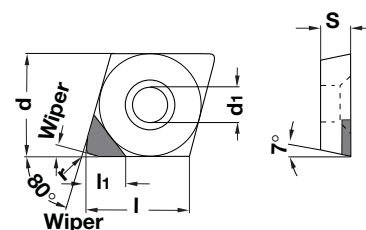
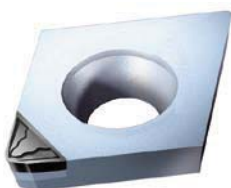
# ISO-HardCut

## CCGT Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm						
	PDC-S				PDC				CVD						
	DP				DP				d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
CCGT 060202													3,4	2,4	0,2
CCGT 060204									6,35	2,8	2,38	6,45	3,2	2,2	0,4
CCGT 060208													3,0	2,0	0,8
CCGT 09T302													4,5	2,4	0,2
CCGT 09T304									9,52	4,4	3,97	9,7	4,3	2,2	0,4
CCGT 09T308													4,1	2,0	0,8
CCGT 120404													4,3	2,2	0,4
CCGT 120408									12,70	5,5	4,76	12,9	4,1	2,0	0,8

## CCGT Chip geometry CB 1 Wiper geometry



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm						
	PDC-S				PDC				CVD						
	DP				DP				d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
CCGT 060202-W													3,4	2,5	0,2
CCGT 060204-W									6,35	2,8	2,38	6,45	3,3	2,3	0,4
CCGT 09T302-W													4,5	2,5	0,2
CCGT 09T304-W									9,52	4,4	3,97	9,7	4,4	2,3	0,4
CCGT 120402-W													4,4	2,3	0,2
CCGT 120404-W									12,70	5,5	4,76	12,9	4,2	2,1	0,4

■ =ex stock (subject to prior sale)

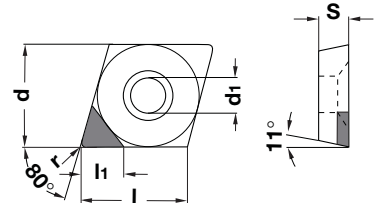
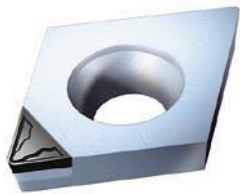
Ordering example: CCGT 09T304-PDC-CB

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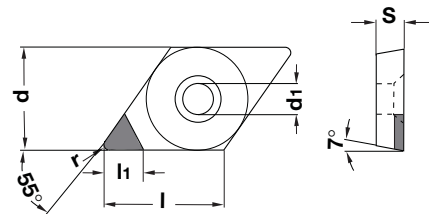
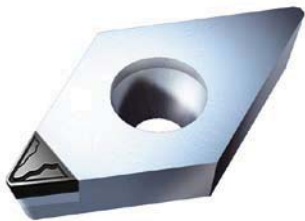


**CPGT** Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm								
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP				DP		DP										
CPGT 050202														2,4	2,4	0,2	
CPGT 050204														2,2	2,2	0,4	
CPGT 060202														3,4	2,4	0,2	
CPGT 060204														3,2	2,2	0,4	

**DCGT** Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm								
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP				DP		DP										
DCGT 070201														3,8	2,7	0,1	
DCGT 070202														3,7	2,6	0,2	
DCGT 070204														3,4	2,3	0,4	
DCGT 070208														3,0	2,0	0,8	
DCGT 11T301														4,8	2,7	0,1	
DCGT 11T302														4,7	2,6	0,2	
DCGT 11T304														4,3	2,3	0,4	
DCGT 11T308														4,0	2,0	0,8	

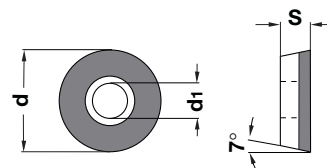
■ =ex stock (subject to prior sale)

Ordering example: CPGT 060204-CVD-CB 1



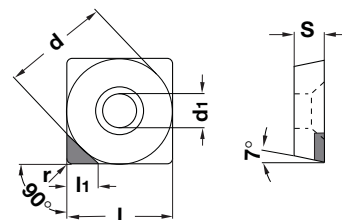
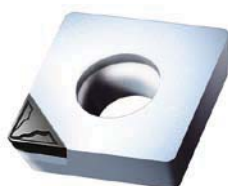
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**RCGT** Chip geometry CB1 FullFace



Insert size	BECKER poly- and monocrystalline diamond grades						Dimensions mm										
			PDC-S			PDC			CVD			d	d <sub>1</sub>	s	l	l <sub>1</sub>	r
	DP						DP										
RCGT 0602M0-VM			■			■					6,0	2,8	2,38	-	-	-	
RCGT 10T3M0-VM			■			■					10,0	4,4	3,97	-	-	-	

**SCGT** Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades						Dimensions mm											
			PDC-S			PDC			CVD			d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP						DP											
SCGT 09T304						■			■		9,52	4,4	3,97	9,52	4,4	2,8	0,4	
SCGT 09T308						■			■						4,3	2,6	0,8	
SCGT 120404						■					12,70	5,5	4,76	12,70	4,4	2,8	0,4	
SCGT 120408						■									4,3	2,6	0,8	

■ =ex stock (subject to prior sale)

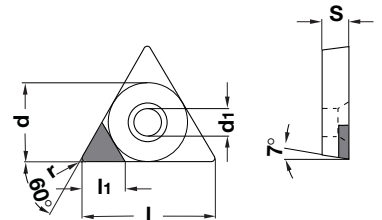
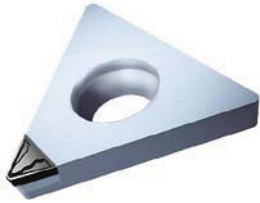
Ordering example: RCGT 0602M0-PDC-S-CB 1

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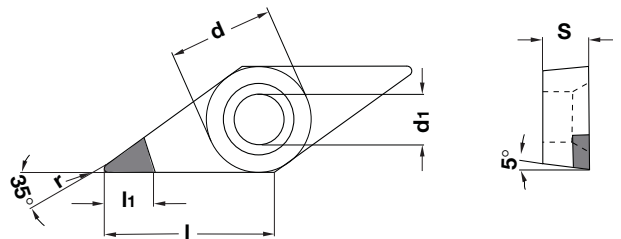
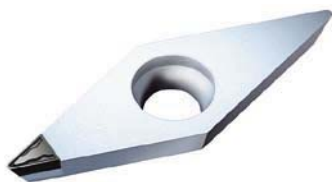


## TCGT Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades									Dimensions mm								
	PDC-S			PDC			PDC-L			CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP						DP											
TCGT 090202															3,7	2,6	0,2	
TCGT 090204											5,56	2,5	2,38	9,6	3,4	2,3	0,4	
TCGT 110202															3,7	2,6	0,2	
TCGT 110204											6,35	2,8	2,38	11,0	3,4	2,3	0,4	
TCGT 16T304															4,6	2,3	0,4	
TCGT 16T308											9,52	4,4	3,97	16,5	4,2	2,0	0,8	

## VBGT Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades									Dimensions mm								
	PDC-S			PDC			PDC-L			CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP						DP											
VBGT 160402															5,9	3,0	0,2	
VBGT 160404											9,52	4,4	4,76	16,6	5,5	3,0	0,4	
VBGT 160408															5,0	3,0	0,8	
VBGT 160412															4,4	3,0	1,2	

■ =ex stock (subject to prior sale)

Ordering example: VBGT 160408-CVD-CB 1

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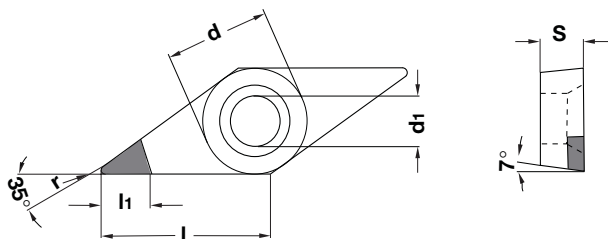
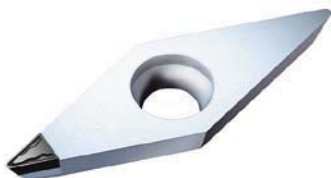
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**VCGT** Chip geometry CB1



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm										
	PDC-S				PDC				CVD				d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP								DP										
VCGT 110301																5,4	3,0	0,1	
VCGT 110302			■							■						4,6	3,0	0,2	
VCGT 110304			■							■						3,9	3,0	0,4	
VCGT 160402										■						5,9	3,0	0,2	
VCGT 160404			■							■						5,5	3,0	0,4	
VCGT 160408			■							■						5,0	3,0	0,8	
VCGT 160412			■							■						4,5	3,0	1,2	

■ =ex stock (subject to prior sale)

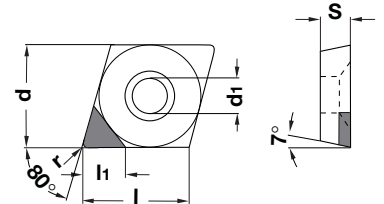
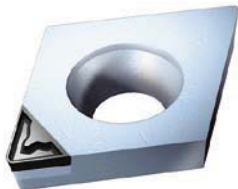
Ordering example: VCGT 110302-PDC-S-CB 1

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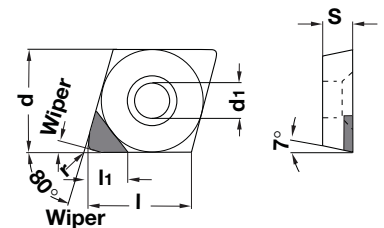
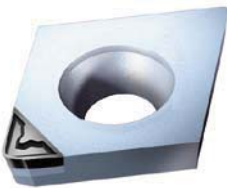


## CCGT Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm								
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP				DP												
CCGT 060202			■						■		6,35	2,8	2,38	6,45	3,4	2,4	0,2
CCGT 060204			■						■						3,2	2,2	0,4
CCGT 060208			■						■						3,0	2,0	0,8
CCGT 09T302			■						■						4,5	2,4	0,2
CCGT 09T304			■						■		9,52	4,4	3,97	9,7	4,3	2,2	0,4
CCGT 09T308			■						■						4,1	2,0	0,8
CCGT 120404			■						■						4,3	2,2	0,4
CCGT 120408			■						■		12,70	5,5	4,76	12,9	4,1	2,0	0,8

## CCGT Chip geometry CB 2 Wiper geometry



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm								
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP				DP												
CCGT 060202-W			■		■				■		6,35	2,8	2,38	6,45	3,4	2,5	0,2
CCGT 060204-W			■		■				■						3,3	2,3	0,4
CCGT 09T302-W			■		■				■						4,5	2,5	0,2
CCGT 09T304-W			■		■				■		9,52	4,4	3,97	9,7	4,4	2,3	0,4
CCGT 120402-W			■		■				■						4,4	2,3	0,2
CCGT 120404-W			■		■				■		12,70	5,5	4,76	12,9	4,2	2,1	0,4

■ =ex stock (subject to prior sale)

Ordering example: CCGT 060204-W-PDC-S-CB

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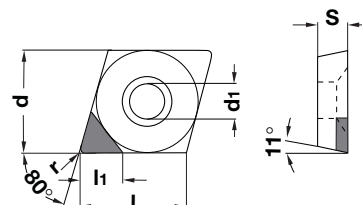
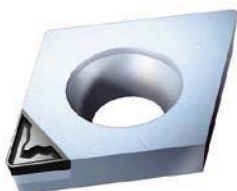
Schneidstoff  
Cutting material  
page 7

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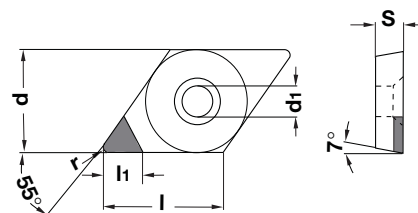
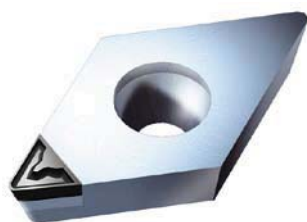
## ISO-HardCut

### CPGT Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm								
	PDC-S				PDC				CVD								
	DP				DP				d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r		
CPGT 060202			■			■								3,4	2,4	0,2	
CPGT 060204			■			■					6,35	2,8	2,38	6,45	3,2	2,2	0,4

### DCGT Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm								
	PDC-S				PDC				CVD								
	DP				DP				d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r		
DCGT 070201			■											3,8	2,7	0,1	
DCGT 070202			■								6,35	2,8	2,38	7,75	3,7	2,6	0,2
DCGT 070204			■												3,4	2,3	0,4
DCGT 070208			■												3,0	2,0	0,8
DCGT 11T301			■												4,8	2,7	0,1
DCGT 11T302			■								9,52	4,4	3,97	11,6	4,7	2,6	0,2
DCGT 11T304			■												4,3	2,3	0,4
DCGT 11T308			■												4,0	2,0	0,8

■ =ex stock (subject to prior sale)

Ordering example: DCGT 11T304-CVD-CB

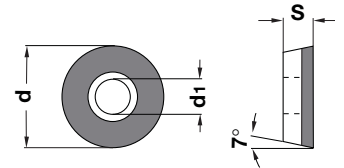


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cutting materials

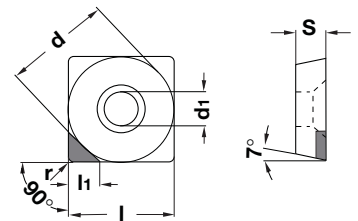
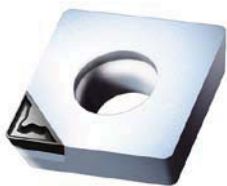


## RCGT Chip geometry CB 2 FullFace



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm									
			PDC-S				PDC			CVD			d	d <sub>1</sub>	s	l	l <sub>1</sub>	r
	DP							DP										
RCGT 0602M0-VM			■										6,0	2,8	2,38	-	-	-
RCGT 10T3M0-VM			■										10,0	4,4	3,97	-	-	-

## SCGT Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm														
			PDC-S				PDC			CVD			d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r				
	DP							DP															
SCGT 09T304			■						■							9,52	4,4	3,97	9,52	4,4	2,8	0,4	
SCGT 09T308			■						■											4,3	2,6	0,8	
SCGT 120404			■																	4,4	2,8	0,4	
SCGT 120408			■										12,70	5,5	4,76	12,70			4,3	2,6	0,8		

■ =ex stock (subject to prior sale)

Ordering example: SCGT 120404-PDC-S-CB 2



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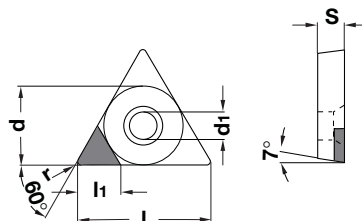
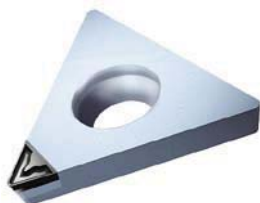


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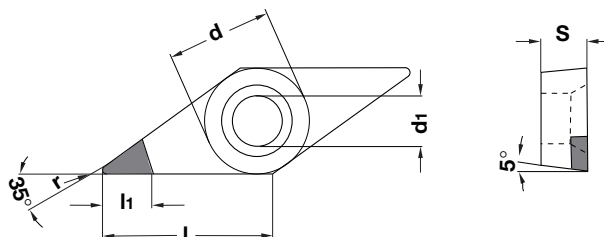
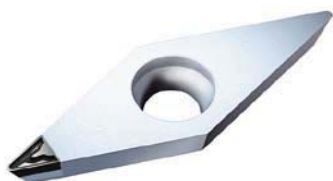
# ISO-HardCut

## TCGT Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades									Dimensions mm							
	PDC-S			PDC			PDC-L			CVD	d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP						DP										
TCGT 090202			■						■	5,56	2,5	2,38	9,6	3,7	2,6	0,2	
TCGT 090204			■						■					3,4	2,3	0,4	
TCGT 110202			■						■	6,35	2,8	2,38	11,0	3,7	2,6	0,2	
TCGT 110204			■						■					3,4	2,3	0,4	
TCGT 16T304			■						■	9,52	4,4	3,97	16,5	4,6	2,3	0,4	
TCGT 16T308			■						■					4,2	2,0	0,8	

## VBGT Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades									Dimensions mm							
	PDC-S			PDC			PDC-L			CVD	d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP						DP										
VBGT 160402			■						■	9,52	4,4	4,76	16,6	5,9	3,0	0,2	
VBGT 160404			■						■					5,5	3,0	0,4	
VBGT 160408			■						■					5,0	3,0	0,8	
VBGT 160412			■						■					4,4	3,0	1,2	

■ =ex stock (subject to prior sale)

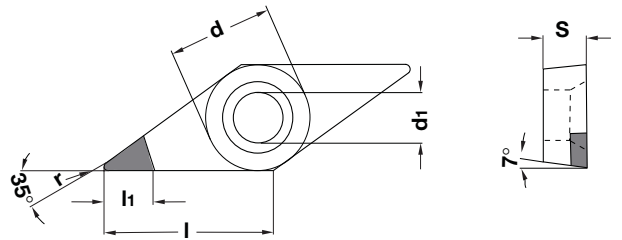
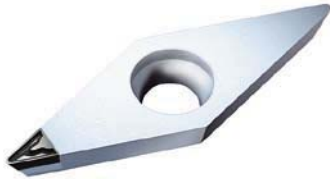
Ordering example: TCGT 110204-CVD-CB 2

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**VCGT** Chip geometry CB 2



Insert size	BECKER poly- and monocrystalline diamond grades										Dimensions mm																		
			PDC-S					PDC				CVD			d	d <sub>1</sub>	s	l	PDC	CVD	r								
	DP					DP					l <sub>1</sub>	l <sub>1</sub>																	
VCGT 110302			■									■							5,4	3,0	0,2								
VCGT 110304			■									■							6,35	2,9	3,18	11,1	4,6	3,0	0,4				
VCGT 110308			■									■											3,9	3,0	0,8				
VCGT 160402			■									■											5,9	3,0	0,2				
VCGT 160404			■									■											5,5	3,0	0,4				
VCGT 160408			■									■											9,52	4,4	4,76	16,6	5,0	3,0	0,8
VCGT 160412			■									■															4,5	3,0	1,2

■ =ex stock (subject to prior sale)

Ordering example: VCGT 160412-CVD-CB 2



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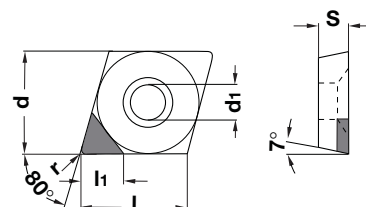
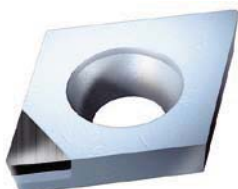


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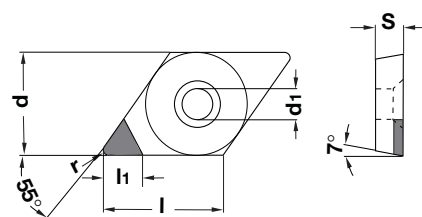
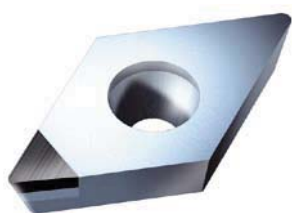
# ISO-HardCut

## CCGW Neutral



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm										
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r		
	DP				DP														
CCGW 060202										■			6,35	2,8	2,38	6,45	3,4	2,4	0,2
CCGW 060204										■							3,2	2,2	0,4
CCGW 09T302										■							4,5	2,4	0,2
CCGW 09T304										■			9,52	4,4	3,97	9,7	4,3	2,2	0,4
CCGW 09T308										■							4,1	2,0	0,8

## DCGW Neutral



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm										
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r		
	DP				DP														
DCGW 070202										■			6,35	2,8	2,38	7,75	3,7	2,6	0,2
DCGW 070204										■							3,4	2,3	0,4
DCGW 070208										■							3,0	2,0	0,8
DCGW 11T302										■							4,7	2,6	0,2
DCGW 11T304										■			9,52	4,4	3,97	11,6	4,3	2,3	0,4
DCGW 11T308										■							4,0	2,0	0,8

■ =ex stock (subject to prior sale)

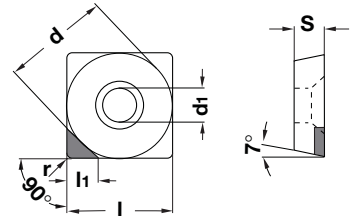
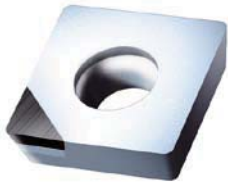
Ordering example: CCGW 09T304-CVD

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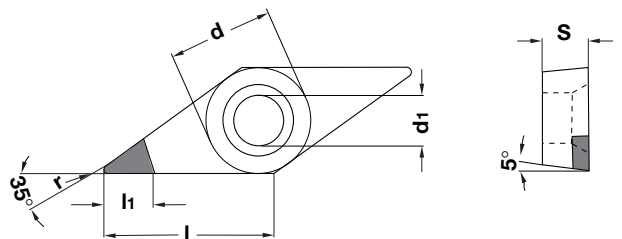
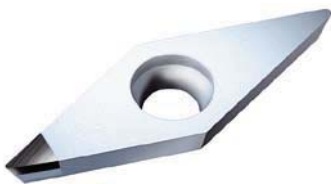


## SCGW Neutral



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm										
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r		
	DP								DP										
SCGW 09T302										■			9,52	4,4	3,97	9,52	4,5	3,0	0,2
SCGW 09T304										■							4,4	2,8	0,4
SCGW 09T308										■							4,3	2,6	0,8

## VBGW Neutral



Insert size	BECKER poly- and monocrystalline diamond grades								Dimensions mm										
	PDC-S				PDC				CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r		
	DP								DP										
VBGW 160402										■			9,52	4,4	4,76	16,6	5,9	3,0	0,2
VBGW 160404										■							5,5	3,0	0,4
VBGW 160408										■							5,0	3,0	0,8

■ =ex stock (subject to prior sale)

Ordering example: VBGW 160408-CVD



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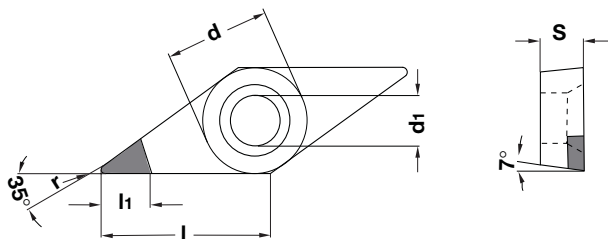
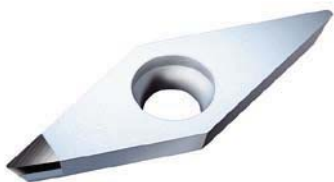


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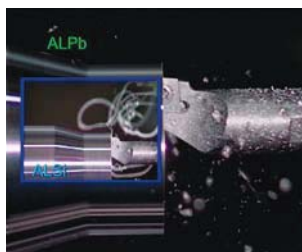
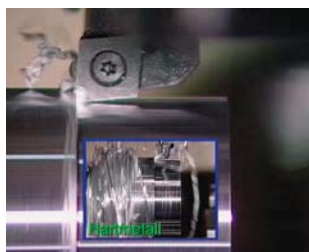
**ISO-HardCut**

**VCGW Neutral**

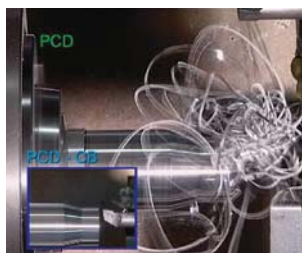


Insert size	BECKER poly- and monocrystalline diamond grades							Dimensions mm						
	PDC-S			PDC		CVD		d	d <sub>1</sub>	s	l	PDC l <sub>1</sub>	CVD l <sub>1</sub>	r
	DP					DP								
VCGW 110302							■	6,35	2,9	3,18	11,1	5,4	3,0	0,2
VCGW 110304							■					4,6	3,0	0,4
VCGW 110308							■					3,9	3,0	0,8
VCGW 160402							■	9,52	4,4	4,76	16,6	5,9	3,0	0,2
VCGW 160404							■					5,5	3,0	0,4
VCGW 160408							■					5,0	3,0	0,8

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Machining with chip breaker geometry



Machining without chip breaker geometry

■ =ex stock (subject to prior sale)

Ordering example: VCGW 110302-CVD



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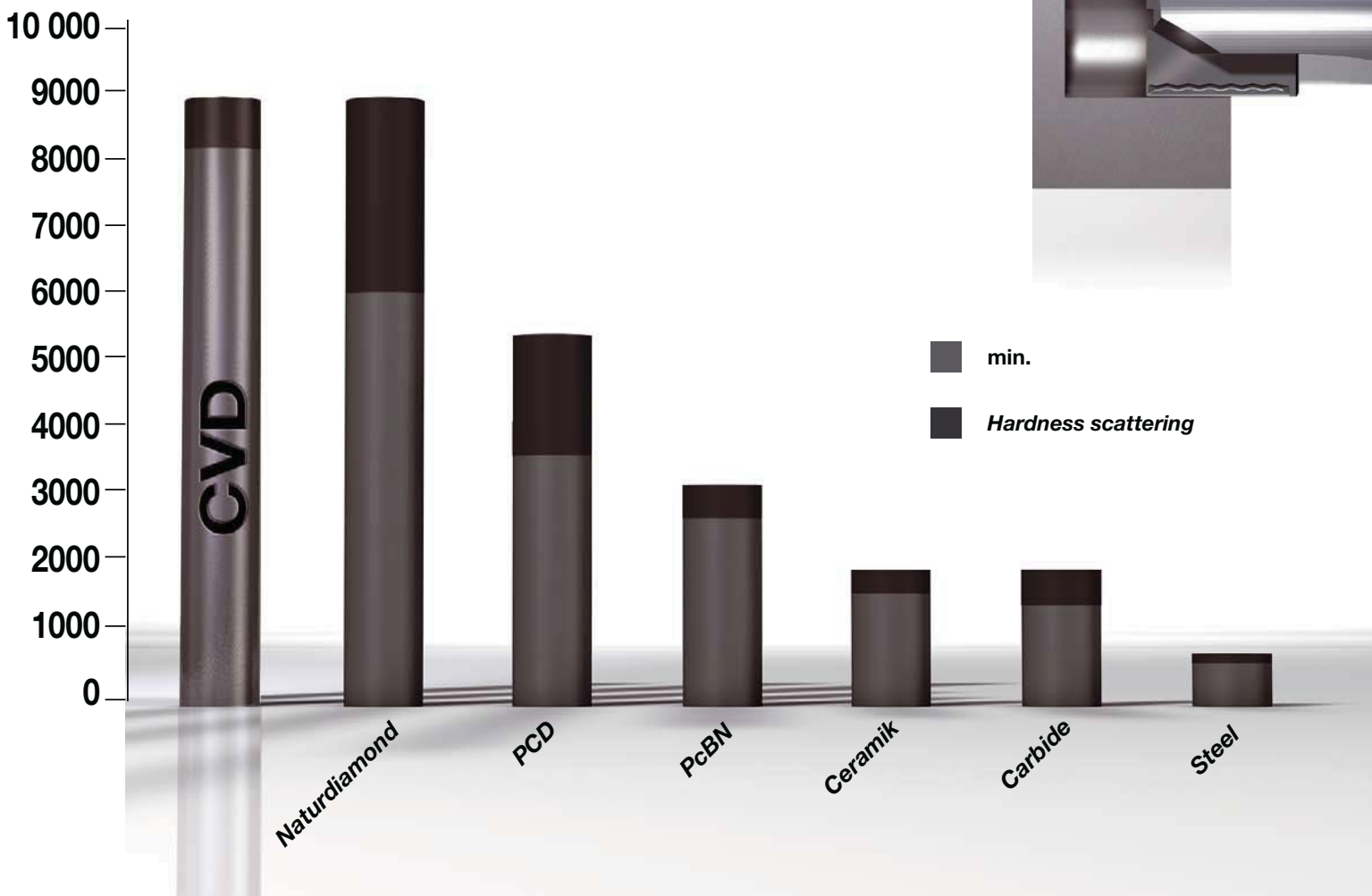
ultrahard

cutting materials



### General cutting material allocation

Hardness (Knoop kg/mm<sup>2</sup>)



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**FormCut**  
**MonoCut**  
**MiniCut**  
**ISO-HardCut**  
**MillCut**



**BECKER Diamantwerkzeuge GmbH**

D- 82178 Puchheim / München, Benzstraße 13, Germany  
Telefon: +49 (0) 89 89 02 28-0, Telefax: +49 (0) 89 89 02 28-30  
[becker@beckerdiamant.de](mailto:becker@beckerdiamant.de), [www.beckerdiamant.de](http://www.beckerdiamant.de)