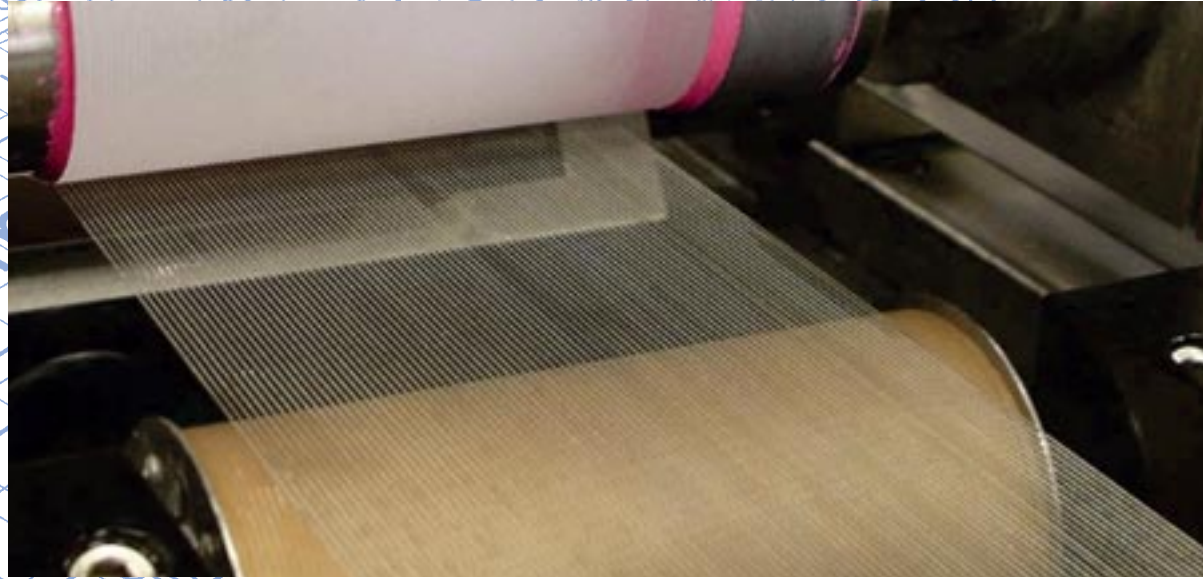
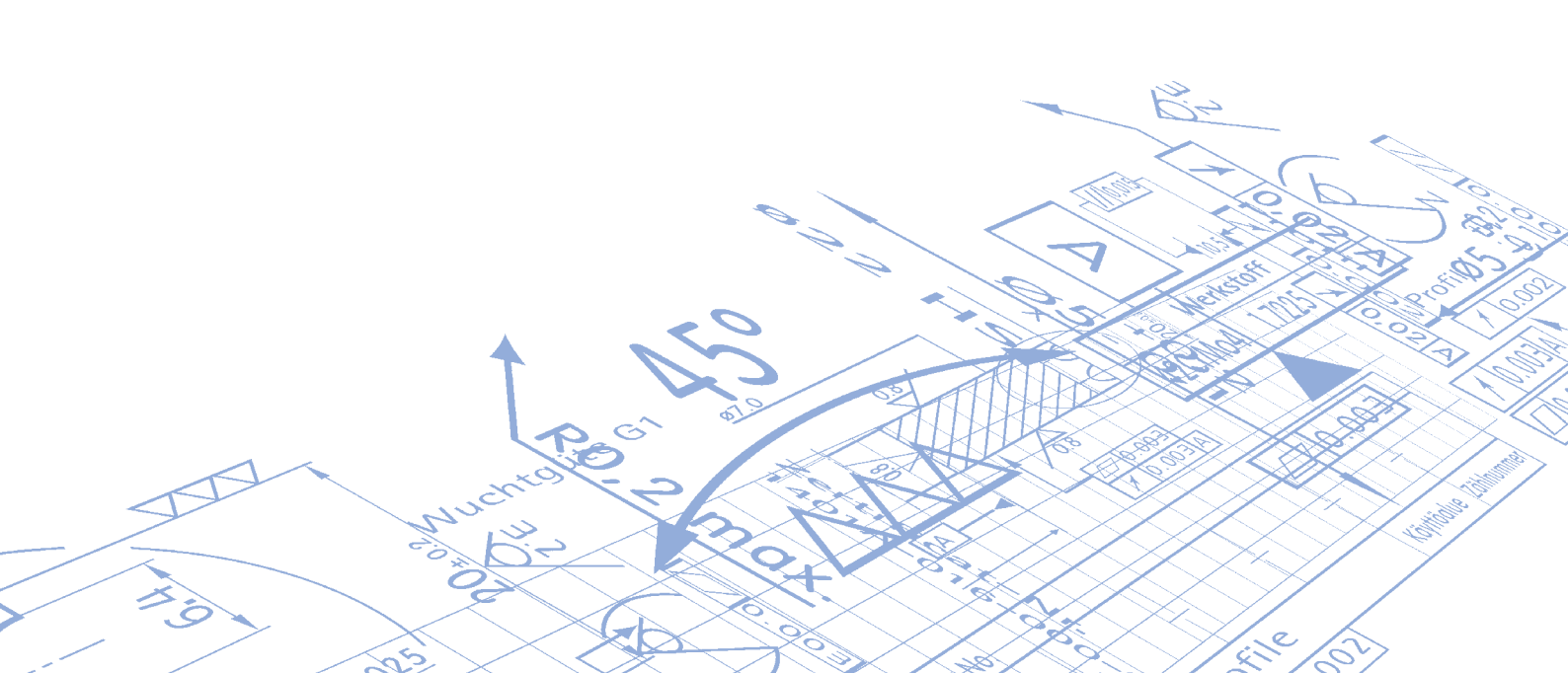


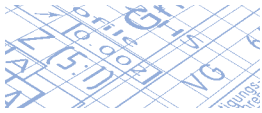
# WINTER

Precision Grinding Solutions



Diamond Coated Wire  
OPTO Slice - SILI Slice - SOLAR Slice - SUPER Slice

Proven Performance



# Diamond Coated Wire OPTO Slice - SILI Slice - SOLAR Slice - SUPER Slice

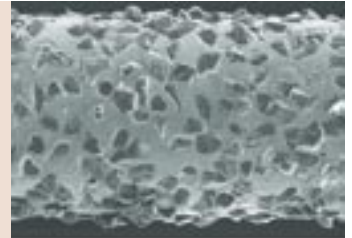
- **Increase of productivity/ efficiency in comparison with bare wires**

- **Highly uniform grain distribution ensures consistent cutting actions and safeguards high workpiece quality**

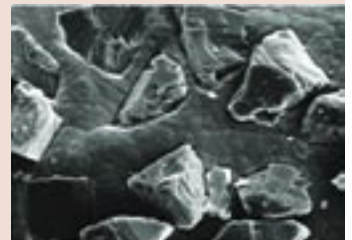
- **Coated diamond technology eliminates slurry recycling and disposal concerns; environmental advantage**

- **Can be spooled directly onto customer's reels**

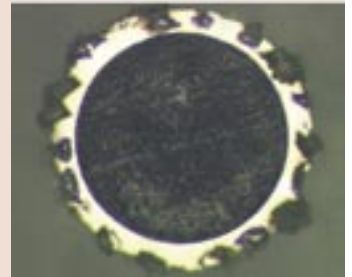
excellent grain distribution along wire



excellent strong grit retention



excellent grain distribution around core

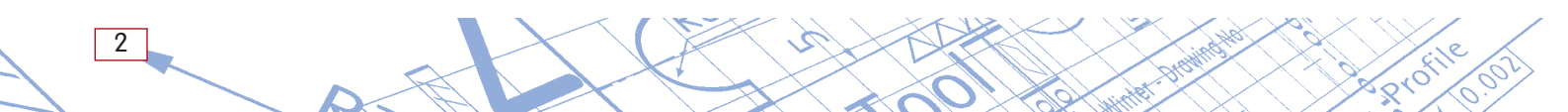


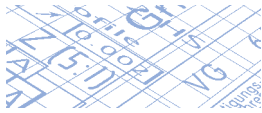
## Case Study 2-Inch Sapphire Wafer Sawing for LED Production

Diamond wire	<b>S18B-0.27-0.18 D25 G820 (66260133195)</b>
Material	<b>2" (50.8mm) C-plane sapphire; length &lt; 86 mm</b>
Sawn wafer thickness	<b>860 μm</b>
Sawing time	<b>4 to 6 hours *</b>
Total thickness variation	<b>&lt; 7 μm (&lt; 15 μm on SiC)</b>
Bow	<b>&lt; 15 μm (&lt; 20 μm on SiC)</b>
Surface finish (Ra)	<b>&lt; 0.7 μm (&lt; 0.7 μm on SiC)</b>
Edge chipping	<b>&lt; 8 μm</b>

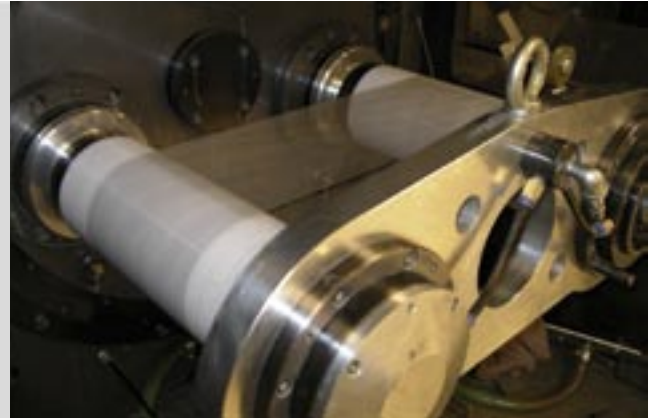
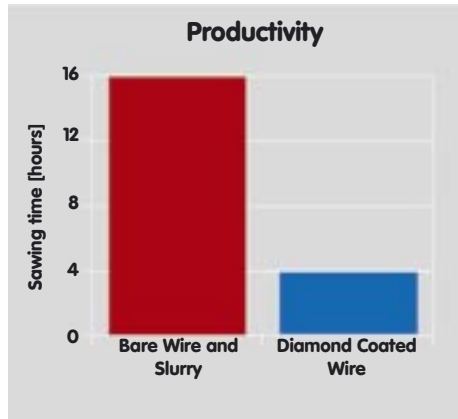
\* DEPENDING ON MACHINE PLATFORM

## Wafer Sawing Breakthroughs





# Diamond Coated Wire OPTO Slice - SILI Slice - SOLAR Slice - SUPER Slice

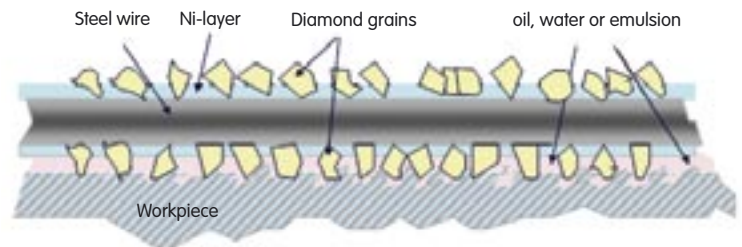


## Competitive performance comparison

Productivity increase up to 500% in comparison to slurry systems

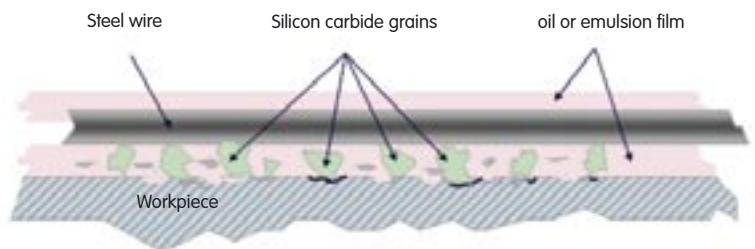
### Diamond coated wire

- Grinding technology
- Fixed grits
- Material removal by slicing
- One-dimensional scratches

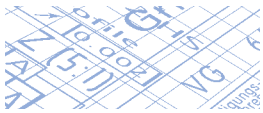


### Bare wire and slurry

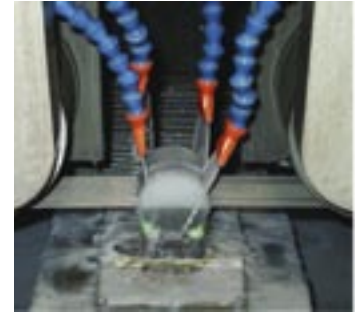
- Lapping technology
- Loose routing grits
- Material removal by crack
- Multidirectional scratches



## on Hard Materials



# Diamond Coated Wire OPTO Slice - SILI Slice - SOLAR Slice - SUPER Slice



## Specification explanation

**S18B** - **0.27** - **0.18** **D25** **G820** **S33**  
 Diamond coated wire    Cutting width    Core diameter    Grit size    Bond code    Concentration

PART NO.	SPECIFICATION	CORE Ø *	GRIT SIZE **	CUTTING WIDTH
<b>OPTO Slice</b>				
66260133195	S18B-0.27-0.18 D25 G820 S33	180 µm (0.0071")	D25	270 µm (0.0106")
66260128002	S18B-0.25-0.15 D25 G820 S33	150 µm (0.0059")	D25	250 µm (0.0098")
<b>SILI Slice &amp; SOLAR Slice</b>				
66260113822	S18B-0.31-0.18 D46 G820 S33	180 µm (0.0071")	D46	310 µm (0.122")
66260127995	S18B-0.29-0.15 D46 G820 S33	150 µm (0.0059")	D46	290 µm (0.0114")
<b>SUPER Slice</b>				
69014164510	S18B-0.22-0.15 D20B G820 S33	150 µm (0.0059")	D20B	220 µm (0.0087")

### Custom Availability

\* 150 to 300 µm (0.0059"-0.0118") core diameters available upon request

\*\* D15A to D46 diamond available upon request

## Standard Availability

### Core Material

Spring steel, 150 µm and 180 µm [0.0059" and 0.0071"] diameter

### Grain Type

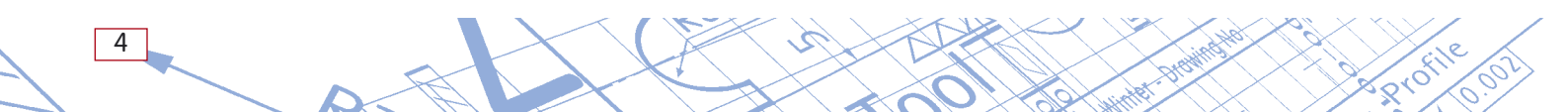
Synthetic or Natural diamond, D20B to D46

### Concentration

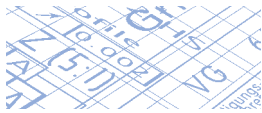
High and continuous, around & along core

### Bond

Nickel-electroplated on steel, single layer high heat and wear resistance

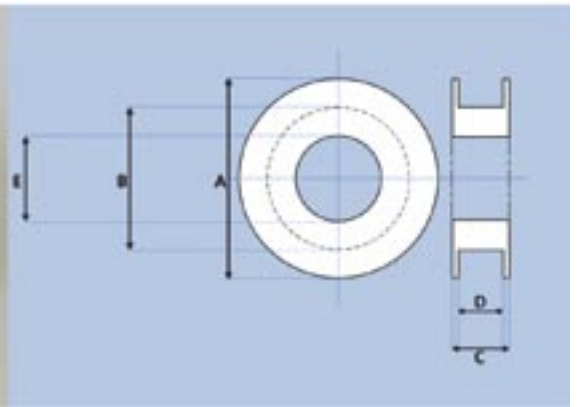
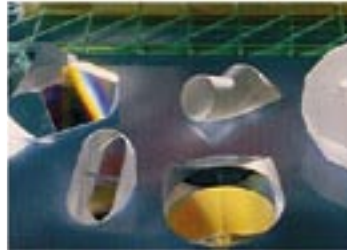






# Diamond Coated Wire OPTO Slice - SILI Slice - SOLAR Slice - SUPER Slice

## Diamond Coated Wire - Spool Availability



SPOOL TYPE	MILLIMETERS				
	(A) FLANGE DIAMETER	(B) BARREL WIDTH	(C) OVERALL WIDTH	(D) BARREL WIDTH	(E) INNER DIAMETER
001A	160.00	118.00	55.00	45.00	33.00
001B	160.00	118.00	166.00	152.00	33.00
001C	260.00	118.00	55.00	45.00	33.00
002	149.86	101.60	30.48	20.32	63.50
003	88.90	63.50	25.40	20.32	38.10
B60	255.00	117.00	270.00	158.00	32.00
B80	254.00	121.00	329.00	315.00	33.00
T610	215.00	164.00	270.00	250.00	50.00
Y01	180.00	84.00	243.00	216.00	30.60

### Custom Availability

We can provide wire on spools above, or any custom reel upon request



## Worldwide Sales & Engineering Support

### Asia

SAINT-GOBAIN Abrasives  
(Singapore) Pte Ltd  
15 Beach Road  
#04-03 Beach Centre  
Singapore 189677  
Phone: +65 337 22 76  
Fax: +65 337 22 47

### Europe

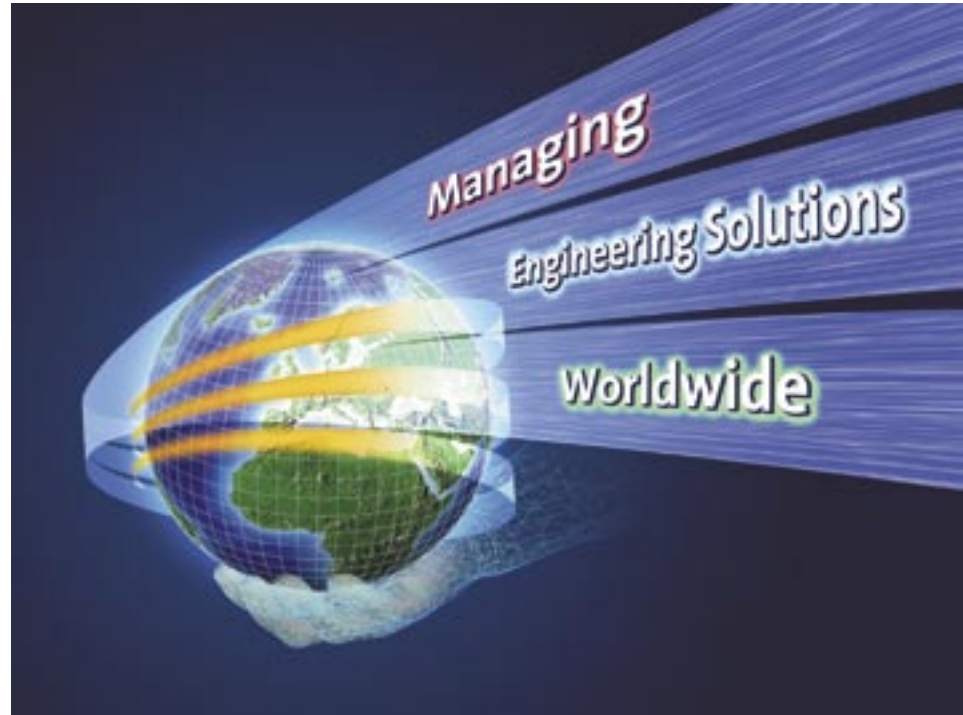
SAINT-GOBAIN  
Diamantwerkzeuge  
GmbH & Co. KG  
Schützenwall 13-17  
D-22844 Norderstedt, Germany  
P.O.Box 2049  
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winter-superabrasives.com  
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### North America

SAINT-GOBAIN Abrasives, Inc.  
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Travelers Rest, SC 29690  
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Fax: +1 (864) 834-3730

diamondwire.saint-gobain.com  
electronics@saint-gobain.com

Lg.-No: E3 / 07



# WINTER Questionnaire

Diamond Wire Data		
Company:	_____	Name: _____
Address:	_____	Phone: _____
Note:	_____	Fax: _____
Please provide below information		
<b>1 Machine platform</b>		
1.1	model *)	
1.2	spool type & dimensions *)	
<b>2 Workpiece</b>		
2.1	material *)	
2.2	size [mm or inch]	
2.3	target TTV [ $\mu\text{m}$ ]	
2.4	target Bow [ $\mu\text{m}$ ]	
2.5	target Roughness [ $\mu\text{m}$ ]	
<b>3 Barrel requirements</b>		
3.1	empty barrel supplied by customer [yes/no] *)	
3.2	per spool requested wire length [m] *)	
3.3	per spool minimum allowable length [m] *)	
3.4	if necessary wire tension on spool [N]	
<b>4 Start procedure</b>		
4.1	initial rewinding before application [yes / no]	
4.2	if 4.1 „yes“ how many meters per new spool	
<b>5 Process</b>		
5.1	wire tension [N]	
5.2	wire speed [mm/min]	
5.3	table feed [mm/hour]	
5.4	pendulum motion forward & back [mm]	
5.5	rocking angle [°]	
5.6	rocking speed [°/min]	
5.7	coolant	
5.8	coolant flow [l/h]	

\*) essential

SAINT-GOBAIN Diamantwerkzeuge  
 GmbH & Co. KG  
 CustomerService  
 Schützenwall 13-17  
 22844 Norderstedt  
 Germany