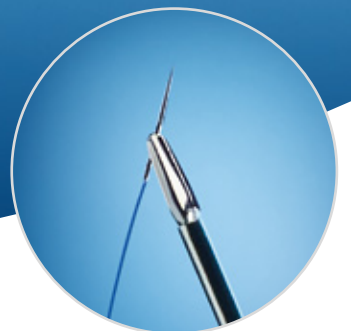
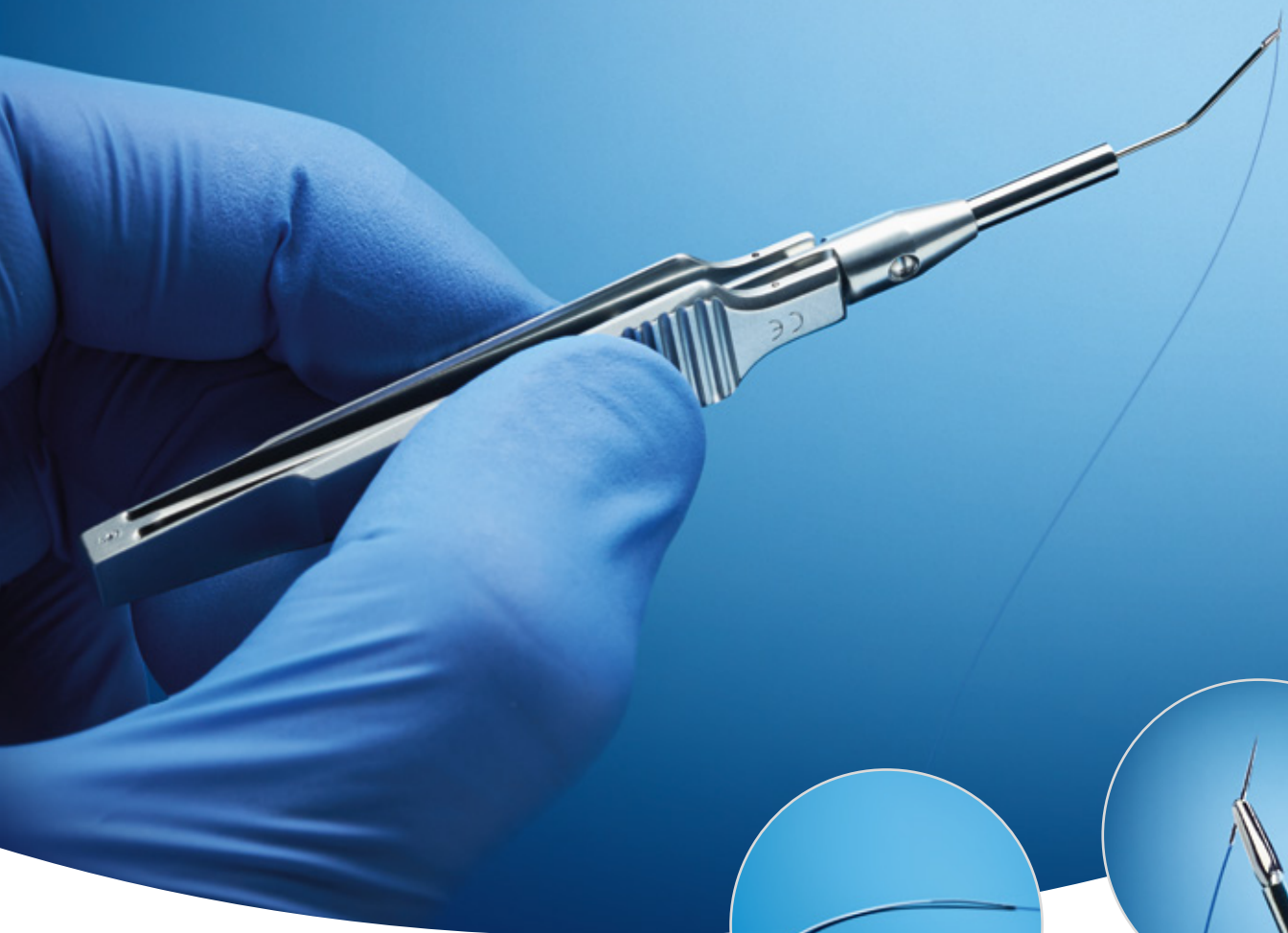


® onateC

SURGICAL SUTURES  
FOR OPHTHALMOLOGY



**Geuder**<sup>®</sup>  
Precision made in Germany

ONATEC<sup>®</sup> is a registered trademark of FSSB Chirurgische Nadeln GmbH, Jestetten, Germany, exclusively distributed by GEUDER AG (in most countries)

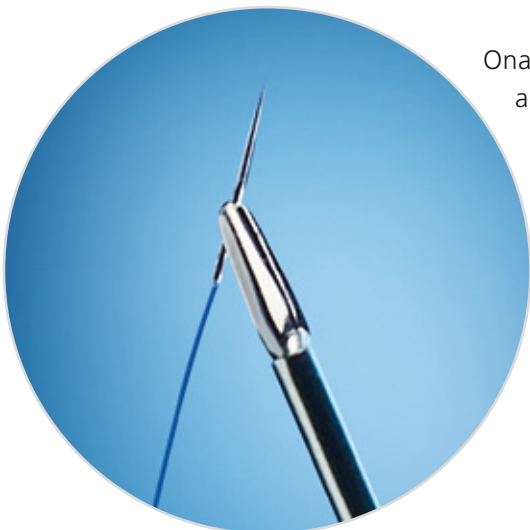


## PREMIUM SURGICAL SUTURES

Surgical sutures are certified medical devices, which replace the mechanical bridging function of missing tissue integrity in the short, medium or long term. For quick and good wound healing, the sutures should create the greatest possible contact between the separated tissue parts. Demanding ophthalmic surgical applications require high-quality sutures for the best possible wound adaptation while at the same time minimizing tissue trauma.

Geuder AG offers a broad portfolio of surgical needles and sutures from Onatec® for almost all ophthalmic surgical indications that require precise stitches. Onatec® sutures meet the highest surgical demands and yield optimal results with little scarring. Onatec® stands for quality products made in Germany, which were developed with leading surgeons to offer practical and effective solutions for ophthalmology.

### THE NEEDLES - HIGHEST PRECISION IN ITS SMALLEST SCALE



Onatec® needles are made from a highly tempered and virtually unbreakable special steel with high bending resistance. Due to the innovative and highly automated manufacturing process, precise needle geometries and accurate needle grinds can be realized, which enable stitching of the finest types of tissue in the smallest space.

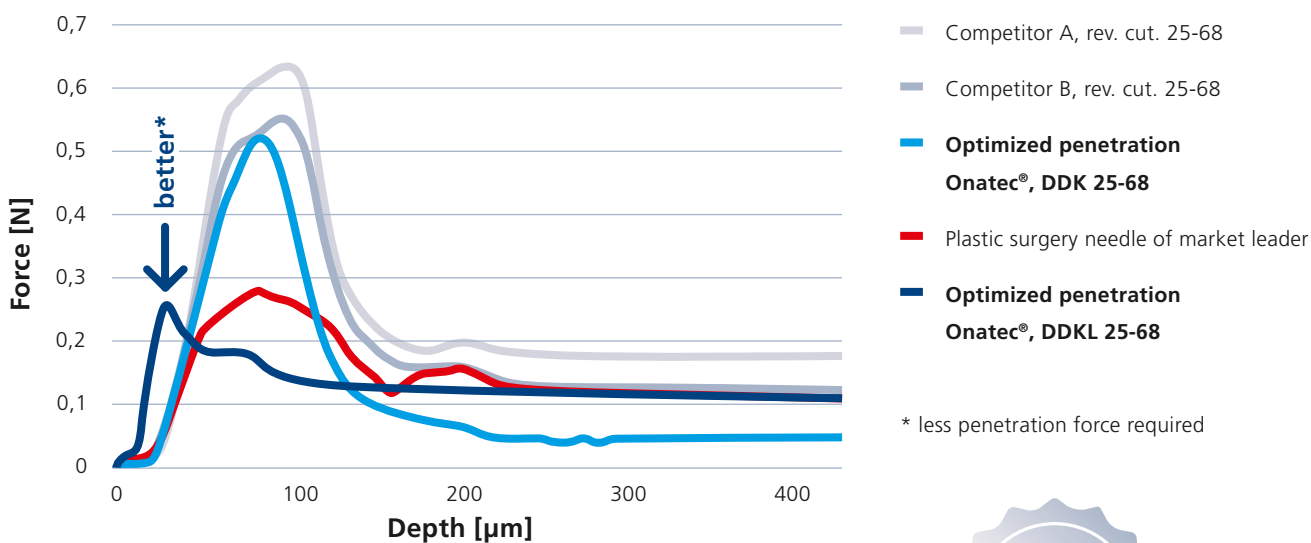
The high-quality surface finishing of many Onatec® needles offers optimal penetration and thus little trauma to the tissue. The result is a reliable wound adaptation with barely visible scars for the best possible restoration of tissue function.



## OPTIMIZED PENETRATION FOR THE HIGHEST OPHTHALMIC SURGICAL REQUIREMENTS:

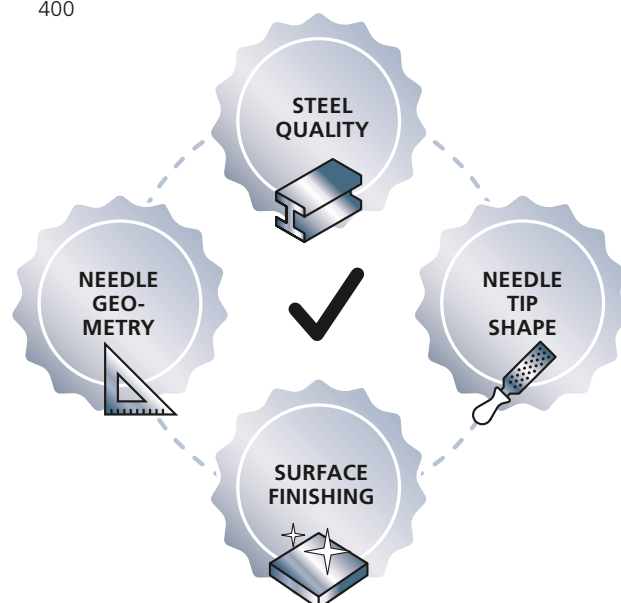
### Penetration Test of Reverse Cutting Needles

Acculine test device – Test media : Povar foil 0.4 mm (Source: FSSB Chirurgische Nadeln GmbH)



### QUALITY FEATURES OF ONATEC® NEEDLES:

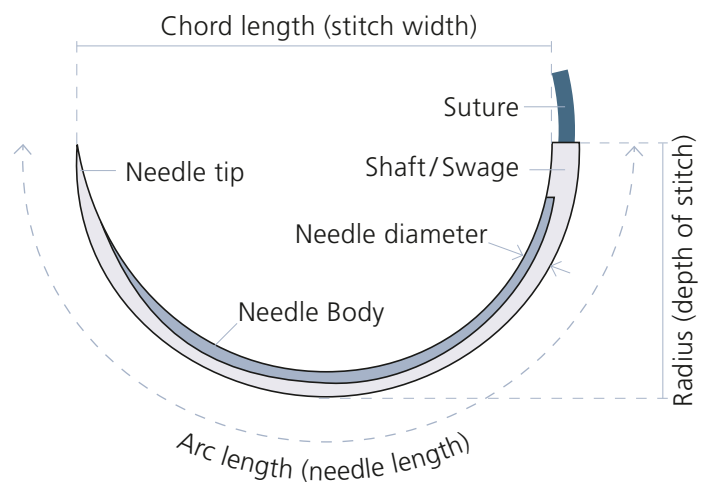
- High resistance to bending and breakage
- Optimized penetration
- Accurate grind of the needle tip shape
- Low tissue trauma



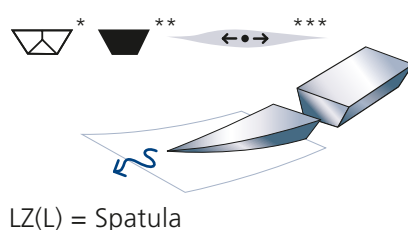
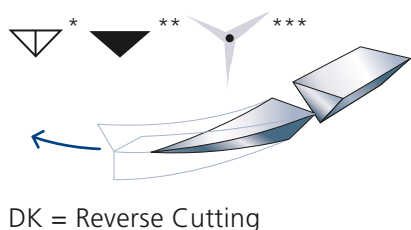
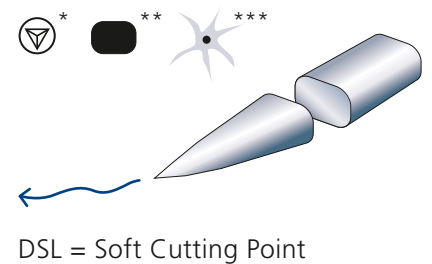
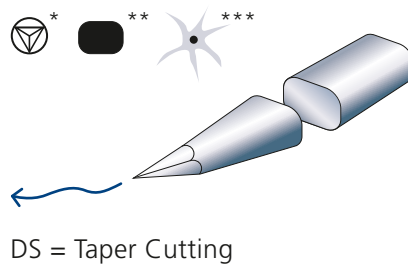
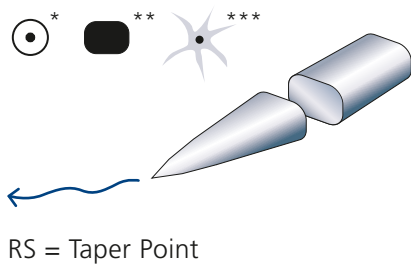
SUTURE TECHNIQUE AND TISSUE DETERMINE THE SPECIFICATIONS OF THE NEEDLE

THE FOLLOWING FEATURES HAVE AN IMPACT:

- Needle shape (cross-section)
- Needle tip
- Needle diameter
- Curvature
- Arc length (needle length)
- Armed (The choice between single and double armed enables different techniques or a more cost-effective use)



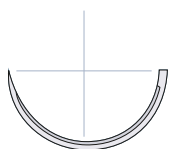
NEEDLE SHAPE AND NEEDLE TIP



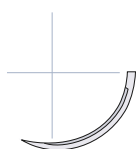
- \* Cross-section needle tip
- \*\* Cross-section needle body
- \*\*\* Cross-section suture channel



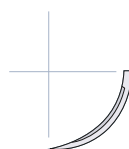
## CURVATURE



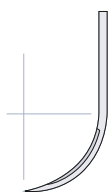
1/2 circle = H



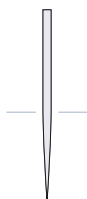
3/8 circle = D



1/4-circle = V



Ski shaped = S



Straight = G

## THE ONATEC® NEEDLE CODE CONTAINS ALL RELEVANT SPECIFICATIONS

**2x DLZL 200 6,4 P**

ARMED	CURVATURE	NEEDLE TYPE (GRIND)	NEEDLE DIA-METER	NEEDLE LENGTH	SPECIALITY
2x = double N/A = single	H = 1/2 circle D = 3/8 circle V = 1/4 circle G = Straight S = Ski shaped	⊙ RS = Taper Point ⊙ DS = Taper Cutting ⊙ DSL = Soft Cutting Point ▽ DK = Reverse Cutting ▽ LZ(L) = Spatula	in μm	in mm	P = Optimized penetration B = Black M = Matt finish

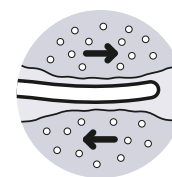
## SUTURE MATERIALS FOR OPTIMAL WOUND ADAPTATION

### OUTSTANDING PROPERTIES:

- High tensile strength resp. tear resistance
- Secure knot positioning
- Easy knot tying
- Low capillarity
- Optimal tissue compatibility
- Good sliding properties through tissue
- Good visibility
- Easy to use

### SELECTION CRITERIA:

- Absorption characteristics
- Tissue compatibility
- Structure, texture and diameter
- Elasticity and strength



## SUTURE DIAMETER

UNITED STATES PHARMAKOPEIA (USP)	DIAMETER [MM]	EUROPEAN PHARMAKOPEIA (PH. EUR. OR EP)
11-0	0.010 – 0.019	0.1
10-0	0.020 – 0.029	0.2
9-0	0.030 – 0.039	0.3
8-0	0.040 – 0.049	0.4
7-0	0.050 – 0.069	0.5
6-0	0.070 – 0.099	0.7
5-0	0.100 – 0.149	1
4-0	0.1500 – 0.199	1.5
3-0	0.200 – 0.249	2



## ABSORPTION CHARACTERISTICS AND TISSUE COMPATIBILITY

Onatec® sutures are made from biocompatible raw materials for the best possible tissue compatibility. The absorbable suture material ONASORB® PGA supports natural wound healing until the shape and function of the tissue are restored. The non-absorbable suture materials ONALENE®, ONABOND®, ONAFIL® SILK and ONALON® are used for permanent wound adaptation in order to restore tissue function.

### NON-ABSORBABLE SUTURE MATERIALS

remain almost unchanged in the tissue (inert) and are integrated into the wound scar:

- ONALENE® made of polypropylene
- ONABOND® made of polyester
- ONAFIL® SILK made of silk

### ABSORBABLE MATERIAL

is degradable by hydrolysis and adapts to the tissue during the healing phase. It increasingly loses its tensile strength and tear resistance:

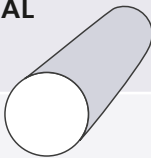
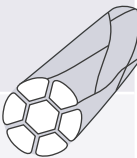
- ONASORB® PGA made of polyglycolic acid

### PSEUDO-ABSORBABLE MATERIAL

degrades over a longer period of time by exposure to light and moisture. It is recommended for tissues with long-term scarring:

- ONALON® made of polyamide

## MATERIAL STRUCTURE AND PROPERTIES

	MONOFILAMENT MATERIAL 	MULTIFILAMENT MATERIAL (BRAIDED, COATED) 
<b>ADVANTAGES</b>	<ul style="list-style-type: none"> <li>· No capillarity</li> <li>· No sawing effect</li> <li>· Easy to pull through tissue</li> <li>· Low traumatic effect</li> </ul>	<ul style="list-style-type: none"> <li>· High tear resistance</li> <li>· Secure knot positioning</li> <li>· Smooth handling</li> <li>· Easy to use</li> </ul>
<b>CHALLENGES</b>	<ul style="list-style-type: none"> <li>· Knot tying requires practice and experience</li> </ul>	<ul style="list-style-type: none"> <li>· Higher stress to tissue because of surface structure</li> </ul>
<b>MATERIAL EXAMPLES</b>	<ul style="list-style-type: none"> <li>· Polypropylene (ONALENE®)</li> <li>· Polyamide (ONALON®)</li> </ul>	<ul style="list-style-type: none"> <li>· Silk (ONAFIL® SILK)</li> <li>· Polyglycolic acid (ONASORB® PGA)</li> <li>· Polyester (ONABOND®)</li> </ul>

\* Absorption time is the time, in which the suture material loses 50 % of its knot tear resistance, not to be confused with complete material degradation

## SPECIFICATIONS OF SUTURE MATERIALS

	ONASORB® PGA		ONALON®	ONALENE®		ONABOND®		ONAFIL® SILK
<b>ABSORBABILITY</b>	absorbable		non-absorbable	non-absorbable		non-absorbable		non-absorbable
<b>STRUCTURE</b>	multifila- ment, braided	mono- filament	monofilament	monofilament		multifilament, braided		multifilament, braided
<b>COLORS</b>	violet 4-0 bis 8-0  undyed 5-0 and 6-0	violet	black	blue	black	undyed / white	green	black
<b>USP (Diameter)</b>	4-0 to 8-0	9-0 and 10-0	4-0 to 10-0	3-0 to 10-0	9-0 and 10-0	4-0 to 6-0	3-0	4-0 to 7-0
<b>MATERIAL</b>	Polyglycolic acid (PGA)		Polyamide (Nylon)	Polypropylene (PP)		Polyester (PES)		Natural silk
<b>COATING</b>	Polycap- rolac- tone and Calcium stearate	none	none	none		Silicone NuSil MED- 2174		Silicone NuSil MED- 2174
<b>ADDITIONAL FEATURES</b>	<ul style="list-style-type: none"> <li>· Half-life period 2 weeks</li> <li>· For plastic surgery (skin suture)</li> <li>· Optimal knot security</li> </ul>		<ul style="list-style-type: none"> <li>· Especially smooth with high tear resistance</li> <li>· Fine monofilaments especially for micro surgery</li> </ul>	<ul style="list-style-type: none"> <li>· High tear resistance</li> <li>· Durable</li> </ul>		<ul style="list-style-type: none"> <li>· High tear resistance</li> <li>· Durable</li> <li>· Special coating for minimum trauma to tissue</li> </ul>		<ul style="list-style-type: none"> <li>· Very smooth due to delicate structure</li> <li>· Low mechanical foreign body effect</li> </ul>





## APPLICATION EXAMPLES OF SUTURE MATERIALS

	ONASORB® PGA	ONALON®	ONALENE®	ONABOND®	ONAFIL® SILK
<b>CLINICAL APPLICATION*</b>  Suture USP and needle type	<ul style="list-style-type: none"> <li>· <b>Strabismus</b> VLZL 8,5</li> <li>· <b>Eyelid and conjunctiva suture</b> 7-0–8-0 DLZ(L) 6.4</li> <li>· <b>Transcutaneous levator resection (pediatric)</b> 7-0 DLZ(L) 6.4</li> <li>· <b>Lateral tarsal strip</b> 6-0 VLZL 8.0</li> <li>· <b>Blepharoplasty</b> 7-0–8-0 DLZ(L) 6.4</li> <li>· <b>Chalazion, hordeolum and xanthelasma</b> 7-0–8-0 DLZ(L) 6.4</li> <li>· <b>Pterygium</b> 9-0–10-0 DLZL 6.4</li> <li>· <b>Glaucoma</b> 10-0 DLZL 6.4</li> </ul>	<ul style="list-style-type: none"> <li>· <b>Glaucoma</b> 10-0 DLZL 6.2</li> <li>· <b>Cornea suture, keratoplasty and fixation of amnion</b> 10-0 DLZ(L) 6.2</li> <li>· <b>Scleral buckling</b> 5-0 DLZL 16E</li> </ul>	<ul style="list-style-type: none"> <li>· <b>Blepharoplasty</b> 7-0 DDK 7.8P</li> <li>· <b>Transcutaneous levator resection</b> 7-0 DDK 7.8P</li> <li>· <b>Hattenbach iris suture</b> 10-0 GRS 2.0</li> <li>· <b>Hattenbach IOL fixation</b> 10-0 GRS 2.0</li> <li>· <b>Transscleral IOL fixation</b> 9-0 GLZL 16</li> </ul>	<ul style="list-style-type: none"> <li>· <b>Strabismus</b> 5-0–6-0 VLZ(L) 8.5</li> <li>· <b>Eyelid and conjunctiva suture</b> 5-0–6-0 VLZ(L) 8.5 5-0 HLZ 8.5</li> <li>· <b>Scleral buckling</b> 4-0–5-0 VLZ(L) 8.5</li> </ul>	<ul style="list-style-type: none"> <li>· <b>Extraocular muscle suture</b> 5-0 VLZ(L) 8.5</li> <li>· <b>Sclera suture</b> 7-0 DDK 7.8P</li> <li>· <b>Scleral buckling</b> 4-0 DLZL 19E</li> </ul>

\* We do not assume liability for the application examples. They are only suggestions from the relevant specialist literature and from training materials.

Item number	Needle tip (cross-section)	Needle (original size)	Armed	Curvature	Needle type	Needle length (mm)	Needle diameter (µm)	Speciality	Suture USP	Suture length (cm)	Suture color	Suture structure	Coating	Packaging unit		
G-ON211345			2x	H	DSL	13	350		5/0	45	undyed	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	24		
G-ON415575			2x	H	LZ	5.5	200		8/0	20	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON415595					LZL				10/0	30		monofilament	none			
G-ON418045			2x	H	LZL	8	350		5/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON418056									6/0						undyed	
G-ON347850			1x	D	DK	7.8	200		6/0	30	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON347861									7/0							
G-ON347870									8/0						P	
G-ON347855			2x	D	DK	7.8	200		6/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON456460			1x	D	LZ	6.4	200		7/0	30	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON456470									8/0							
G-ON351150			1x	D	LZL	11	300		6/0	45	undyed	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	24		
G-ON351155			2x	D	LZL	11	300	M	6/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	24		
G-ON351156								M, B								
G-ON351346			2x	D	LZL	13	350	P	5/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	24		
G-ON455590			1x	D	LZL	5.5	125		10/0	15	violet	monofilament	none	12		
G-ON456450			1x	D	LZL	6.4	250		6/0	30	undyed	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON456481									9/0	10	violet	monofilament	none			
G-ON456490									10/0	15						
G-ON456465			2x	D	LZL	6.4	200		7/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON456475									8/0	30						
G-ON456476									8/0	45						
G-ON456485									9/0	30						
G-ON456495									10/0	30						
G-ON458055			2x	D	LZL	8	300		6/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON468055			2x	V	LZL	8	300		6/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON468056											undyed					
G-ON468058											undyed					
G-ON468155											350				25	violet
G-ON468156											B					undyed
G-ON468545			2x	V	LZL	8.5	350		5/0	45	violet	multifilament <sup>1</sup>	PCL+Ca <sup>2</sup>	12		
G-ON468546									undyed							
G-ON468556									6/0		25				violet	

1 multifilament, braided | 2 Polycaprolactone + Calcium stearate

Item number	Needle tip (cross-section)	Needle (original size)	Armed	Curvature	Needle type	Needle length (mm)	Needle diameter (µm)	Speciality	Suture USP	Suture length (cm)	Suture color	Suture structure	Coating	Packaging unit
G-OL318060	▽		1x	H	DK	8	230	P	7/0	30	black	monofilament	none	12
G-OL318045	▽		2x	H	DK	8	300		5/0	30	black	monofilament	none	12
G-OL415080	▽		1x	H	LZ	5	100		9/0	20	black	monofilament	none	12
G-OL415690	▽		1x	H	LZL	5.6	150		10/0	15	black	monofilament	none	12
G-OL415695	▽		2x	H	LZL	5.6	150		10/0	30	black	monofilament	none	12
G-OL144890	⊙		1x	D	RS	5	100		10/0	10	black	monofilament	none	12
G-OL145191	⊙		1x	D	RS	5.1	70		10/0	20	black	monofilament	none	12
G-OL146470	⊙		1x	D	RS	6.4	150		8/0	15	black	monofilament	none	12
G-OL146480							140		9/0					
G-OL351150	▽		1x	D	LZL	11	350		6/0	45	black	monofilament	none	24
G-OL351160							330		7/0					
G-OL351155	▽		2x	D	LZL	11	350		6/0	45	black	monofilament	none	24
G-OL351350	▽		1x	D	LZL	13	350		6/0	45	black	monofilament	none	24
G-OL351630	▽		1x	D	LZL	16	430		4/0	45	black	monofilament	none	12
G-OL351640									5/0					
G-OL351930	▽		1x	D	LZL	19	530		4/0	45	black	monofilament	none	12
G-OL456280	▽		1x	D	LZL	6.2	150		9/0	15	black	monofilament	none	12
G-OL456290									10/0					
G-OL456295	▽		2x	D	LZL	6.2	150		10/0	30	black	monofilament	none	12
G-OL464895	▽		2x	V	LZ	4.8	150		10/0	30	black	monofilament	none	12
G-OL466460	▽		1x	V	LZL	6.4	200		7/0	30	black	monofilament	none	12

Item number	Needle tip (cross-section)	Needle (original size)	Armed	Curvature	Needle type	Needle length (mm)	Needle diameter (µm)	Speciality	Suture USP	Suture length (cm)	Suture color	Suture structure	Coating	Packaging unit
G-OE245685			2x	D	DS	5.6	150		9/0	30	blue	monofilament	none	12
G-OE249455			2x	D	DSL	9.4	200		6/0	30	blue	monofilament	none	12
G-OE249465									7/0	75				
G-OE347850			1x	D	DK	7.8	250	P	6/0	45	blue	monofilament	none	12
G-OE347860									7/0					
G-OE347865			2x	D	DK	7.8	230	P	7/0	45	blue	monofilament	none	12
G-OE347866										75				
G-OE455590			1x	D	LZL	5.5	200		10/0	30	blue	monofilament	none	12
G-OE461980			1x	V	LZ	19	200		9/0	10	black	monofilament	none	12
G-OE461995			2x	V	LZL	19	200		10/0	20	black	monofilament	none	12
G-OE491695			2x	ski/ S	LZ	16	150		10/0	30	blue	monofilament	none	12
G-OE172080			1x	G	RS	2	100		9/0	10	black	monofilament	none	12
G-OE172090									10/0					
G-OEX1			2x	G	RS	5	100		10/0	16	blue	monofilament	none	5
					LZL	13	430		6/0					

**ONABOND®**  
non-absorbable

Item number	Needle tip (cross-section)	Needle (original size)	Armed	Curvature	Needle type	Needle length (mm)	Needle diameter (µm)	Speciality	Suture USP	Suture length (cm)	Suture color	Suture structure	Coating	Packaging unit
G-OB418535	▽		2x	H	LZ	8.5	460		4/0	45	white	multifilament <sup>1</sup>	NuSil <sup>3</sup>	12
G-OB418545							350		5/0					
G-OB341925	▽		2x	D	DK	19	580	P	3/0	45	green	multifilament <sup>1</sup>	NuSil <sup>3</sup>	24
G-OB468535	▽		2x	V	LZ	8.5	430		4/0	45	white	multifilament <sup>1</sup>	NuSil <sup>3</sup>	12
G-OB468545					LZ		350		5/0					
G-OB468555					LZL		350		6/0					

**ONAFIL® SILK**  
non-absorbable

G-OF141630	⊙		1x	D	RS	16	430	P	4/0	50	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	24
G-OF141631										2x 50				
G-OF357850	▽		1x	D	DK	7.8	200		6/0	30	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	12
G-OF357860									7/0	45				
G-OF357855	▽		2x	D	DK	7.8	250		6/0	45	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	12
G-OF357865							200		7/0					
G-OF351150	▽		1x	D	LZL	11	300	M	6/0	45	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	24
G-OF351155	▽		2x	D	LZL	11	300	M	6/0	45	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	24
G-OF351330	▽		1x	D	LZL	13	450	M, P	4/0	45	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	24
G-OF468545	▽		2x	V	LZ	8.5	350		5/0	45	black	multifilament <sup>1</sup>	NuSil <sup>3</sup>	12

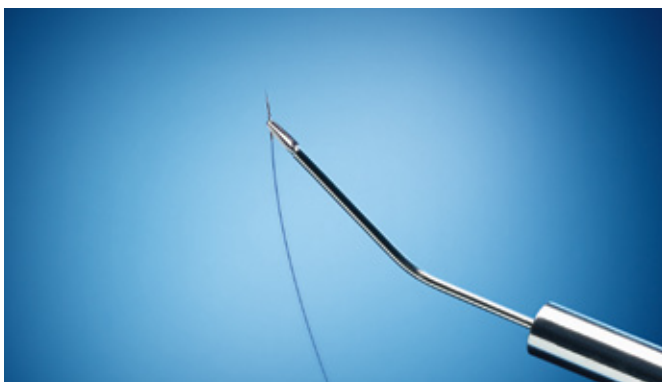
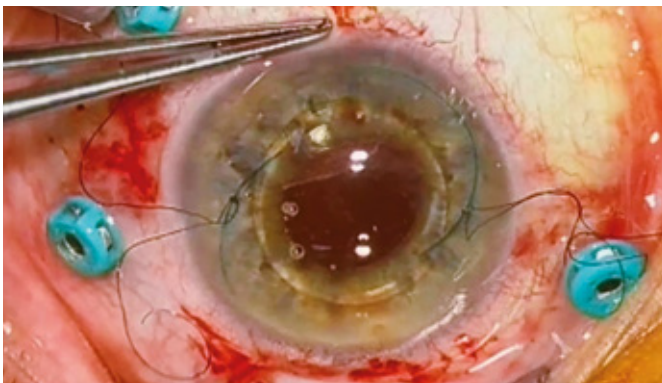
<sup>1</sup> multifilament, braided | <sup>3</sup> NuSil(R) MED-2174 (NuSil is a registered trademark of Nusil Technology, LLC)

## BIMANUAL INTRAOCULAR MICRO SUTURE INNOVATIVE MATERIAL AND NEW SUTURING TECHNIQUE BY HATTENBACH (LUDWIGSHAFEN) FOR IOL FIXATION

- Re-fixation of dislocated IOLs without changing the lens / transscleral fixation
- Iris suture / reconstruction
- Knot placement and fixation within the anterior chamber without externalizing the haptic in case of iris trauma or defect
- Easy bimanual suture handling with two paracenteses
- Small needle size enables spatially flexible, atraumatic suturing



Prof. Dr. Lars-Olof  
Hattenbach, Chairman Dept.  
of Ophthalmology, Hospital  
Ludwigshafen, Germany



ONALENE® suture material and Geuder 25G  
Hattenbach Hybrid Instruments (needle holder,  
tying forceps and scissors)

**G-OE172080**

**ONALENE® PP**

GRS-2,0-100 9/0, 10 cm, black

**G-OE172090**

**ONALENE® PP**

GRS-2,0-100 10/0, 10 cm, black



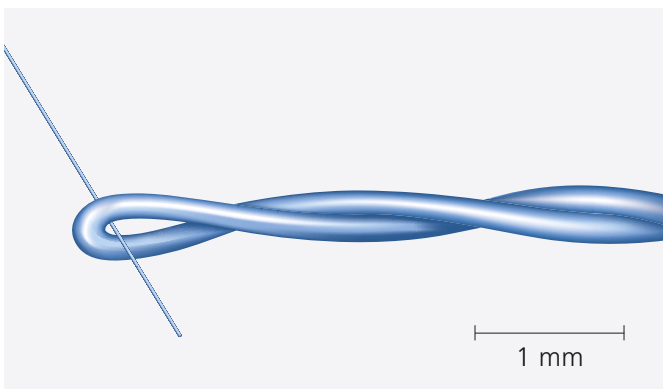
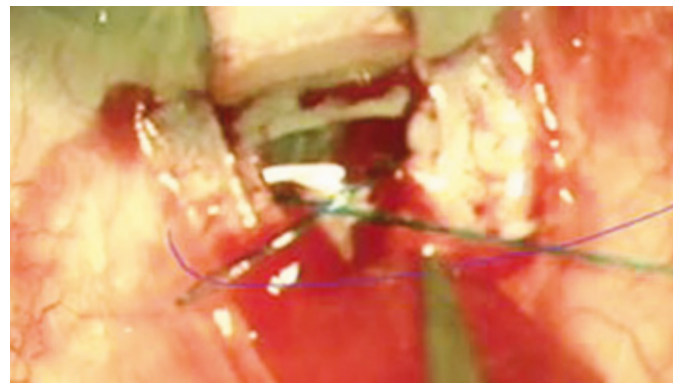
## ALL-IN-ONE SOLUTION FOR NON-FILTRATING GLAUCOMA SURGERY

### ADVANTAGES OF ONALENE® SUTURE PROBE CANALOPLASTY BY KODOMSKOI (OFFENBURG, GERMANY)

- Safe and permanent widening of Schlemm's canal
- Tissue-protecting due to atraumatic tip design
- Spiral structure of suture probe enables intraoperative assessment of function and condition of the venous collectors
- Easy and solid fixation of the implant



Leonid Kodomskoi  
Senior Physician at  
Ortenau Eye Clinic,  
Offenburg, Germany



**G-OEX1**  
**ONALENE® PP**  
GRS-5,0-100 10/0, 16 cm, blue

**ONALENE® PP**  
GLZL-13,0-430 6/0, 8 cm, blue

ONALENE® 6/0 twisted suture probe (for temporary grip)  
ONALENE® 10/0 implant (straight thin suture)

THE LABELING CONTAINS ALL IMPORTANT PRODUCT INFORMATION:

Product / suture material — **ONALON®**  
**NYLON**  
BLACK MONOFILAMENT

Suture diameter — **10-0 USP**  
(0.2metric)

Suture length — **4" / 10cm**

**LOT** LOTCODE  
YYYY-MM-DD

CE **STERILE EO**

**REF** **OL144890**  
NON-ABSORBABLE

DRS-5.0-100  
TAPER POINT  
3/8c 5.0mm

**12**

① 0001

(01)10848782032836  
(17)YYMMDD  
(10)LOTCODE

Order number

Packaging unit  
Pieces per box

Version number  
of the label

Needle type

Needle shape

® onatec **Made in Germany**



For further information,  
please visit our Website:  
<https://www.geuder.de/en/products/suture-materials/>

Manufacturer of Onatec suture materials:  
**CE 2797** FSSB Chirurgische Nadeln GmbH (Jestetten, Germany)  
**CE 1639** Surgical Specialties Mexico S. de R.L. der C.V.

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Illustrations not drawn to scale.