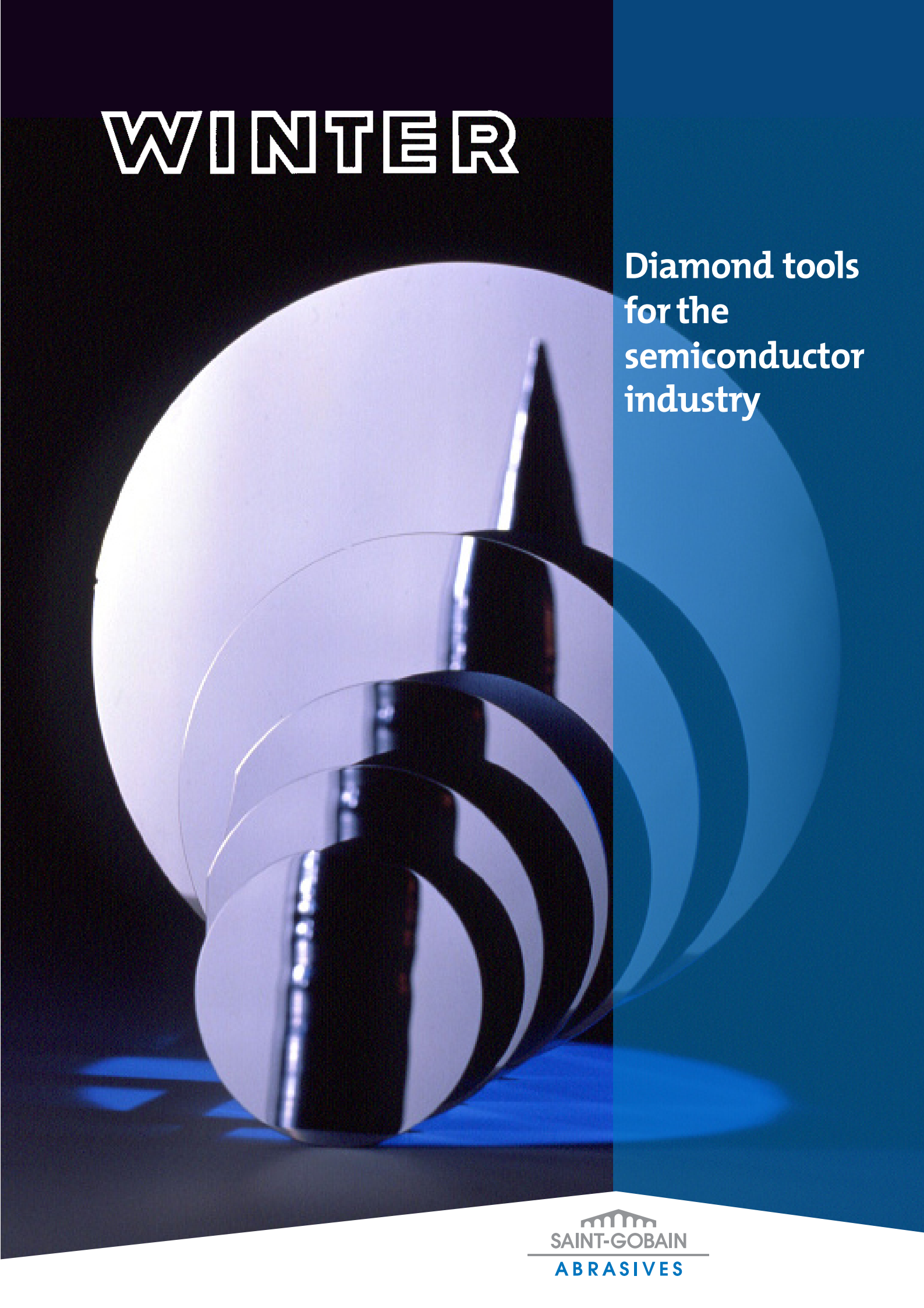
WINTER

Diamond tools for the semiconductor industry



SAINT-GOBAIN
ABRASIVES

WINTER

Diamond tools for the semiconductor industry have worldwide reputation for quality and cost-effectiveness.

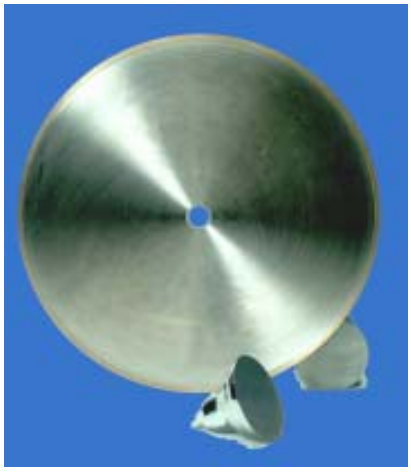
This catalogue gives an overview of the sales program for the semiconductor industry and serves equally as a decision-making aid in selection of the appropriate WINTER diamond tool.

It this based on many years of experience in the semiconductor industry - proposes a diamond tool program tailored to this industry.

The quality control system integrated into our production process ensures consistent quality of all WINTER products.

Further detailed information is given in our speciality catalogues (e.g. ID saw blades, OD saw blades), which are available on request.

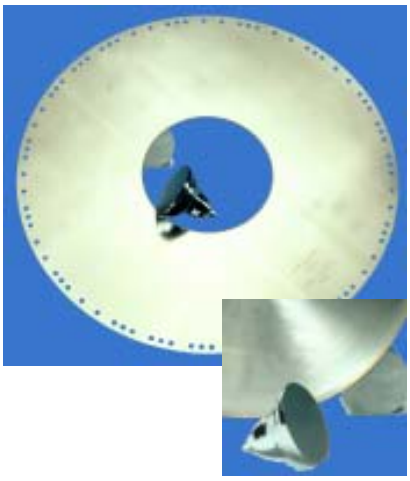
Saint-Gobain Abrasives Engineers are available to answer further questions or to support you on site.



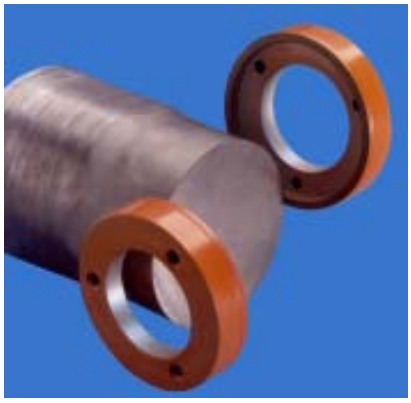
Cover photo: Company Wacker Siltronic AG

Diamond tools for the semiconductor industry

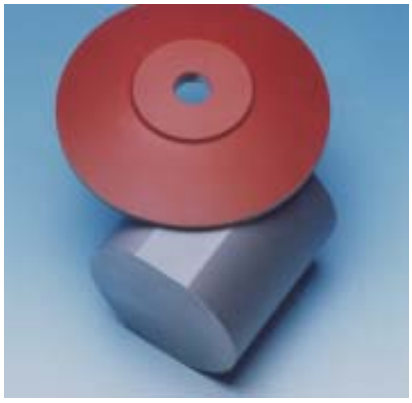
1 Rod cropping



2 Cylindrical rod grinding

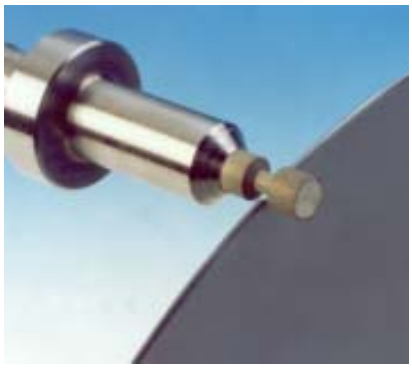


3 Orientation fiducial (flat/notch) grinding

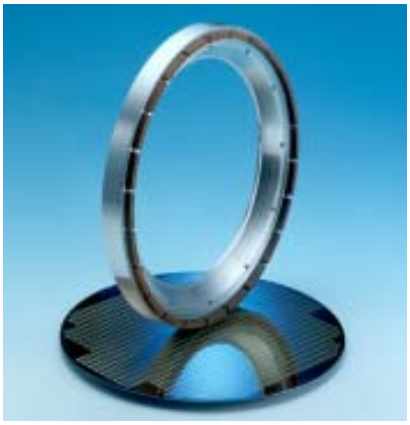


4 Wafer slicing

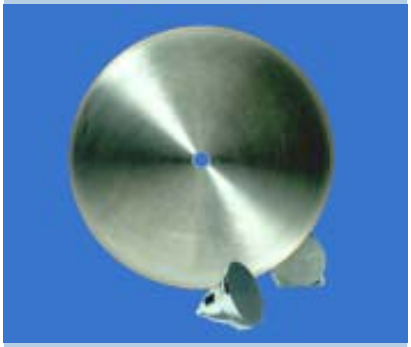
5 Wafer edge grinding/profiling

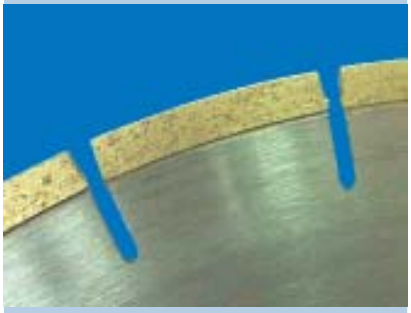


6 Wafer backside grinding



Process step 1
rod cropping

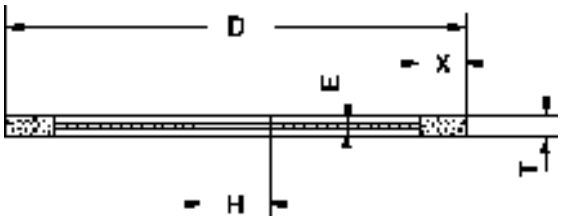




Tool WINTER diamond OD sawblades for cropping silicon rods.

Benefits Cost-effective and unproblematic operation:
- Straight cut
- Smooth finish
- Eliminates exit breakout

Machines Universal application on all standard machines.



Program

Type e.g.	D mm	T mm	X mm	E mm	H mm
1A1R	400	1.5-4.5	5	*)	*)
1A1RSS	350-800	2.4-4.5	5	*)	*)

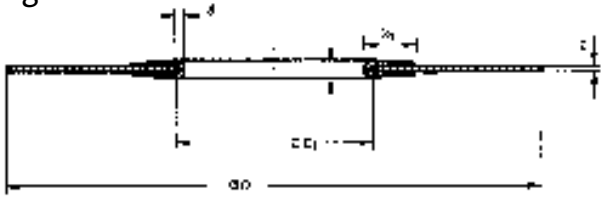
*) as specified Layer specification D91 BZ 457 / C45
D107 / BZ 457 / C23

For other dimensions, see Diamond OD sawblades catalogue no. 39 e.

Tool WINTER diamond ID sawblades for cropping off silicon rods.

Benefits Due to their small cutting width, diamond ID sawblades are much more economical than OD sawblades.

Machines e.g. MEYER & BURGER TS 205 / TS 205



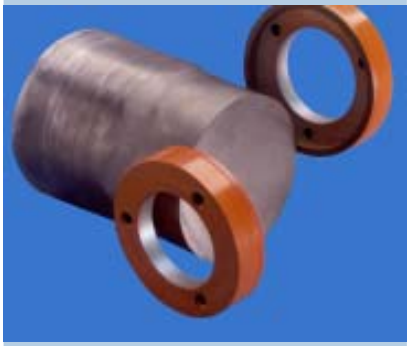
Program

Type e.g.	D mm	D_1 mm	T mm	X mm	E mm
S35E	690	235	0.37	0.4	0.17
S35E	860	304	0.40	0.4	0.17
	inch	inch	inch	inch	inch
S35E	$27\,^{1}/_{6}$	$9\,^{1}/_{2}$	.0146	.0157	.0067
S35E	34	12	.0157	.0157	.0067

*) as specified Layer specification D91 /G820 / S33

For other dimensions, see Diamond ID sawblades catalogue no. 37 e.

Process step 2 cylindrical / peripheral rod grinding



Tool WINTER
diamond wheel
for cylindrical grinding.

Benefits Cost-effective operation
by fast material removal.
Minimal influence on
crystalline structure.

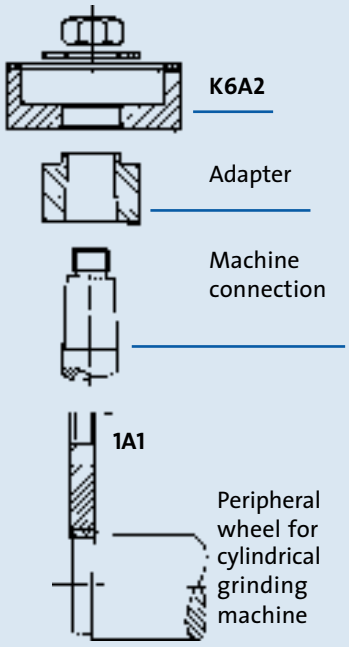
Machines e.g. UEDA GIKEN
(1 or 2 spindles),
or cylindrical
grinding machines.

Program

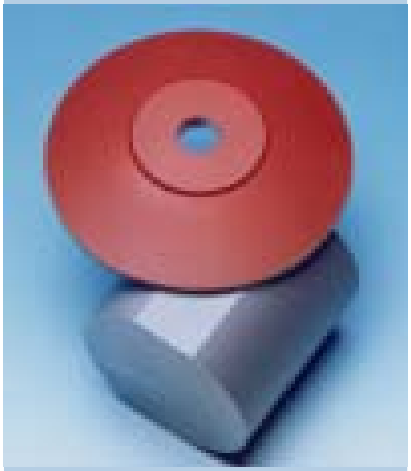
Type e.g.	D mm	W mm	T mm	X mm	H*) mm	Machine
K6A2	75	4		6		UEDA GIKEN with Winter adapter
K1A1	300		30	3		Cylindrical grinding

*) as specified Layer specification D181 /K-plus 888 R/ C75

Cup wheel for UDEKA GIKEN machine



Process step 3 orientation fiducial grinding



Tool WINTER
diamond wheel
for orientation
flat grinding.

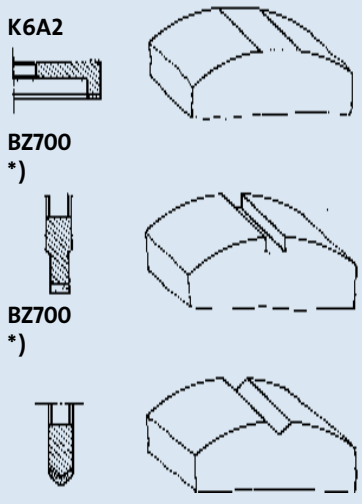
Benefits Good surface quality
No edge chipping
Good profile retention

Machines e.g. GMN MPS 3H
or other surface grinding
machines.

Program

Type e.g.	D mm	W mm	T mm	X mm	V° mm	H *) mm	Machine
K12A2	150	5	6		40		GMN MPS 3H
BZ700	175		5	2			Dual grit Surface grinders

*) as specified Layer specification D64 /BZ 387 / C75



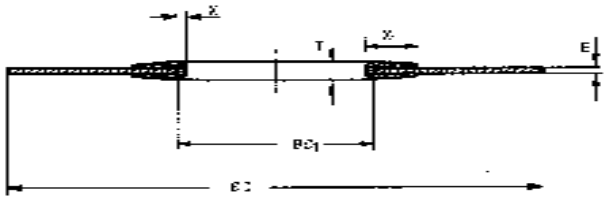
*) Other profiles on request

Process step 4 wafer slicing

Tool WINTER diamond ID sawblades

Benefits Controlled slicing with minimal kerf loss.
Good surface and edge quality and long tool life time.

Machines Universal application on all standard machines.
Meyer & Burger, TSK, STC, GMN



Program

Type e.g.	D		D_1		T-dimension range (standard grit) from		to	
	mm	inch	mm	inch	mm	inch	mm	inch
S35B	206	8 1/8	83	3 1/4	0,22	.0086	0,29	.0114
	257	10 1/8	101	4	0,25	.0098	0,29	.0114
	304	12	115	4 1/2	0,25	.0098	0,35	.0138
	422	16 5/8	153	6	0,26	.0102	0,35	.0138
	546	21 1/2	184	7 1/4	0,26	.0102	0,35	.0138
	558	22	203	8	0,26	.0102	0,35	.0138
	558	22	235	9	0,26	.0102	0,35	.0138
	690	27 1/6	235	9 1/4	0,29	.0114	0,35	.0138
	690	27 1/6	290	11 1/2	0,29	.0114	0,35	.0138
	860	34	304	12	0,30	.0118	0,38	.0150
S35D	206	8 1/8	83	3 1/4	0,22	.0086	0,30	.0118
	257	10 1/8	101	4	0,25	.0098	0,30	.0118
	304	12	115	4 1/2	0,25	.0098	0,30	.0118
	422	16 5/8	153	6	0,26	.0102	0,35	.0138
	546	21 1/2	184	7 1/4	0,26	.0102	0,35	.0138
	558	22	203	8	0,26	.0102	0,35	.0138
	558	22	235	9	0,26	.0102	0,35	.0138
	690	27 1/6	235	9 1/4	0,27	.0106	0,37	.0146
	690	27 1/6	290	11 1/2	0,27	.0106	0,37	.0146
	860	34	304	12	0,32	.0126	0,38	.0150

Layer specification D46 / G820 / S33

Winter uses core material in thickness 0.10, 0.12, 0.15, 0.17 and 0.20 mm, depending on T-dimension. Other dimension available on request.

Process step 5 edge grinding / profiling

Tool WINTER diamond wheels

Benefits Profile accuracy (radius / angle) with an optimum surface quality and long tool life.

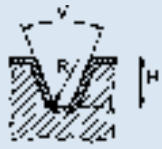
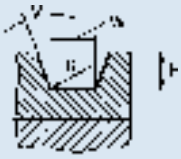
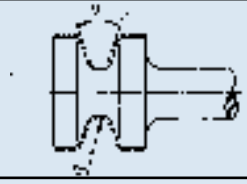
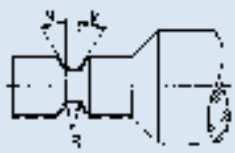
Machines e.g. SVG, DAIICHI, EMTEC, STC

G711 / G715
R or T profile
in electroplated bond

BZ711/BZ715/BZ700
R or T profile
in metal bond

NKV2 / NKV3
R or T profile
in electroplated bond
or metal bond

Program

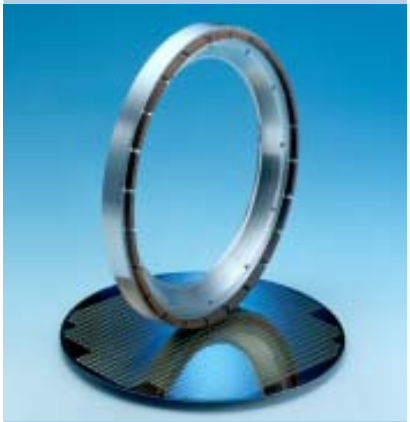
Drawing	Type	Profile	Outer Ø mm	Grooves up to	Machine Typ
	**G 711**	R-Profile electroplated single layer	38.1/50/52.4/52.7 103.6 202	1 4 6	SVG STC Daiichi, Emtec, STC, TSK
	**G 715**	R-Profile electroplated single layer	50 103.6 202	1 4 6	SVG STC Daiichi, Emtec, STC, TSK
	**BZ 711**	R-Profile metalbonded multi layer	50 102 103,6 202	1 4 4 6	SVG Emtec STC
	**BZ 715** (BZ 700)	T-Profile metalbonded multi layer	102 103.6 202	4 4 6	Emtec STC Daiichi, Emtec, STC, TSK
	**NKV2** (S07B) (BZ07B)	R-Profile electroplated metalbonded	4.2 103.6 202	1 4 6	Daiichi STC
	**NKV3** (S07B) (BZ07B)	T-Profile electroplated metalbonded	38.1/50/52.4/52.7 103.6	1 4	Daiichi STC

Profiles R = Radius profile
T = Trapezium profile

Standard Gritsize
Metalbond D20B/D20A/D15C/D15B/D7
Electroplated D20B/D20A/D15C

Standard Tolerances
Metalbond R = 0.01 / W=0.02 / V=0.50
Electroplated R = 0.015 / W=0.02 / V=0.75

Process step 6 wafer backside grinding



Tool WINTER
diamond wheel

Benefits Grinding without damage to structure, good surface quality.

Machines e.g. DISCO DFH 840 / 841
OKAMOTO VG 502
G+N Multinano

Program

Type	D mm	W mm	X mm	H mm	D1 mm	Specification
1R 2A2 T	**204**	**4**	**5**	**22.5**	**158**	**coarse 1**
1R 2A2 T	**204**	**4**	**5**	**22.5**	**158**	**polish 1**

Note

The Saint-Gobain Abrasives quality system for Winter tools

The Saint-Gobain Abrasives quality system covers a whole series of functions from development right up to application:

- Quality in the consulting phase
- Quality in the product planning and development phase
- Quality in the purchasing phase
- Quality in the production phase
- Quality in the application phase

Quality System

Quality engineering

Inspection planning
- Incoming quality inspection
- Inspection procedures

Test equipment monitoring
- Internal
- Maintenance contracts
- External repair following diagnosis
- Test equipment management and issue (with tool tags)

Certificates
Customer specific
On customer request

Quality training
- Internal
- External

Quality inspection

Incoming inspection
- Raw materials
- Semi-finished and finished parts from subcontractors

In-process inspection
- Inspection procedures
- Drawings
- Routing cards
- Saint-Gobain Abrasives standards

Process monitoring
Coordinated with process monitoring dept.

Electroplating bath inspec.
- Bath monitoring
- Bath analyses

Final inspection
- Visual
- Dimension checking
- Analyses (chemical, metallographic, etc.)

Precision meas. Room

Quality monitoring

Complaint processing
- Assessment
- Preventive measures
- Documentation and statistics

Scrap and rework
- Weekly reports
- Monthly reports

Internal quality audits
- Permanent working groups
- Ad hoc working groups

External quality audits
At Saint-Gobain Abrasives subsidiaries

Quality costing

Supplier quality audits

Saint-Gobain Abrasives cooperates closely with major clients in the semiconductor industry, creating engineering solutions that will certainly also be of interest to you.
These companies have conducted several supplier audits at our plants, validating our excellent quality level. Let us tackle your application engineering problems, too.
Why not contact us - we have specialists not far from your location.

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ABRASIVES

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Certified acc. to
DIN EN ISO 14001
Certifcate No.
EM-2129 HH

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Organization
for the Safety
of Abrasives
(oSa)

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