

The logo for VID GlassPartner, featuring the letters 'VID' in a bold, grey, sans-serif font. The letter 'I' is stylized with a horizontal bar that is orange on the left and grey on the right.

GLASSPARTNER
The Synthetic Diamond Technology

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■ DIAMOND GRINDING WHEELS (metal bonded)



The assets and advantages of using the high quality synthetic diamond grinding wheels

- possibility of processing very hard as well as light materials
- high performance and quality of grinding
- high durability and constancy of the grinding wheel shape
- high efficiency
- favorable price and utility value proportion

About the sythetic diamond

The synthetic diamond originates through the action of high pressure and temperature on the natural graphite. Through various levels of pressure and temperature, different degrees of hardness of the synthetic diamond grain are achieved. The requested grit size is then achieved through crushing, grinding, sifting and rinsing.

Diamond is the hardest known material on earth and in the hardness scale it is assigned number 10. Besides hardness, this material is also exceptional for its good thermal conductivity and resistance to temperatures up to 700°C (1292°F) and resistance to all kinds of chemical effect at standard temperatures.

Other information

Grinding surface of all diamond tools is prepared by the producer to be used directly. If the grinding potential of the diamond tool decreases, we recommend to clean the working surface with an activating/revitalizing stone which we supply upon your request.

The standard diamond wheels have the admissible peripheral speed 30m⁻¹.

Essential for the successful use of the diamond tool is a good technical condition of the machine and usage of appropriate coolants (Rotex, GS 600, water etc.)

Types of binding, grain size and examples of their use

Available is a wide range of grain size ranging from micro powder to very rough grain. The choice of the grain size cannot be categorized. When making the choice it is necessary to take into account the purpose of the tool usage. There are three basic operations: fining or frosting, fine grinding, rough grinding.

- 1) Fining or matting
30-40, 20-30 µm small size grain, minimal roughness of the processed surface, minimal efficiency, minimal removal of material
- 2) Fine grinding
270/325, 325/400 (MESH) medium size grain, standard grinding with medium roughness of the processed surface, medium efficiency, medium removal of material.
The most frequently used grain size for the final processing of the surface prior to chemical polishing.
- 3) Rough grinding
60/70, 70/80 (MESH) large size grain, rough grinding with maximal roughness of the processed surface, maximal efficiency, maximal removal of material.

Grain size	Efficiency	Roughness
30-40, 20-30 µm	min	min
270/325, 325/400 MESH		
60/70, 70/80 MESH	max	max

Diamond grinding wheels

Metal bonded synthetic diamond grinding surface

The choice of bond depends on the type of the diamond wheel and the grain size

1) Manual grinding:

- a) The basic bond type used at manual processing is M2
 This bond (M2) can be successfully used for wheels of any type. However, for the wheels of the types 1E1, 1EE1, it is - in order to heighten the roughness - recommended to use different bond types (M3, M4), depending on the grain size. For the wheels of the type 6A2 with small size grain it is in order to prolong the time between truing recommended to use the bond type M2.

Type of wheel	Grain size (µm) 30/40,20/30	Grain size MESH 270/325,325/400	Grain size MESH 60/70,70/80
1E1, 1EE1	M2 (M5)	M3	M4
1F1, 1FF1	M2	M2	M2
1A1	M2	M2	M2
6A2	M2	M2	M2

- b) For conditioning of the surface for effective mechanical polishing (fining), or for final processing of the surface through frosting, the bond types MB1 and MB2 should be used.

The wheels with this kind of bond present a connecting link between common metal bonded diamond wheels and the electrocorundum wheels. In many cases they are a fully adequate substitute. The wheels with the bond type MB1 and MB2 allow for glass grinding (free of grinding burn) with higher efficiency than the common metal bonded wheels (M2), and they keep the shape (angle or radius) better than the electrocorundum wheels. Diamond wheels with these bond types are recommended for the following technologic operations:

The first technologic operation: grinding of glass with no further processing (the operation offrosting/matting). With this type of processing the surface remains frosted (non-transparent) - MB1.

The second technologic operation: grinding of glass with further mechanical polishing in order to achieve glass transparency (without acid polishing) - MB2.

Type of wheel	Grain size (µm) 40/50,30/40,20/30
1E1, 1EE1	MB1
1F1, 1FF1	MB2
1A1	MB2

For the operation of frosting the bond type MB1 is to be used. For the offer of the wheels with the bond type MB1 see page 21 of this catalogue.

2) Machine processing:

The highest efficiency of the diamond wheel designed for machine processing is achieved through the utilization of the bond type M1.

Type of wheel	Grain size (µm) 270/325,325/400
1E1, 1EE1	M1
1A1	M1 (t) hightend hardness

Table of grain size of the synthetic diamond powder - fine grinding

FEPA ISO 6106	US Standard ASTM E 11 M	Dimension µm	DIN 848	ČSN 224015
M 1	0 - 1	0 - 1	0,7	1/0
M 1,6	1 - 2	1 - 2	1	2/1
M 2,5	1,5 - 3	1,5 - 3		3/2
M 4	2 - 4	2 - 4	3	4/2
M 6,3	3 - 6	3 - 6		5/3
M 10	4 - 8	4 - 8		7/5
	6 - 12	6 - 12	7	10/7
M 16	8 - 16	8 - 16		14/10
	10 - 20	10 - 20	15	20/14
	15 - 25	15 - 25		
M 25	15 - 30	15 - 30	25	28/20
	20 - 30	20 - 30		
M 40	20 - 40	20 - 40	30	40/28
	30 - 40	30 - 40		
	30 - 50	30 - 50		60/40
M 63	30 - 60	30 - 60		
D 39	400/500	28 - 40	35	36/25
D 46	325/400	38 - 45	45	40/36
D 54	270/325	45 - 53	50	50/40
D 64	230/270	53 - 63	55	63/50
D 76	200/230	63 - 75	65	80/63
D 91	170/200	75 - 90	90	
D 107	140/170	90 - 106	100	100/80
D 126	120/140	106 - 125	110	125/100

Table of grain size of the synthetic diamond powder - rough grinding

FEPA ISO 6106	US Standard ASTM E 11 M	Dimension µm	DIN 848	ČSN 224015
D 151	100/120	125 - 150	150	160/125
D 181	80/100	150 - 180	180	
D 213	70/80	180 - 212		200/160
D 251	60/70	212 - 250	220	250/200
D 301	50/60	250 - 300	280	315/250
D 426	40/45	355 - 425	350	400/315
D 426	35/40	425 - 500	450	500/400

Diamond grinding wheels

Metal bonded synthetic diamond grinding surface

Concentration of the diamond powder

The concentration of the diamond powder presents the weight content of the diamond powder per 1 cm³. Primary is the concentration K 100 which presents the content of 0.88g of the diamond powder in 1 cm³.

Concentration (K)	25	50	75	100	125	150	175	200
Content of diamond powder (g/cm ³)	0,22	0,44	0,66	0,88	1,10	1,32	1,54	1,76

Making an order

When making an order please mention the type of the diamond wheel (FEPA) and all technical parameters stated in the tables, the grain size (US Standard, µm) and its concentration (K).

If the requested type or dimension of the diamond wheel is not listed in our catalogue, it is possible to produce one to your order.

Example of order:

With a detailed specification of the tool, for instance:

1 pc 1E1 200 x 10 x 10 x 90 x 42 270/325 (US Standard) K 50 M03

Meaning of the figures

1pc: number of pieces

1E1: wheel type (FEPA)

200: 200 mm wheel diameter

10: 10 mm width of the wheel

10: 10 mm height of the grinding layer (bond)

90: 90° angle (the representation of the shape of the grinding layer)

42: 42 mm bore

270/325: requested grain size of the synthetic diamond powder (as stated in the grain size table)

K50: concentration of the synthetic diamond powder

M03: requested bond type (depending on the purpose of the wheel usage)

10: 10 mm width of the wheel

10: 10 mm height of the grinding layer (bond)

90: 90° angle (the representation of the shape of the grinding layer)

!!!When choosing the concentration "K" and the bond type, please consult our advisory service every time you are not certain about the choice suitable for the intended utilization of the tool!!!

Contact for the receipt of orders

Address: VID GlassPartner s.r.o., U nádraží 1297, 511 01 Turnov, Czech Republic

E-mail: info@vid-glasspartner.com

Charge-free advisory service

Besides suggesting the proper wheel shape and its specific grinding qualities (free of charge), we offer an advisory service as well as a thorough counseling in areas of individual technologic steps and the technologies of glass refining, according to the needs and order of our customers. Designing of such technologic steps will be charged after mutual consent and consultation with the sales department. The charge-free advisory service email account: info@vid-glasspartner.com.

Accessories of the diamond grinding wheels






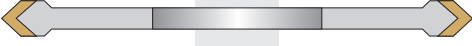






The catalogue also includes accessories for the effective utilization and maintenance of the VID tools. These are mainly the activating/revitalizing stones of various shapes and grain sizes, clamps, and some other accessories.

Tool maintenance service

Our company, VID GlassPartner s.r.o., also offers custom modification and trueing/dressing of new as well as worn-out wheels. Details concerning this service can be obtained from the charge-free advisory service. If you wish to order this service, please, contact the sales department.

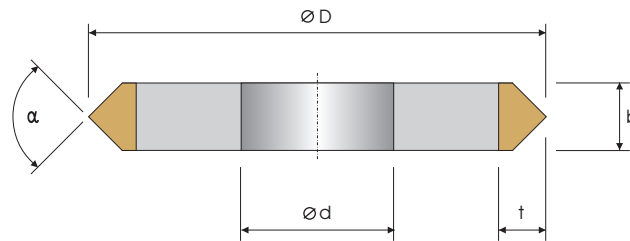
Diamond grinding wheels

Metal bonded synthetic diamond grinding surface

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1E1

Angular diamond grinding wheel
Metal bonded synthetic diamond grinding surface

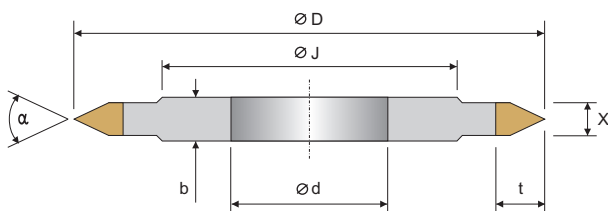


1) The height of the diamond layer "t" may change according to the chosen angle α° .

D mm	b mm	α°	d mm
40	3 - 10	70 - 145	16
50	3 - 13	70 - 145	16 - 24
60	4 - 20	70 - 145	16 - 32
80	3 - 20	70 - 145	16 - 42
100	3 - 22	70 - 145	16 - 60
120	3 - 30	70 - 145	16 - 60
150	3 - 30	70 - 145	16 - 60
200	3 - 40	170 - 145	16 - 60
250	5 - 30	70 - 145	16 - 60
300	5 - 30	70 - 145	16 - 60

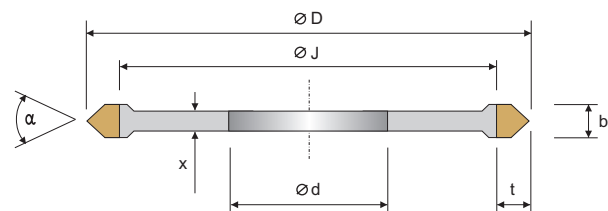
14E1

Angular diamond grinding wheel



9E1

Angular diamond grinding wheel



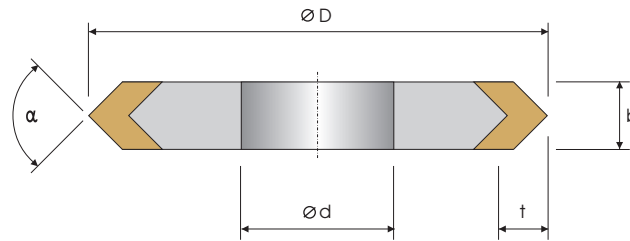
The basic dimension same as for 1E1, need to be completed with:

J - diameter of
x - diameter of

1EE1

Angular diamond grinding wheel

Metal bonded synthetic diamond grinding surface

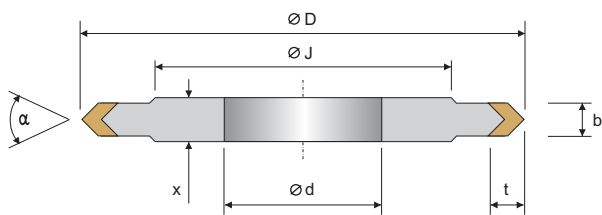


1) The height of the diamond layer "t" may change according to the chosen angle α° .

D mm	b mm	α°	d mm
65	12	120	16 - 32
100	15/20	115/140	16 - 60
110	10/15/25	90 - 115	16 - 60
150	4 - 13	85 - 120	16 - 60

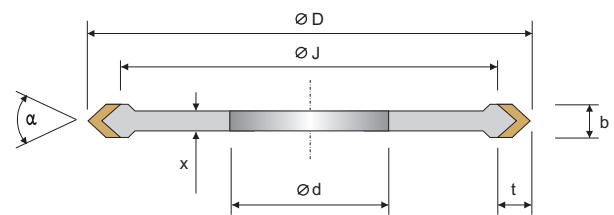
14EE1

Angular diamond grinding wheel



9EE1

Angular diamond grinding wheel

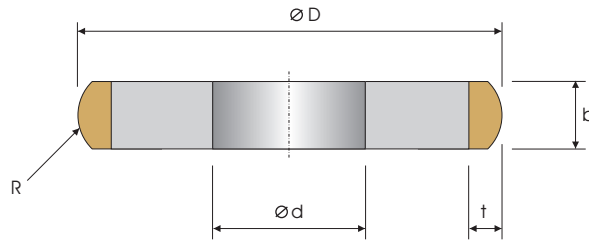


The basic dimension same as for 1EE1, need to be completed with:

J - diameter of
x - diameter of

1F1

Radius diamond grinding wheel
Metal bonded synthetic diamond grinding surface

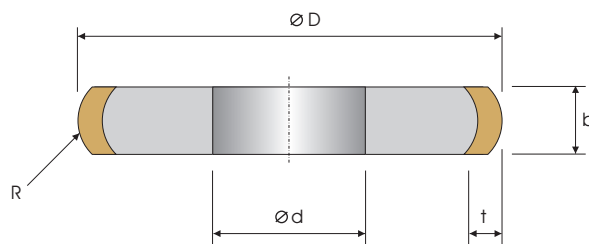


1) The height of the diamond layer "t" may change according to the chosen radius "R".

D mm	b mm	R mm	d mm
40	5 - 20	5 - 90	16
50	6 - 25	5 - 90	16 - 24
60	5 - 30	5 - 90	16 - 32
80	6 - 30	70 - 145	16 - 42
100	10 - 30	5 - 90	16 - 60
120	13 - 30	7 - 90	16 - 60
150	12 - 40	7 - 90	16 - 60
200	9 - 40	8 - 90	16 - 60
250	16 - 30	10 - 90	16 - 60
300	13 - 40	8 - 90	16 - 60

1FF1

Radius diamond grinding wheel
Metal bonded synthetic diamond grinding surface



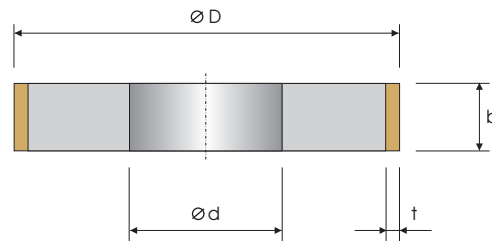
1) The height of the diamond layer "t" may change according to the chosen radius "R".

D mm	b mm	R mm	d mm
80	16 - 30	15 - 45	16 - 42
100	18	10	16 - 60
150	12	7	16 - 60

1A1 (FEPA)

Cylindric diamond grinding wheel

Metal bonded synthetic diamond grinding surface

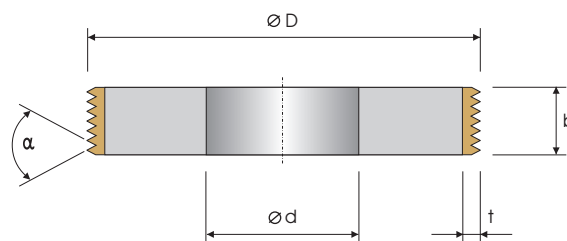


D mm	b mm	t mm	d mm
40	4 - 30	5	16
50	5 - 30	5 - 10	16 - 24
60	10 - 30	5 - 10	16 - 24
80	10 - 30	8 - 17	16 - 42
100	5 - 35	5 - 20	16 - 60
110	10 - 15	5	16 - 60
120	10 - 40	5 - 12	16 - 60
150	10 - 40	5	16 - 60
200	10 - 40	5 - 18	16 - 60
250	10 - 30	5	16 - 60
290	20 - 30	5	16 - 60
300	10 - 40	10	16 - 60

1A1^S (FEPA)

Cylindric diamond grinding wheel

Metal bonded synthetic diamond grinding surface



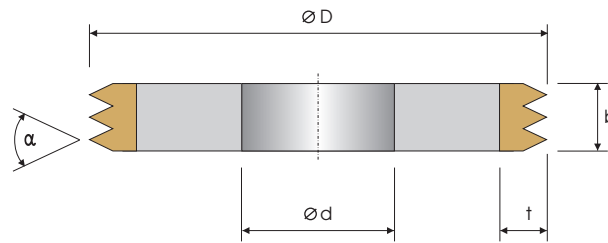
The basic dimension same as for 1A1, need to be completed with:

- number of nick
- angle of nick α

1AA3

Triple diamond grinding wheel

Metal bonded synthetic diamond grinding surface



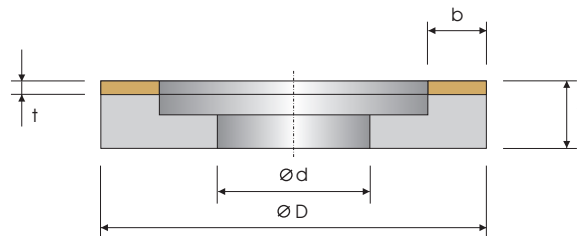
1) The height of the diamond layer "t" may change according to the chosen angle α .

D mm	b mm	R mm	d mm
80	8 - 10	70 - 100	16 - 42
100	8 - 10	70 - 100	16 - 60
120	8 - 10	70 - 100	16 - 60
150	8 - 10	70 - 100	16 - 60
200	8 - 10	70 - 100	16 - 60

6A2

Surface diamond grinding wheel

Metal bonded synthetic diamond grinding surface



D mm	b mm	t mm	T mm	d mm
125	10	3	25	32
150	25	1,5	24,5	20
150	40	2	30	20
155	50	3	25	27
230	87,5	3	25	27
250	20/40	2,5/5	28/30 - 35	80/35
355	135	3	35	51