

## **SKYTEC PCD-BASIC+** THE GRINDING PORTFOLIO FOR PCD AND CBN CUTTING TOOLS

- Shorter set-up times thanks to longer dressing intervals
- Increases process stability through the use of an innovative bond system
- Improves cutting-edge chipping with better cutting ability

TYROLIT  
SKYTEC PCD-Basic+

## SKYTEC PCD-BASIC+ GRINDING OF PCD AND CBN CUTTING TOOLS

One of the features of the PCD and CBN cutting tool segment is the growing number of different materials. Increasing quality requirements and high cost pressure demands improved tool solutions when grinding. The quality and cost of these tools are therefore extremely important. TYROLIT has developed a new generation of grinding tools specifically for the production of modern PCD and CBN cutting tools.

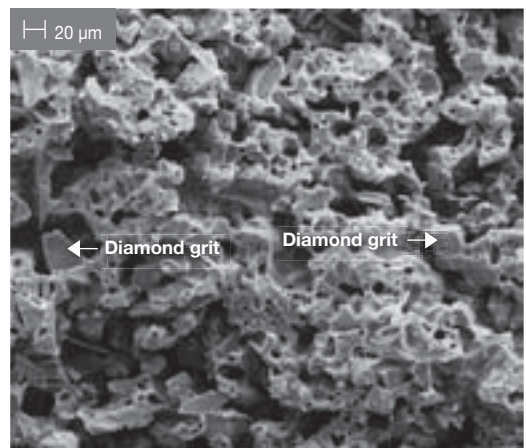
The SKYTEC PCD-Basic+ product line represents all that is best in grinding tools. Lowest levels of cutting-edge chipping and an increased stock removal rate guarantee shorter grinding times and longer dressing intervals which represents even more improvements compared to conventional grinding tools.

### Impressive innovative bond systems

Next to the choice of the correct diamond grinding grit the bond is the main element in tool grinding. The bond system of SKYTEC PCD-Basic+ features higher porosity with the same material hardness.

### Improved cooling for longer dressing intervals

The higher porosity of the bond greatly improves the cooling of the grinding tool. This increases the life of SKYTEC PCD-Basic+ grinding tools and improves grinding productivity.



Greater porosity in SKYTEC PCD-Basic+

### Product and application benefits

- Cutting-edge chipping <math><10 \mu\text{m}^\*</math>
- Shorter set-up times as a result of longer dressing intervals
- Process stability thanks to an innovative bond system
- Higher cutting ability with high profile retention
- Extensive stock range

\* depends on type of PCD/CBN and grit size



## SKYTEC PCD-BASIC+ GENERATES LESS CHIPPING

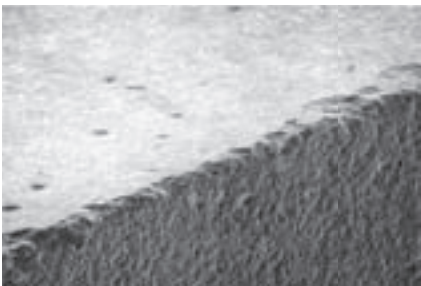
PCD or CBN cutting tools have the highest quality requirements. Precise geometries and minimal chipping are the essential quality requirements.

TYROLIT has developed new grinding wheels for the economically efficient production of these tools using Skytec PCD-Basic+.

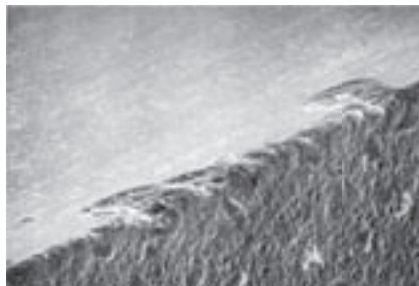
These grinding wheels deliver the required cutting ability with high stock removal performance and high dressing intervals. The grinding tools are also very easy to dress.



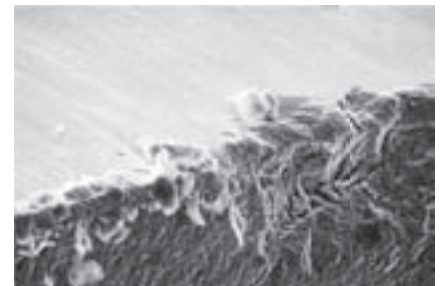
Minimal chipping




Average chipping




Very poor chipping



## EXAMPLES OF APPLICATIONS

	Grinding tool	6A2H 150x40x40 20-8 <b>D9VB+</b>
	Workpiece	PCD-mounted plate
	Machine	Coborn R9
	Cooling lubricant	Water and anticorrosive
	Stock	0,3 mm
	Cutting speed	18 m/s
	<b>Result</b>	Low wear Chipping <10µm 10% less contact time

	Grinding tool	12A2T 400x28x340 <b>D15VB+</b>
	Workpiece	PCD-mounted plate
	Machine	Agathon 400 PENTA
	Cooling lubricant	Blaser Grindlyte CO
	Dressing interval	6 per cutting tool
	Stock	0,12 mm
	Cutting speed	25 m/s
	<b>Result</b>	10% less wear Minimal chipping

## SKYTEC PCD-BASIC+ APPLICATION TECHNOLOGY

For an economically efficient use of SKYTEC PCD Basic+ tools the TYROLIT application technology team recommends the following grinding parameters and specifications.

### RECOMMENDED GRINDING PARAMETERS

#### PCD and CBN peripheral grinding

Parameter	
Cutting speed [vc]:	12–22 m/s
Oscillation / no. of strokes:	40–120 strokes/min
<b>Pressure:</b> RS09, RS15, EWAMATIC RS12	2.5–3.5 bar Position 1–3



### RECOMMENDED SPECIFICATIONS

#### PCD peripheral grinding

Application	Requirements for cutting edges and surface	Standard values for achievable chipping	Specification
Pre-grinding	Low	>20µm	<b>D25VB+</b>
Universal grinding	Medium	10–20µm	<b>D15VB+</b>
Finish grinding	High	<10µm	<b>D9VB+</b>
Fine grinding	Very high	<8µm	<b>D6VB+</b>

Machines: EWAG (manual + CNC), Coborn (manual + CNC)

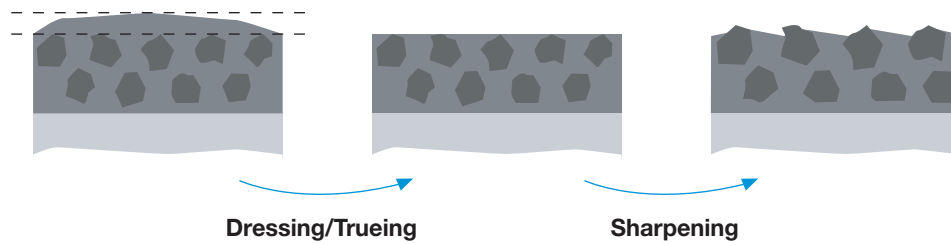
#### CBN peripheral grinding

Application	Requirements for cutting edges and surface	Standard values for achievable chipping	Specification
Pre-grinding	Low	>20µm	DU46K53VB
Universal grinding	Medium	10–20µm	<b>D32VB+</b>
Finish grinding	High	<10µm	<b>D20VB+</b>

Machines: EWAG (manual + CNC), Coborn (manual + CNC)

## SKYTEC PCD-BASIC+ DRESSING AND SHARPENING

In addition to the correct choice of specification the conditioning dressing and sharpening also have important roles to play. Dressing is carried out using a SiC wheel that produces the geometry and evenness of the abrasive layer. Next is sharpening using a vitrified aluminium oxide sharpening stick which sets back the bond and exposes the diamond.



## SKYTEC PCD-BASIC+ STANDARD PORTFOLIO

### Dressing wheel – shape 1

Shape	D	T	H	Specification	Material number	Stock
	75	20	12,7	C120J5V15	473304	x

Customised grinding tools can be manufactured on request.

### Sharpening stick – shape 90AS

Shape	B	C	L*	Specification	Material number	Stock
	25	13	100	89A240J7AV17	845595	x
	25	13	100	89A600-25V83	33531	x
	25	13	100	1C40014AV18	703371	

\* Length of the sharpening stick

Customised grinding tools can be manufactured on request.



## SKYTEC PCD-BASIC+ STANDARD PORTFOLIO

### Peripheral grinding – shape 6A2H

Shape	D	T	H	W	X	TK	B
	150	40	40	3	4	60 4x90°	6,6
	150	40	40	4	5	60 4x90°	6,6
	150	40	40	4	8	60 4x90°	6,6
	150	40	40	6	6	60 4x90°	6,6
	150	40	40	6	8	60 4x90°	6,6
	150	40	40	8	6	60 4x90°	6,6
	150	40	40	8	10	60 4x90°	6,6
	150	40	40	10	6	60 4x90°	6,6
	150	40	40	10	10	60 4x90°	6,6
	150	40	40	15	6	60 4x90°	6,6
	150	40	40	15	10	60 4x90°	6,6
	150	40	40	20	6	60 4x90°	6,6
	150	40	40	20	10	60 4x90°	6,6
	200	40	40	5	6	60 4x90°	6,6
	200	40	40	10	6	60 4x90°	6,6
	200	40	40	10	10	60 4x90°	6,6
	200	40	40	20	6	60 4x90°	6,6
200	40	40	20	10	60 4x90°	6,6	

Machines: EWAG (manual + CNC), Coborn (manual + CNC) | Customised grinding tools can be manufactured on request.

### Stock products – shape 6A2H

**NEW**

D	T	H	W	X	Description	Specification	Material number
150	40	40	3	4	SKYTEC PCD-Basic+	<b>D15VB+</b>	735141
150	40	40	4	5	SKYTEC PCD-Basic+	<b>D9VB+</b>	735142
150	40	40	4	5	SKYTEC PCD-Basic+	<b>D15VB+</b>	735143
150	40	40	6	8	SKYTEC PCD-Basic+	<b>D15VB+</b>	617338
150	40	40	10	10	SKYTEC PCD-Basic+	<b>D9VB+</b>	735144
150	40	40	10	10	SKYTEC PCD-Basic+	<b>D15VB+</b>	735147
150	40	40	10	10	SKYTEC PCD-Basic+	<b>D20VB+</b>	729610
150	40	40	20	10	SKYTEC PCD-Basic+	<b>D6VB+</b>	735149
150	40	40	20	10	SKYTEC PCD-Basic+	<b>D9VB+</b>	729601
150	40	40	20	10	SKYTEC PCD-Basic+	<b>D15VB+</b>	617337
150	40	40	20	10	SKYTEC PCD-Basic+	<b>D20VB+</b>	735148
150	40	40	20	10	SKYTEC PCD-Basic+	<b>D32VB+</b>	735150

Machines: EWAG (manual + CNC), Coborn (manual + CNC) | Customised grinding tools can be manufactured on request.





## SKYTEC PCD-BASIC+ STANDARD PORTFOLIO

### Peripheral grinding – shape 6A2

Shape	D	T	H	W	X
	125	22	20	20	4
	125	25	20	20	4
	150	40	40	20	4
	150	40	40	20	6
	150	40	40	20	8
	150	40	40	20	10

Machines: EWAG (manual + CNC), Coborn (manual + CNC) | Customised grinding tools can be manufactured on request.

### Peripheral grinding – shape 11A2

Shape	D	T	H	W	X
	150	30	40	3	5
	150	30	40	5	5
	150	30	40	8	5
	150	30	40	10	5
	150	30	40	15	5
	150	30	40	20	5
	200	40	40	3	4
	200	40	40	6	5
	200	40	40	10	6
	200	40	40	20	6

Machines: EWAG (manual + CNC), Coborn (manual + CNC) | Customised grinding tools can be manufactured on request.



## SKYTEC PCD-BASIC+ STANDARD PORTFOLIO

### Peripheral grinding – shape 11A2B\_06972

Shape	D	T	H	W	X	TK	B
	250	70	50	3	4	90 (4x90°)	7
	250	70	50	5	5	90 (4x90°)	7
	250	70	50	8	5	90 (4x90°)	7
	250	70	50	10	8	90 (4x90°)	7
	250	70	50	20	10	90 (4x90°)	7

Machines: EWAG (CNC), Coborn (CNC) | Customised grinding tools can be manufactured on request.

### Peripheral grinding – shape 11A2B\_06662

Shape	D	T	H	W	X	TK	B
	200	57	50	10	6	90 (4x90°)	7
	200	57	50	10	10	90 (4x90°)	7
	200	57	50	20	8	90 (4x90°)	7
	200	57	50	20	10	90 (4x90°)	7
	250	70	50	8	10	90 (4x90°)	7
	250	70	50	12	10	90 (4x90°)	7
	250	70	50	20	8	90 (4x90°)	7
	250	70	50	20	10	90 (4x90°)	7

Machines: EWAG (CNC), Coborn (CNC) | Customised grinding tools can be manufactured on request.

### Peripheral grinding – shape 2A2T

Shape	D	T	H	W	X	TK	B
	350	45	310	5	6	334 (6x60°)	M8
	350	45	310	10	6	334 (6x60°)	M8
	350	45	310	17,5	6	334 (6x60°)	M8

Machine: WENDT WCD | Customised grinding tools can be manufactured on request.



# SKYTEC PCD-BASIC+ STANDARD PORTFOLIO

## Peripheral grinding – shape 11A2H

Shape	D	T	H	W	X	TK	B
	400	38	355,06	6	6	365	6
	400	38	355,06	8	6	365	6
	400	38	355,06	10	6	365	6
	400	39	336,06	6	6	352	6
	400	39	336,06	8	6	352	6
	400	39	336,06	10	6	352	6

Machine: WENDT WAM / WAC | Customised grinding tools can be manufactured on request.

## Peripheral grinding – shape 12A2T\*

Shape	D	T	H	W	X	TK	B
	350	27	300	6	6	310 (12x30°)	M5
	350	27	300	8	6	310 (12x30°)	M5
	350	27	300	10	6	310 (12x30°)	M5
	350	27	300	12	6	310 (12x30°)	M5
	350	27	300	15	6	310 (12x30°)	M5
	400	28	340	8	6	348 (12x30°)	M5
	400	28	340	10	6	348 (12x30°)	M5
	400	28	340	12	6	348 (12x30°)	M5
	400	28	340	15	6	348 (12x30°)	M5
	400	28	340	18	6	348 (12x30°)	M5
	400	28	340	20	6	348 (12x30°)	M5

Machine: AGATHON (CNC) | Customised grinding tools can be manufactured on request.

\* also available for EcoDress



## SKYTEC PCD-BASIC+ STANDARD PORTFOLIO

### External cylindrical grinding – shape 1A1

Shape	D	H	T(U)	X
	40	According to customer specifications	4-10	5
	50		4-10	5
	75		4-15	5
	100		4-15	5
	150		4-20	5
	200		10-20	5
	300		10-20	5

Machines: Standard external cylindrical grinding | Customised grinding tools can be manufactured on request.

### External cylindrical grinding – shape 14A1

Shape	D	T	H	U	X
	150	8-20	According to customer specifications	4-20	5
	200	10-20		4-20	5
	300	10-20		4-20	5/8/10
	350	10-20		4-20	5/8/10
	400	10-20		4-20	5/8/10
				4-20	5/8/10

Machines: Standard external cylindrical grinding | Customised grinding tools can be manufactured on request.

### Stock products – shape 14A1

**NEW**

D	T	H	W	X	Description	Specification	Material number
350	20	127	4	5	SKYTEC PCD-Basic+	<b>D12VB+</b>	735155
350	20	127	6	10	SKYTEC PCD-Basic+	<b>D12VB+</b>	735156
350	20	127	6	10	SKYTEC PCD-Basic	DU64M73VD	912876
350	20	127	8	10	SKYTEC PCD-Basic	DU64M73VD	912873

Machines: Standard external cylindrical grinding



## APPLICATION ENGINEERING SOLUTIONS EXPERTISE

**Successful enterprises expect not only top products from their partners, but also process know-how and a program of comprehensive support for their individual requirements.**

Concentration on the production and supply of top quality tools is in itself no longer sufficient. Good “software” has to be offered alongside the “hardware”. With the wealth of process expertise commanded by our team of application engineers we are able to provide our customers with sustained solutions in line with today’s demanding technical and economical expectations.



### **Clarify the task**

We place great emphasis on knowing the targets of our customers. Application engineering specialists analyze the task in detail. A requirements profile which takes technological and profitability aspects into account is then drawn up together with the customer.



### **Define the concept**

The team of experienced application engineers defines approaches to the solution, calling on the additional input from our specialists from R & D and our in-house test center as required.



### **Realize the solution**

The process solution is then taken direct to the customer where it is put into practice on the relevant machine. Within the scope of a sustained process optimization the application engineer sets the mode of operation for the grinding tool, the interaction between machine, workpiece, material, cooling lubricant and kinematical parameters.



### **Share the know-how**

Our know-how in the field of grinding technology is crucial to successful cooperation. A one-off optimization is not the solution for the customer. Sustained results come from the continuous application of the experience on a broad basis. Service is also offered to our customers by way of practice-oriented information, data preparation, trainings and seminars.

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