

Rauschert auf einen Blick



Technical Ceramics



Electroceramics



Ceramics for lightning



Ceramic components for textile machines



Ceramics for mechanical engineering



High temperature ceramics



Infrared heater plates



Ceramic honeycombs



Welding back-ups



Elektro heat ceramics



Ignition components



Ceramic coating



Ceramic sealing and regulation discs



Ceramic parts for pumps



Functional ceramics



Plastik Injection Moulding



2-component plastic parts



System components



Assemblies (ceramics/metal/plastic)

Rauschert Ceramic Thread Guides

Rauschert is a leading European manufacturer of ceramic components. Our Textile Ceramic Product Division is an important and successful part of Rauschert's business and the management and employees are committed to continuous improvement and customer service into the future.

The sales Offices for Rauschert textile ceramic products are located in: Pressig/Germany, Baar/Switzerland and Shanghai/China.

Take advantage of the Rauschert experience!

Send us your enquiries!

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With more than 100 years experience in supplying industrial customers Rauschert can also be a reliable partner for you.

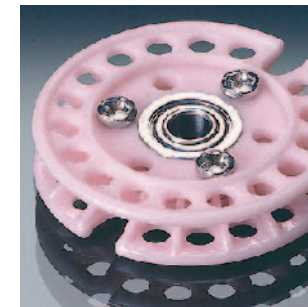
With 1.500 employees in 13 countries and 17 manufacturing plants Rauschert is meeting today's international challenges.

Please request our literature or visit us on our website!

www.rauschert.com



Experienced, Flexible, Reliable.



Ceramic Thread Guides RAPAL®

Catalogue

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100 Rauschert
Years Experience

Table of Content

Keramische Fadenführer von Rauschert

Mit über 100 Jahren Erfahrung in der Herstellung von Keramik im Zentrum der europäischen Textilindustrie, ist Rauschert als Keramikhersteller hervorragend geeignet, Qualität und Wissen über Anwendungen an die Textilindustrie weltweit anzubieten.

Mit einem ausgewählten Team von Ingenieuren, Technikern und Experten für textile Anwendungen ist Rauschert ein führender Hersteller von Fadenführern und ist vorbereitet, die Textilindustrie bei der Entwicklung innovativer Produkte für das 21. Jahrhundert zu unterstützen.

Lassen Sie Rauschert dabei helfen Ihre textilen Prozesse zu verbessern.

Rauschert bietet eine große Reihe von Keramikmaterialien mit jeweiligen Eigenschaften an, die gut geeignet sind verschiedene Probleme im textilen Bereich zu lösen.

Liste der Materialien und deren Eigenschaften

Physikalische Eigenschaften	Einheit	Rapal®	Rapal® 100	Rapal® 200	Rapal® 200AZ	Titania	Zirconia Y	Zirconia M
Aluminiumoxidgehalt	Gewicht %	98,0	99,7	99,7	85	-	-	-
Zirkonoxidgehalt	Gewicht %	-	-	-	15	-	95	96
Titanoxidgehalt	Gewicht %	-	-	-	-	92	-	-
Dichte	g/cm ³	3,70	≥3,85	>3,9	4,1	4,05	>5,85	≥5,65
Farbe		weiß/rot	weiß/rot	elfenbein/pink	weiß	creme	weiß	gelb
Porosität	%	0	0	0	0	0	0	0
Wärmeleitfähigkeit	W / m · K	20	25	25	23	2,5	2,5	2,0
Vickershärte	HV 10	1500	1800-2000	1800-2000	1600	1100	1200-1400	1100

Reibung

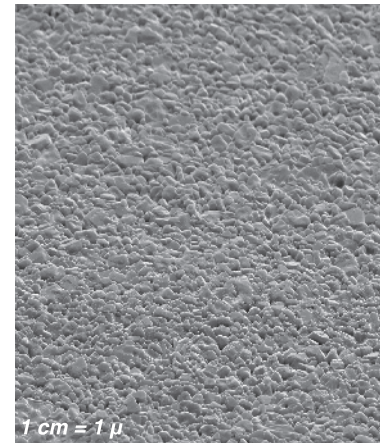
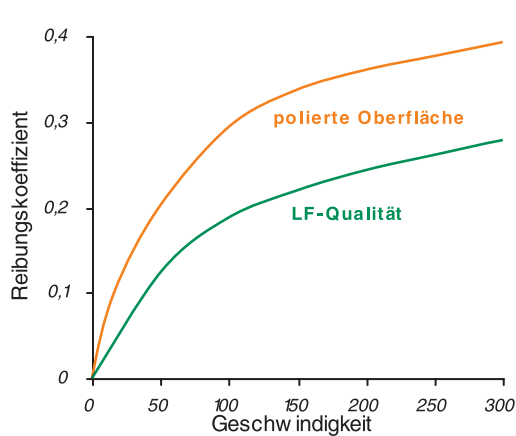
In jedem textilen Prozess ist es normalerweise wünschenswert, die Fadenspannung zu minimieren. Um dies zu erreichen muss die Reibung zwischen dem bewegten Garn und der keramischen Kontaktoberfläche kontrolliert werden. Die Reibungskraft ist vor allem aus zwei Komponenten zusammengesetzt:

- die abrasive Kraft
- die Adhäsionskraft

Für ein bestimmtes Garn (z. B. verdreht oder flach) muss somit die Oberfläche so beschaffen sein, dass beide Komponenten minimiert werden. Dies kann durch eine Optimierung der Kontaktfläche und durch Minimierung der Oberflächenunebenheiten erreicht werden.

Fehler hierbei führen entweder zu starkem ‚Schnee‘ oder zu gebrochenen Garnfilamenten/Schlingen und zu hohen Fadenspannungen. Rauschert hat eine Reihe von hochqualitativen Keramikmaterialien und verschiedene Fertigungsprozesse entwickelt, um dies zu vermeiden. Darüber hinaus ist Rauschert in der Lage, mit der Hilfe eines Reibwertmessgerätes bei der Verbesserung der textilen Prozesse Unterstützung zu leisten.

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3.90142 P	18	3.91776	30	3.94488	12	3.94732/8930 P	29
3.90146	30	3.91776 R	30	3.94490	20	3.94749	14
3.90151	25	3.91779	30	3.94501/8803	8	3.94751 LF	20
3.90153	30	3.91797 R	30	3.94517 GP	21	3.94751 PIP	20
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3.90264 GP	17	3.9316/8820	11	3.94600	13	3.97480	32
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3.90337 SP	27	3.94006 G	24	3.94616/8803	8	3.99003	28
3.90338 GP	28	3.94013 R	20	3.94616/8811	8	3.99004	28
3.90340 GP	19	3.94016	23	3.94616/8816	9	7.8902/4	15
3.90347 P	27	3.94028	23	3.94632/8858	9	7.8902/5	15
3.90361 GP	18	3.94036	30	3.94646/8812	10	7.8903/4	15
3.90362 AZP	19	3.94055 R	26	3.94647/8812	10		
3.90363 GP	18	3.94094/8859	9	3.94648/8812	10		
3.90363/1 GP	18	3.94116	13	3.94650 PIP	25		



Friktionsdiagramm

polierte Oberfläche

LF-Qualität

Typische Anwendungen von Rauschert-Fadenführern

Schmelzspinnen

Rauschert bietet eine umfassende Auswahl von Fadenölen an, die für eine Reihe von unterschiedlichen Garnen und Spinnengeschwindigkeiten von LOY und POY bis zu HOY und FDY geeignet sind. Die Oberfläche Rapal 200 NE bietet die niedrigst mögliche Reibung für Hochgeschwindigkeits-Anwendungen.

Ergänzend hierzu gibt es eine große Reihe von Changierfadenführern und anderen Fadenführern für verschiedene Arten von Maschinen.

Strecktexturieren

Rapal 200 ist ein feinkörniges sehr reines Aluminiumoxid, das besonders für die hohen Anforderungen des ‚Hochgeschwindigkeits-Strecktexturieren‘ geeignet ist. Bei jeder Stufe des DTY-Prozesses muss sowohl die Oberflächenqualität als auch die Oberflächenrauheit der Fadenführer genau kontrolliert werden, um ein fehlerfreies Endprodukt zu erreichen.

Rauschert bietet bekannte Formen von Einlassführungen für Heizer, Aufwickelfadenführer und Drallstopper in einer Reihe von Materialien und Oberflächenbeschaffenheiten einschließlich diamantpoliert, LF-Qualität (N, NE, PN) und natürlicher Oberflächen. Alle Qualitäten wurden für die schnell laufenden und wechselnden Garnfigurationen entwickelt.

OE-Spinnen

Rauschert bietet eine große Reihe von hochglanzpolierten Keramikabzugsdüsen mit oder ohne Metallhalterungen an.

Andere textile Prozesse

Rauschert liefert ein breites Standardsortiment an Fadenführern für die Strickerei oder Weberei.

Toleranzen

Toleranzen für normale Produktion sind $\pm 2\%$ für Maße über 10 mm und $\pm 0,2$ mm für Maße unter 10 mm.

Wenn jedoch engere Toleranzen benötigt werden, kann dies durch Präzisionsschleifmaschinen erreicht werden.

Rauschert Ceramic Threadguides

Introduction

With over 100 years experience of ceramic manufacturing in the heart of the European textile machinery industry, Rauschert is uniquely placed in offering ceramic materials, quality and applications knowledge to the textile industry worldwide. With its dedicated team of engineers, technologists and textile application experts, Rauschert is the leading German manufacturer of yarn guides and is committed and prepared to serve the needs of the textile industry into the 21st Century. Let Rauschert help you improve your textile process.

Rauschert offers a wide range of ceramic materials, with a corresponding range of properties ideally suited to solving different textile problems.

Materials List and Properties

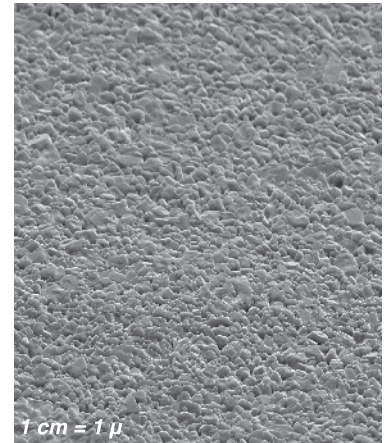
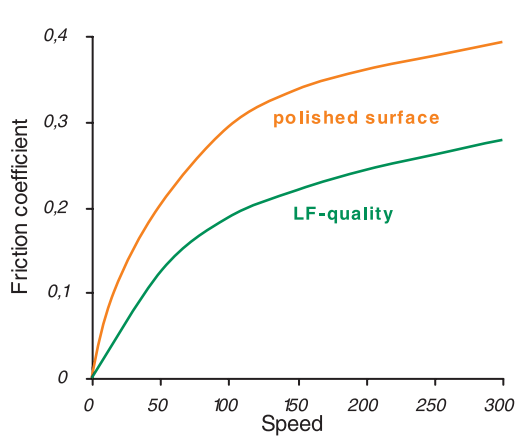
Physical Characteristics	Unit	Rapal®	Rapal® 100	Rapal® 200	Rapal® 200AZ	Titania	Zirconia Y	Zirconia M
Content of aluminium oxide	weight %	98,0	99,7	99,7	85	-	-	-
Content of zirconium oxide	weight %	-	-	-	15	-	95	96
Content of titanium oxide	weight %	-	-	-	-	92	-	-
Density	g/cm ³	3,70	≥3,85	>3,9	4,1	4,05	>5,85	≥5,65
Colour		white/red	white/red	ivory/pink	white	creme	white	yellow
Porosity	%	0	0	0	0	0	0	0
Thermal Conductivity	W / m · K	20	25	25	23	2,5	2,5	2,0
Hardness acc. to Vickers	HV 10	1500	1800-2000	1800-2000	1600	1100	1200-1400	1100

Friction

In any textile process it is usually desirable to minimise yarn tensions and in order to achieve this, the friction between the moving yarn and the ceramic contact surface must be controlled. The frictional force is comprised primarily of two components:

- *the ploughing (abrasive) force*
- *the adhesive force*

It follows therefore that for a particular yarn (e.g. twisted or flat) the ceramic surface should be engineered to reduce both of these components, by optimising the actual contact area and minimising ceramic surface defects. Failure will result in either excessive 'snow', or broken filaments/loops and high yarn tensions. Rauschert has developed a range of high quality ceramic materials and special surface finishing processes in order to avoid this and furthermore, are then able to assist customers optimise their textile process with the help of a high speed Friction Meter.



Friction diagram

polished surface

LF-quality

Typical Applications for Rauschert Threadguides

Melt Spinning

Rauschert offers a comprehensive selection of spin finish applicators, suitable for a range of deniers and spinning speeds for LOY and POY to HOY and FDY.

The Rapal 200 'NE-Quality' surface is recommended as giving the lowest possible friction for high-speed applications.

Complementary to this is a full range of traverse guides and other associated guides suitable for many makes of machine.

Drawtexturing

Rapal 200 is a fine grain high purity alumina especially suited to the rigorous demands of high-speed drawtexturing. Each stage of the DTY process requires precise attention to both the surface quality and roughness of the threadguides in order to ensure a defect free end product.

Rauschert offers popular shapes of heater entry guides, take-up guides, and twiststops in a range of materials and surface finishes including diamond polished, 'LF-Quality' (N, NE, PN) and natural, all engineered to cope gently with the fast moving and changing yarn configuration.

Open-End Spinning

Rauschert offers a big range of highly polished ceramic navels with or without metal holding device.

Other textile processes

Including twisting, knitting, weaving and creels.

Dimensional Tolerances

Dimensional tolerances for normal manufacture are $\pm 2\%$ for dimensions over 10 mm and ± 0.2 mm for dimensions under 10 mm.

However should closer tolerances be necessary, then this can be arranged using precision grinding equipment.

Ceramic Friction Discs

for the texturing process

- **Working Discs**
- **Guide Discs**

Ceramic manufacturing from raw-material to finished product

- Rauschert now manufactures ceramic friction discs for all PES-, PA- und PP-Texturing Processes.
- The friction discs can be used in all common makes of Friction Units.

Product Characteristics

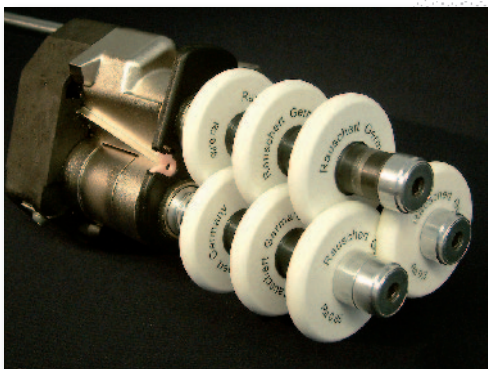
- high deformation resistance
- stable roughness values
- good shock resistance
- high regularity
- long life-time

Process Characteristics

- high yarn speed
- yarn gentle
- low snow
- low yarn tension forces T1 / T2
- Titer range up to dtex 330

Textile Technology

- high yarn strength
- very good elongation values
- excellent crimp contraction
- high crimp stability
- consistent yarn quality



Send us your enquiries!

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Postfach 1162
D-96329 Pressig

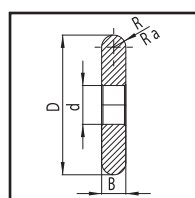
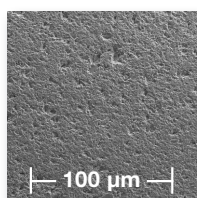
Phone (0049) 9265-78-0
Fax (0049) 9265-78-10899
eMail info.prg@rauschert.de

Working Discs						
part-number		diameter	bore	thickness	radius	roughness
Rauschert	CICE	D [mm]	d [mm]	B [mm]	R [mm]	Ra [µm]
90531-1	GAL 6045 T195 0,85	52	14,45	9	5,5	0,85
90554-2	GAL 6025 T195 1,30	45	12	6	3,7	1,3
90555-3	GAL 6012 T195 0,85	49,62	12	6	3,5	0,85
90531-4	GAL 6045 T195 1,10	52	14,45	9	5,5	1,1
90554-4	GAL 6025 T195 0,85	45	12	6	3,7	0,85
90531-3	GAL 6045 T195 1,30	52	14,45	9	5,5	1,3
90606-1	GAL 6064 T195 0,85	52	12	9	5,5	0,85

Guide Discs						
part-number		diameter	bore	thickness	radius	roughness
Rauschert	CICE	D [mm]	d [mm]	B [mm]	R [mm]	Ra [µm]
90531-2	GAL 6045 T199 0,30	52	14,45	9	5,5	0,30
90554-1	GAL 6025 T195 0,30	45	12	6	3,7	0,30
90554-3	GAL 6025 T199 0,30	45	12	6	3,7	0,30
90551-2P	GAL 6064.03 T199 0,30	52	12	9	5,5	0,30
90555-1	GAL 6012 T199 0,30	49,62	12	6	3,7	0,30
90555-2	GAL 6012 T195 0,30	49,62	12	6	3,7	0,30

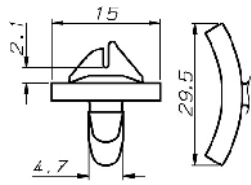
Other types available on request

Reference Data to texturing process						Working Discs / Guide Discs					
No.	Titer	Process Speed	Heater Temperature	Draw ratio	D / Y	Friction Discs	Disc Arrangement	Yarn tension force at friction unit	Tenacity	Crimp Contraction	Crimp stability
		[m/min]	[° C]			[ØxB]		T1 / T2 [cN]	[cN/dtex]	[%]	[%]
1	PES dtex 167 f30	800	420	1,72	2,00	52x9	1-8-1	71 / 69	4,10	42,9	91,8
2	PES dtex 167 f30	700	220	1,70	2,00	52x9	1-8-1	62 / 60	4,06	46,8	94,3
3	PES dtex 110 f36	800	360	1,60	2,00	52x9	1-8-1	44 / 42	4,17	40,6	89,0
4	PES dtex 76 f24	900	340	1,62	2,00	52x9	1-8-1	36 / 34	4,32	46,5	88,8
5	PA 6.6 dtex 78 f23	800	330	1,40	2,00	52x9	1-7-1	44 / 44	4,59	41,7	94,7
6	PA 6.6 dtex 44 f13	900	300	1,40	2,00	52x9	1-7-1	25 / 25	4,54	55,3	96,2
7	PA 6.6 dtex 22 f7	900	240	1,32	2,00	52x9	1-6-1	13 / 15	4,68	59,2	96,2
8	PA 6.6 dtex 33 f34	700	202	1,269	1,95	52x9	1-6-1	22 / 21	4,21	44,9	92,1
9	PA 6.6 dtex 78 f68	700	210	1,269	1,90	52x9	1-7-1	40 / 38	3,94	36,8	91,2



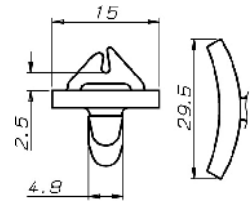
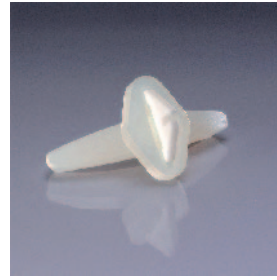
Experience, capability and clear targets

Rauschert is versatile in material, form and surface!



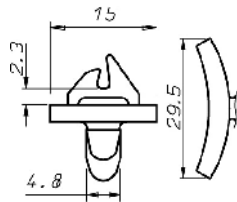
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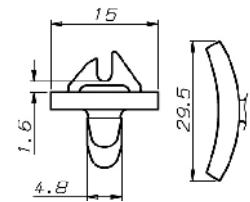
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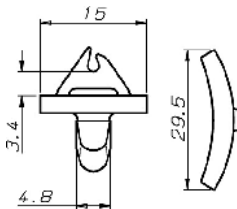
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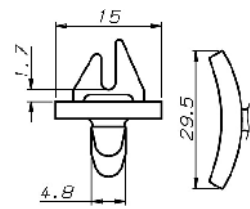
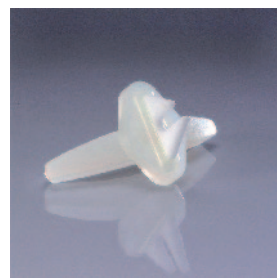
Mat: Rapal 100

Art.-No.: 3.94591/8842



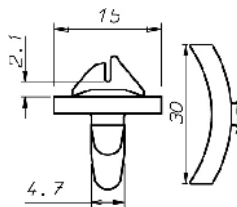
Mat: Rapal 100

Art.-No.: 3.94535/8842



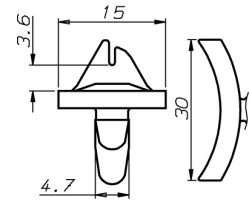
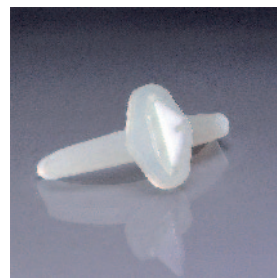
Mat: Rapal 100

Art.-No.: 3.94192/8842



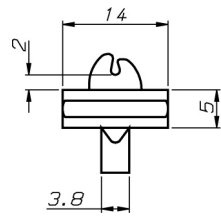
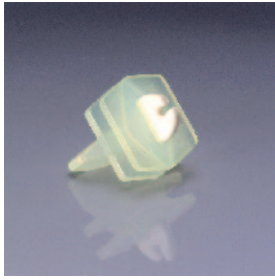
Mat: Rapal 100

Art.-No.: 3.94616/8803



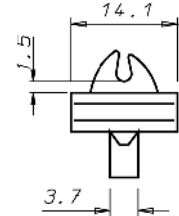
Mat: Rapal 100

Art.-No.: 3.94501/8803



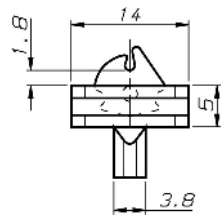
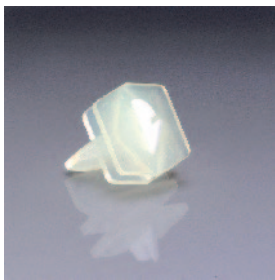
Mat: Rapal 200

Art.-No.: 3.94632/8858



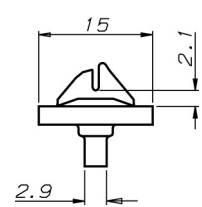
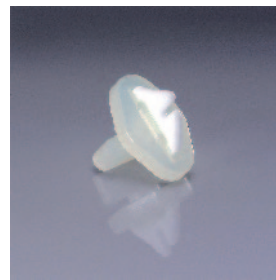
Mat: Rapal 100

Art.-No.: 3.94403/8858



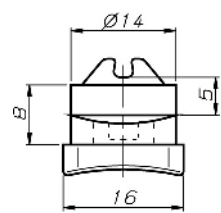
Mat: Rapal 100

Art.-No.: 3.94282/8858



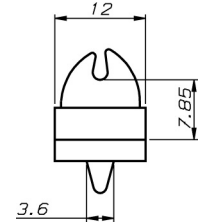
Mat: Rapal 100

Art.-No.: 3.94616/8816



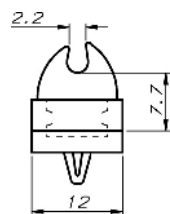
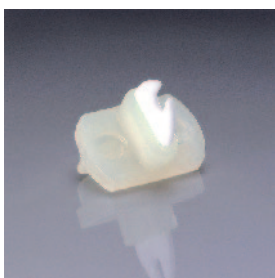
Mat: Rapal 200 PI

Art.-No.: 3.94658/8868 PI



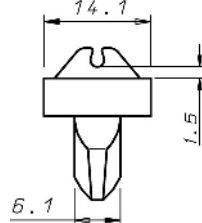
Mat: Rapal 100

Art.-No.: 3.94094/8859



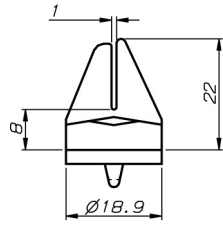
Mat: Rapal 100

Art.-No.: 3.94145/8807



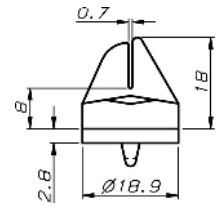
Mat: Rapal 100

Art.-No.: 3.94519/8838



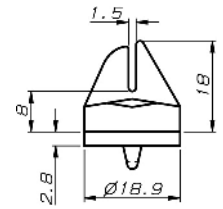
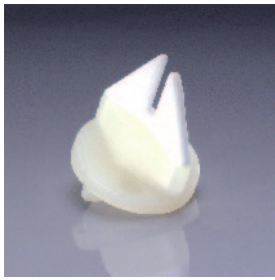
Mat: Rapal 100

Art.-No.: 3.9366/8805



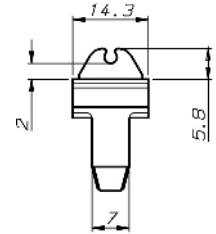
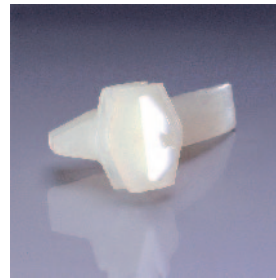
Mat: Rapal 100

Art.-No.: 3.9367/8805



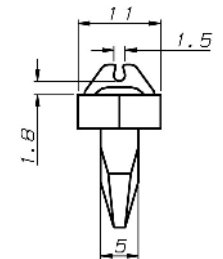
Mat: Rapal 100

Art.-No.: 3.9378/8805



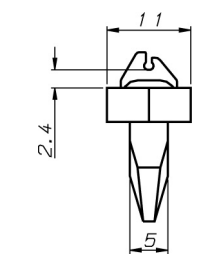
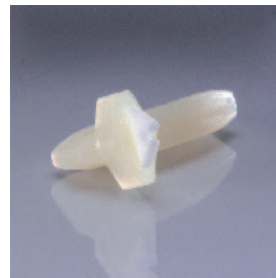
Mat: Rapal 100

Art.-No.: 3.9322/8839



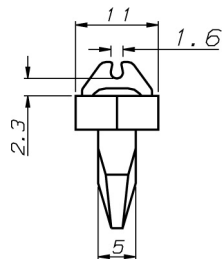
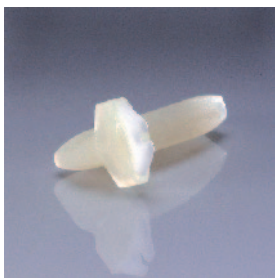
Mat: Rapal 100

Art.-No.: 3.94646/8812



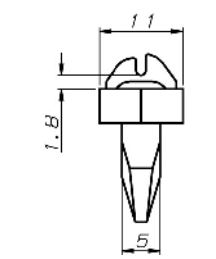
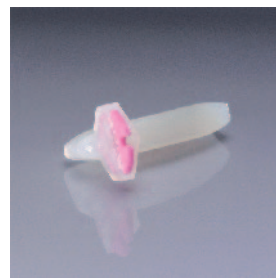
Mat: Rapal 100

Art.-No.: 3.94647/8812



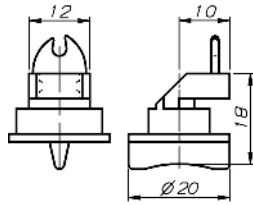
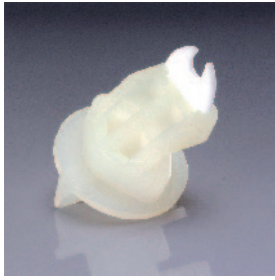
Mat: Rapal 100

Art.-No.: 3.94648/8812



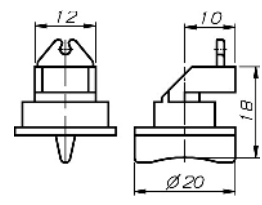
Mat: Rapal 100 R

Art.-No.: 3.94706/8812 R



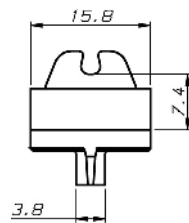
Mat: Rapal 100

Art.-No.: 3.94145/8837



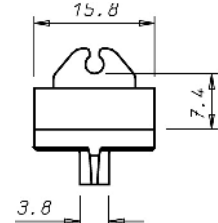
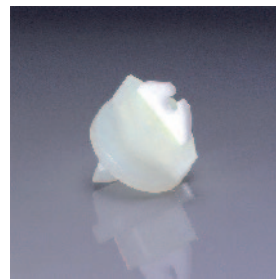
Mat: Rapal 100 R

Art.-No.: 3.94601/8830 R



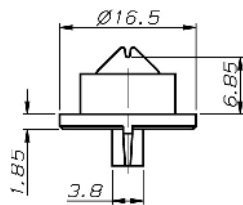
Mat: Rapal 100

Art.-No.: 3.9316/8820



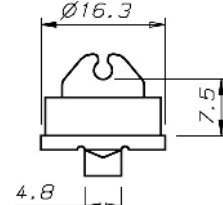
Mat: Rapal 100

Art.-No.: 3.94406/8820



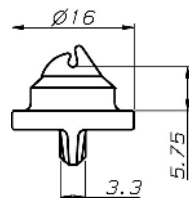
Mat: Rapal 100

Art.-No.: 3.94379/8834



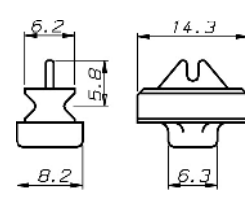
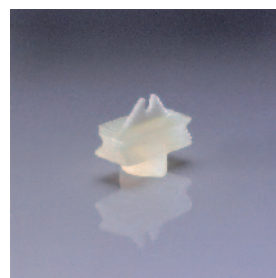
Mat: Rapal 100

Art.-No.: 3.94406/8844



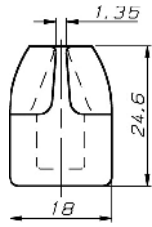
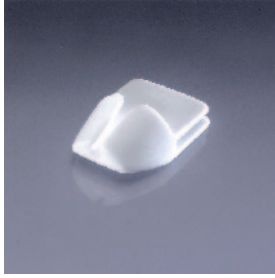
Mat: Rapal 100

Art.-No.: 3.94282/8814



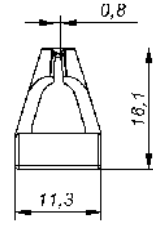
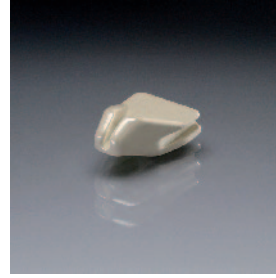
Mat: Rapal 100

Art.-No.: 3.94228/8832



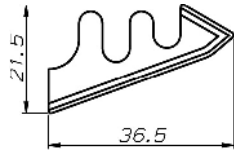
Mat: Rapal 100

Art.-No.: 3.94488



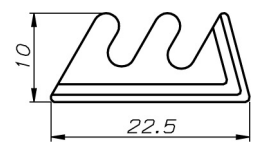
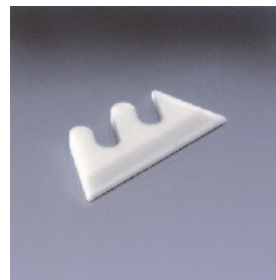
Mat: Titania

Art.-No.: 3.94795 GP



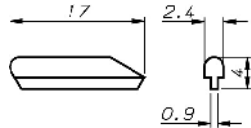
Mat: Rapal 200

Art.-No.: 3.90186



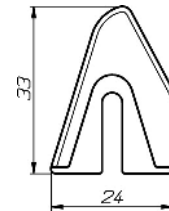
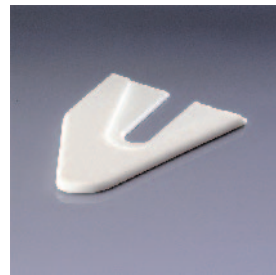
Mat: Rapal 200

Art.-No.: 3.90185



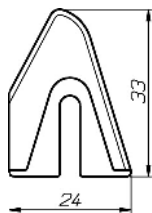
Mat: Rapal 100

Art.-No.: 3.94382



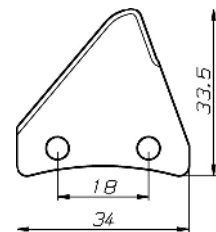
Mat: Rapal 200 AZ

Art.-No.: 3.90265 AZ



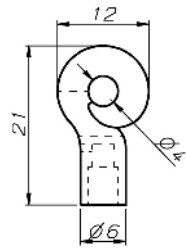
Mat: Rapal 200 AZ

Art.-No.: 3.90266 AZ



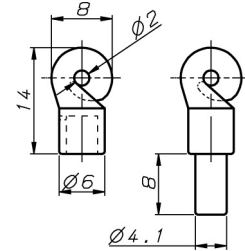
Mat: Rapal 200 AZ

Art.-No.: 3.90267 AZ



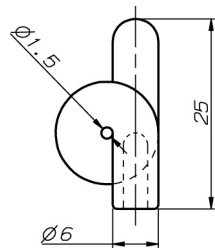
Mat: Rapal 100 R

Art.-No.: 3.94537 R



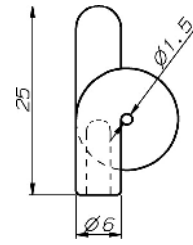
Mat: Rapal 200
with metal holder

Art.-No.: 3.94565
Art.-No.: 3.94565/8716



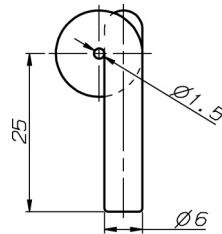
Mat: Rapal 200

Art.-No.: 3.94683



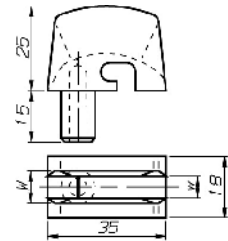
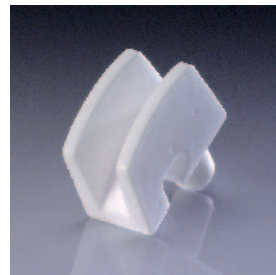
Mat: Rapal 200

Art.-No.: 3.94570



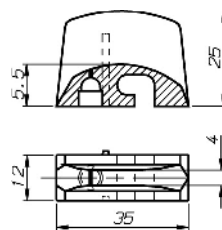
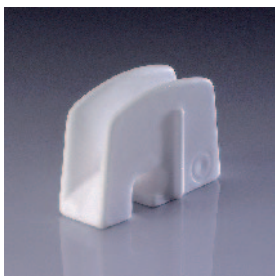
Mat: Rapal 200

Art.-No.: 3.94600



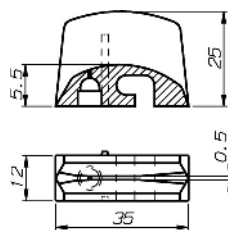
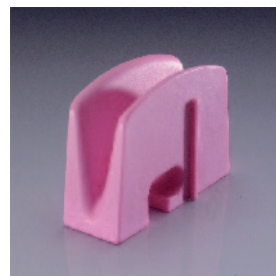
Mat: Rapal 100

Art.-Nr.	W	w
3.94608	6,0	3,0
3.94609	7,5	4,5
3.94610	10,5	7,5
3.94611	13,0	10,0



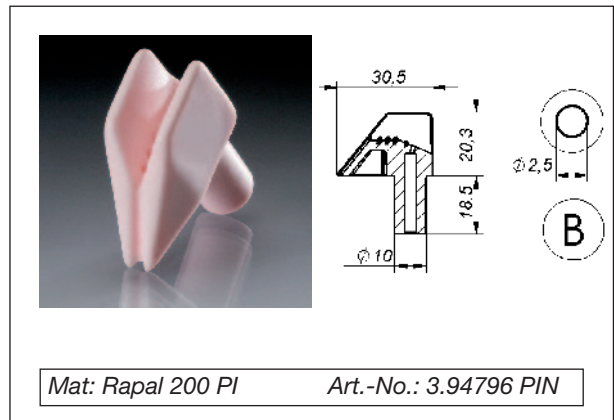
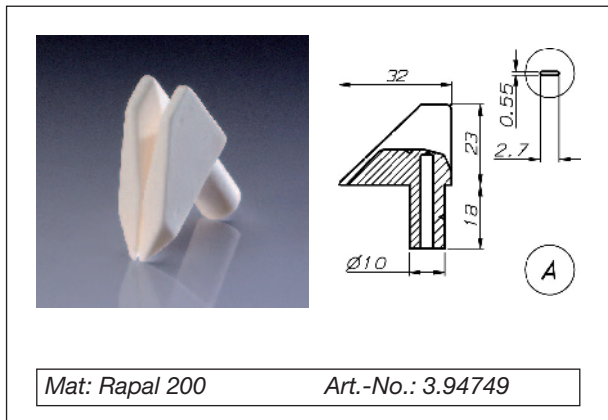
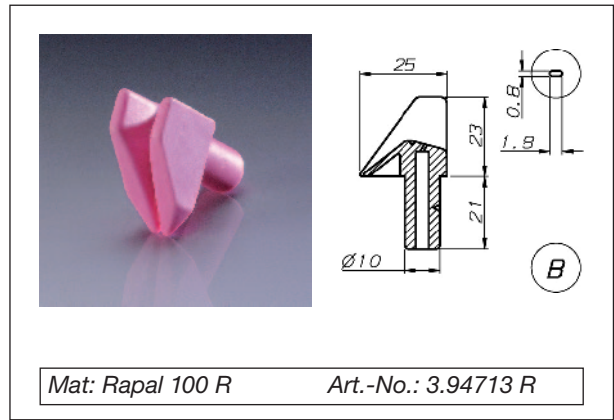
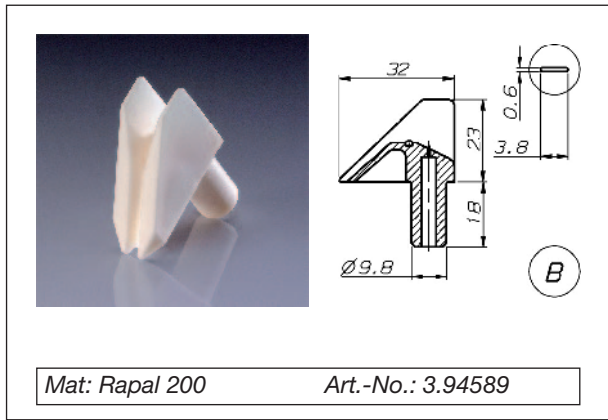
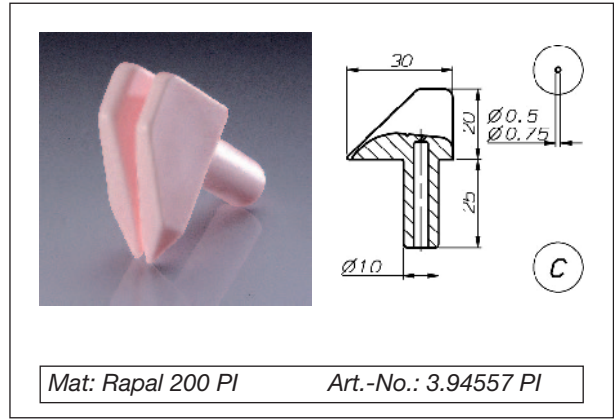
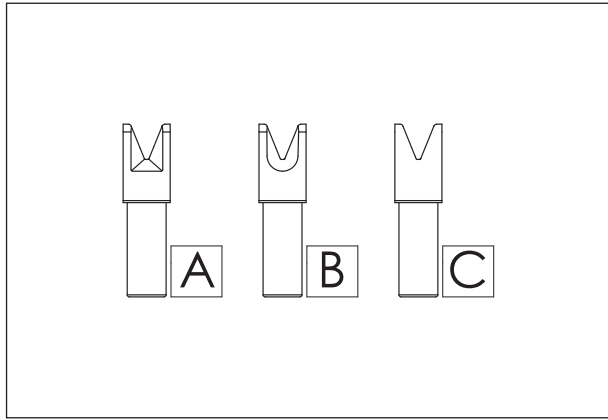
Mat: Rapal 100

Art.-No.: 3.94116



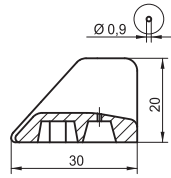
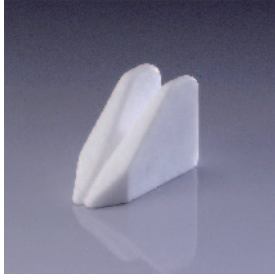
Mat: Rapal 100 R

Art.-No.: 3.94126 R



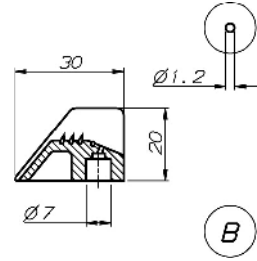
Mat: Rapal 200 PI Art.-No.: 3.94768 PI

Lustre	3.94768 / 0,6		3.94768 / 1,0		3.94768 / 2,4	
	bright	dull	bright	dull	bright	dull
HOY	NE	NE	NE	NE		
FDY				NE		
7000 m/min					E	E
speed						
2000 m/min						
POY	NE	E	NE	E	E	E
	20 den		100 den	150 den	200 den	300 den



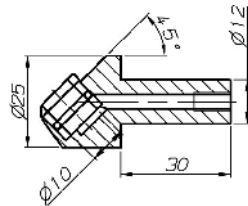
Mat: Rapal 100

Art.-No.: 3.94398

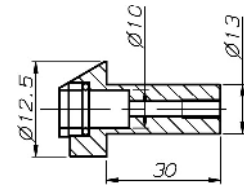


Mat: Rapal 200

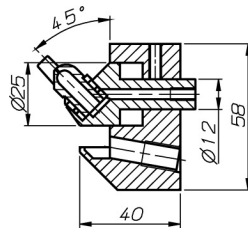
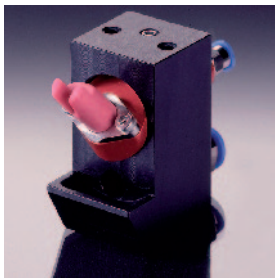
Art.-No.: 3.94726



Art.-No.: 7.8902/4

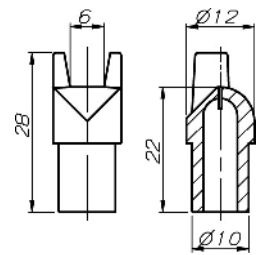


Art.-No.: 7.8902/5



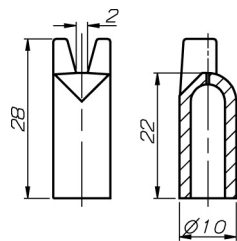
Mat: Rapal 100

Art.-No.: 7.8903/4



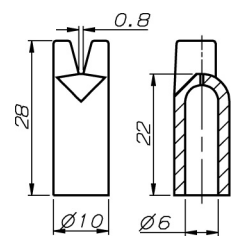
Mat: Rapal 100 R

Art.-No.: 3.94453 R



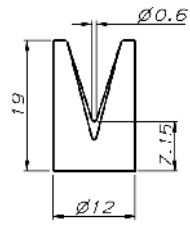
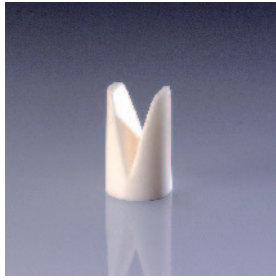
Mat: Rapal 100 R

Art.-No.: 3.94454 R



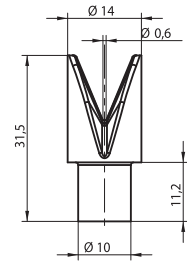
Mat: Rapal 100 R

Art.-No.: 3.94525 R



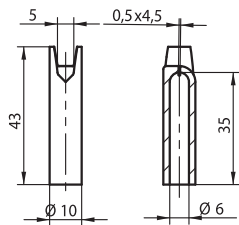
Mat: Rapal 100

Art.-No.: 3.94594 P



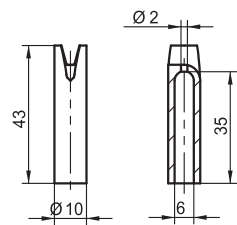
Mat: Rapal 100

Art.-No.: 3.90094



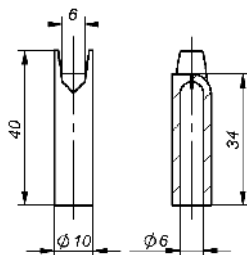
Mat: Rapal 100

Art.-No.: 3.94336/43



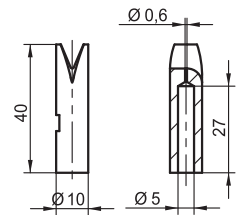
Mat: Rapal 100

Art.-No.: 3.94337/43



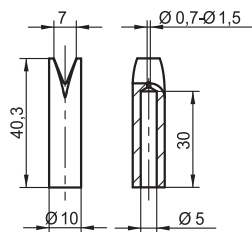
Mat: Rapal 100

Art.-No.: 3.94338/43



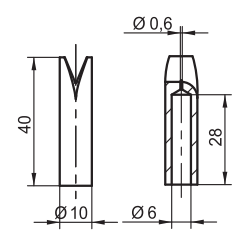
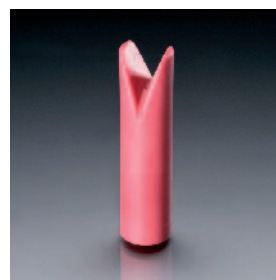
Mat: Rapal 100

Art.-No.: 3.90046/1,1



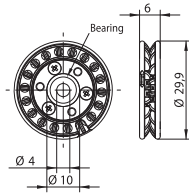
Mat: Rapal 100

Art.-No.: 3.9363/1,5

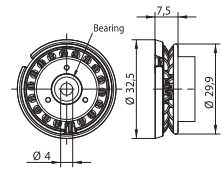


Mat: Rapal 100 R

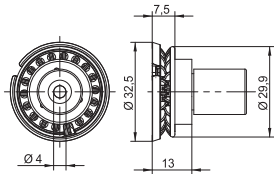
Art.-No.: 3.90227/40 R



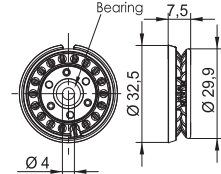
Mat: Rapal 200 PI Art.-No.: 3.94671/8765 PIP



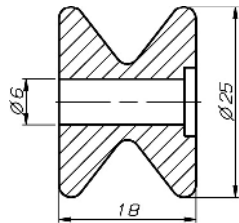
Mat: Rapal 200 PI Art.-No.: 3.94671/8766 PIP



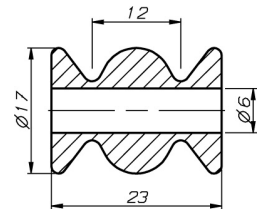
Mat: Rapal 200 PI Art.-No.: 3.94671/8722 PIP



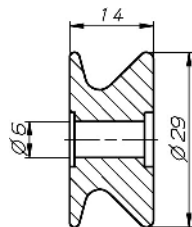
Mat: Rapal 200 PI Art.-No.: 3.94671/8741 PIP



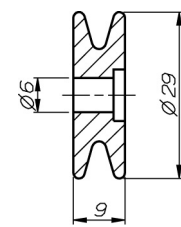
Mat: Titania Art.-No.: 3.90264 GP



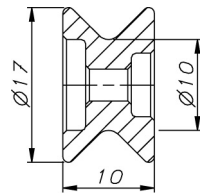
Mat: Titania Art.-No.: 3.90262 GP



Mat: Rapal 200 Art.-No.: 3.90263 P
Art.-No.: 3.90263 LF

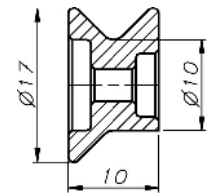


Mat: Rapal 200 Art.-No.: 3.90101 P
Art.-No.: 3.90101 LF



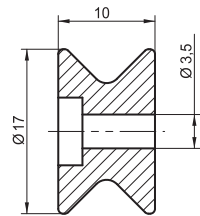
Mat: Rapal 200 AZ

Art.-No.: 3.90322 AZP



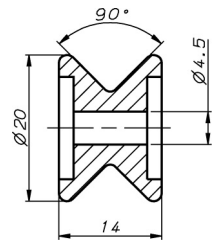
Mat: Rapal 200 AZ

Art.-No.: 3.90197 AZP



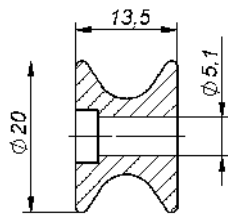
Mat: Titania

Art.-No.: 3.90361 GP



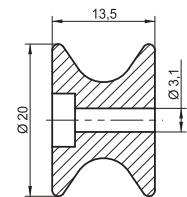
Mat: Rapal 200

Art.-No.: 3.90142 P



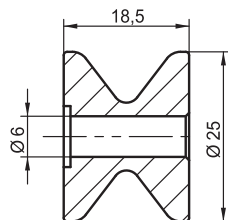
Mat: Titania

Art.-No.: 3.90363 GP



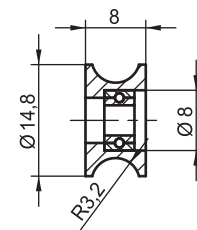
Mat: Titania

Art.-No.: 3.90363-1 GP



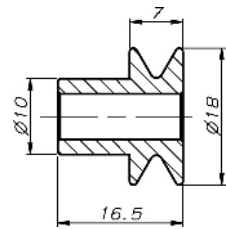
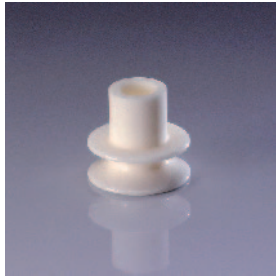
Mat: Rapal 100

Art.-No.: 3.90112



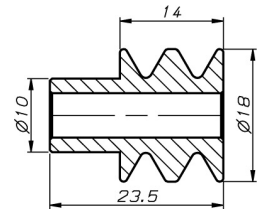
Mat: Rapal 100 R

Art.-No.: 3.92094/8724 RP



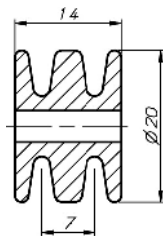
Mat: Rapal 200

Art.-No.: 3.90242 P



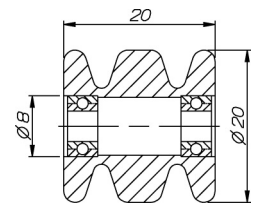
Mat: Rapal 200

Art.-No.: 3.90244 P



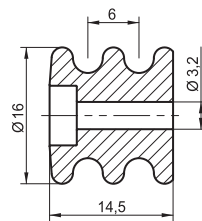
Mat: Rapal 100

Art.-No.: 3.91701



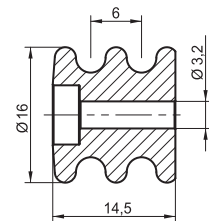
Mat: Rapal 100

Art.-No.: 3.90291/8723



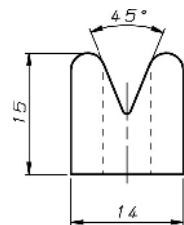
Mat: Rapal 200 AZ

Art.-No.: 3.90362 AZP



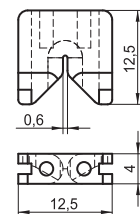
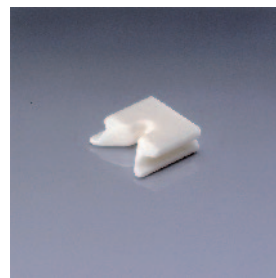
Mat: Titania

Art.-No.: 3.90340 GP




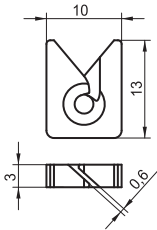
Mat: Rapal 100

Art.-No.: 3.94342 P

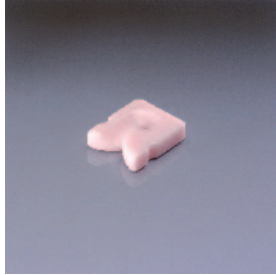
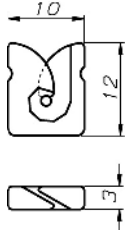


Mat: Rapal 200

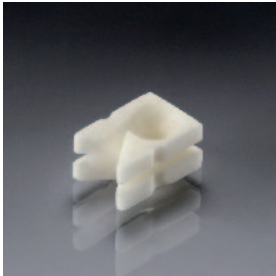
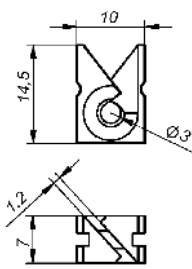
Art.-No.: 3.94487 P

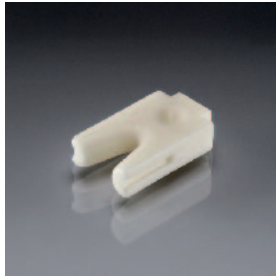
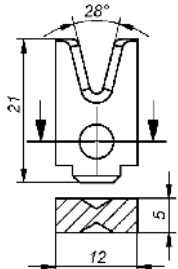
Mat: Rapal 200 PI Art.-No.: 3.94751 PIP
3.94751 LF


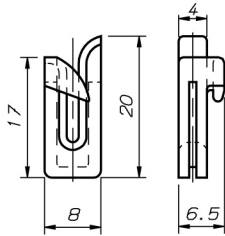
Mat: Rapal 200 PI Art.-No.: 3.94681 PI


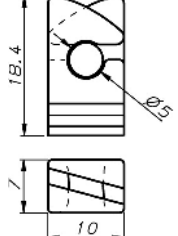
Mat: Rapal 200 Art.-No.: 3.99001


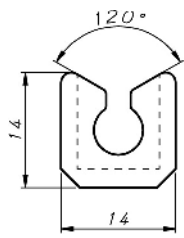
Mat: Rapal 200 Art.-No.: 3.99002


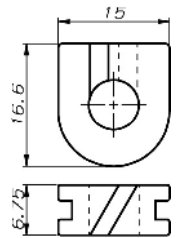
Mat: Rapal 100 Art.-No.: 3.94490

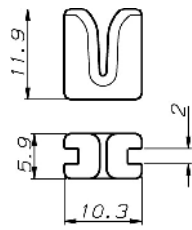
Mat: Rapal 100 R Art.-No.: 3.94144 R

Mat: Rapal 100 R Art.-No.: 3.94013 R

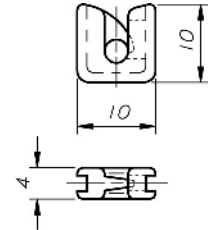



Mat: Rapal 100 Art.-No.: 3.9365 P



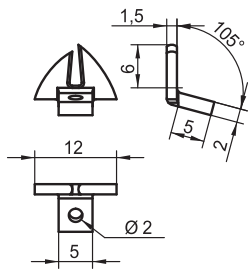
Mat: Titania

Art.-No.: 3.94752 GP



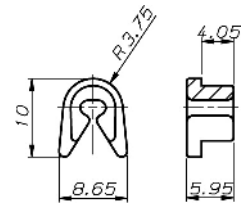
Mat: Rapal 100

Art.-No.: 3.94532



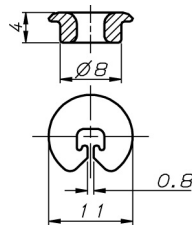
Mat: Rapal 200

Art.-No.: 3.99000



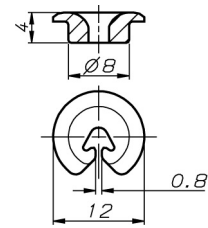
Mat: Rapal 100

Art.-No.: 3.94465



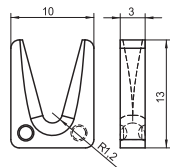
Mat: Titania

Art.-No.: 3.94793 GP



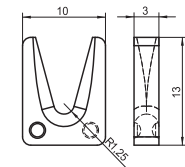
Mat: Titania

Art.-No.: 3.94517 GP



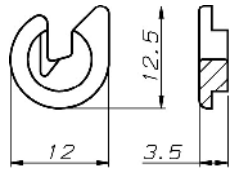
Mat: Rapal 200 PI

Art.-No.: 3.94845 PIP



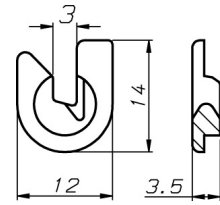
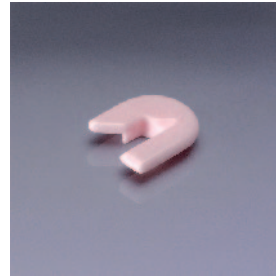
Mat: Rapal 200

Art.-No.: 3.94844 P



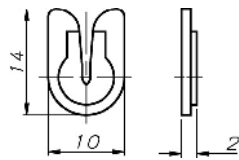
Mat: Rapal 200 PI

Art.-No.: 3.94656 PIP



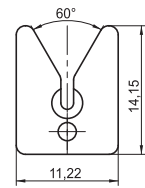
Mat: Rapal 200 PI

Art.-No.: 3.94657 PIP



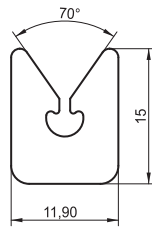
Mat: Rapal 200

Art.-No.: 3.94655 P



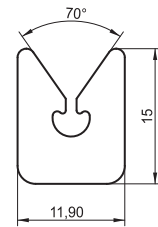
Mat: Titania

Art.-No.: 3.90367 GP



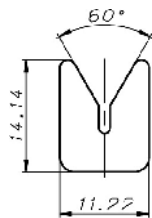
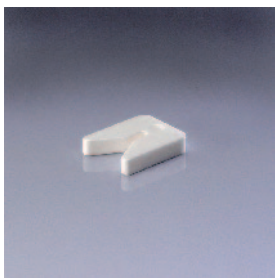
Mat: Rapal

Art.-No.: 3.90368



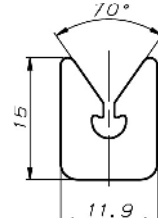
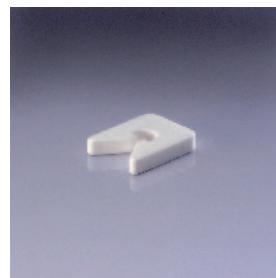
Mat: Titania

Art.-No.: 3.90368 GP



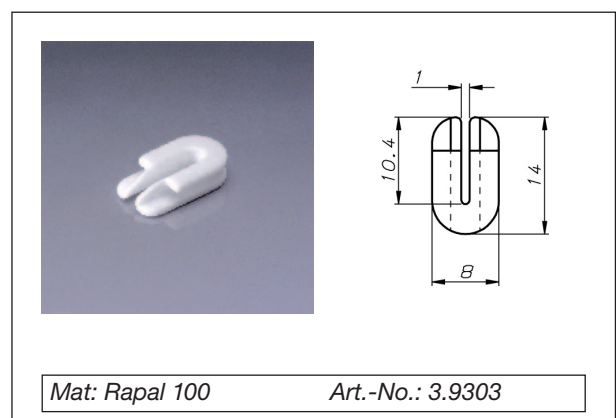
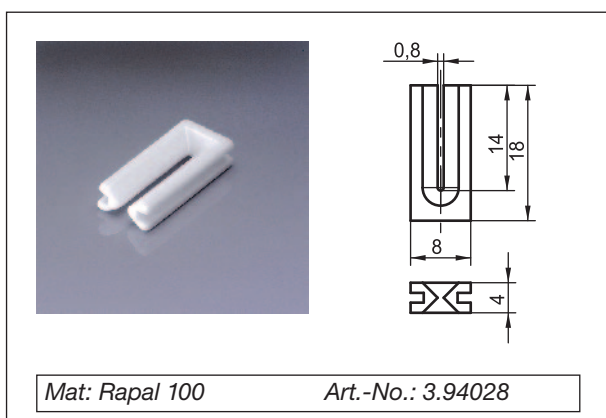
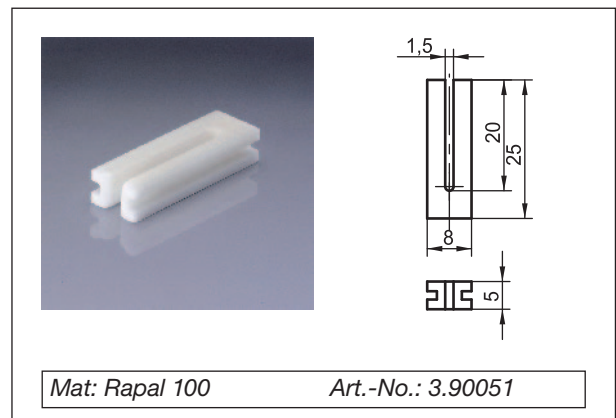
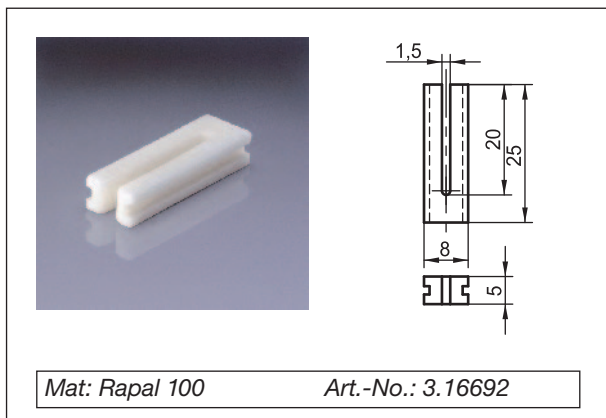
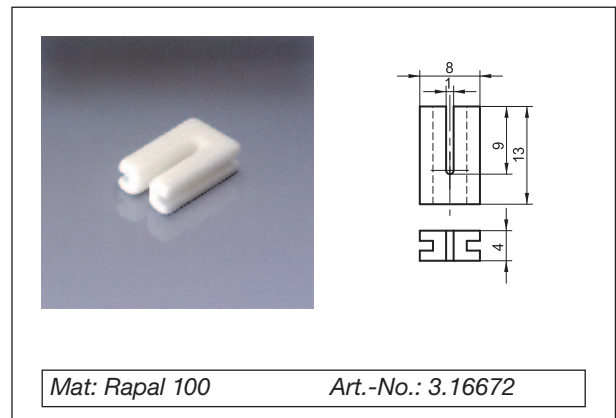
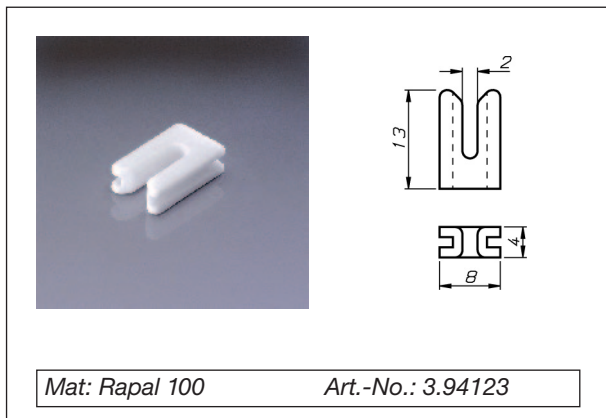
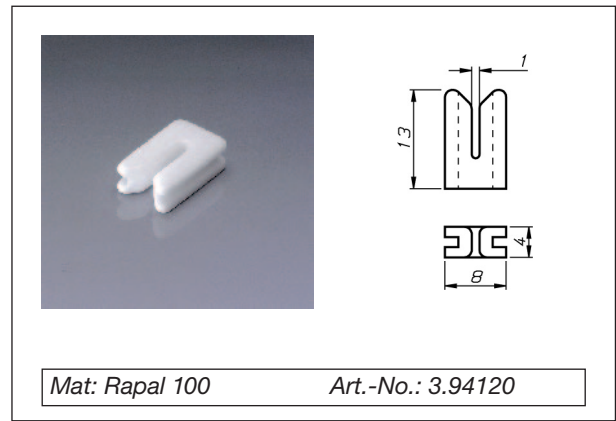
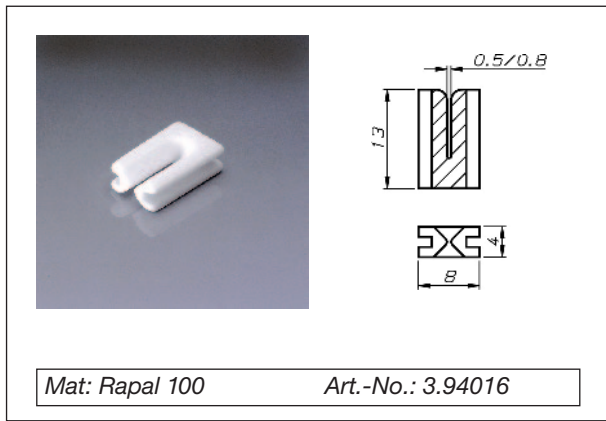
Mat: Rapal 200 AZ

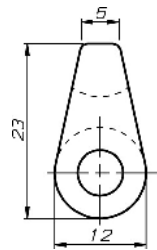
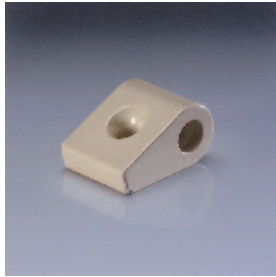
Art.-No.: 3.90125 AZP



Mat: Rapal 200 AZ

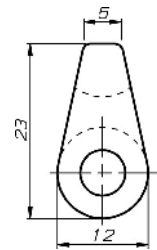
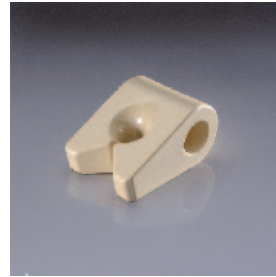
Art.-No.: 3.90124 AZP





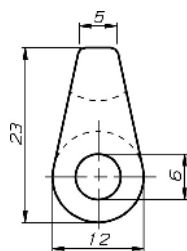
Mat: Titania

Art.-No.: 3.90300 GP



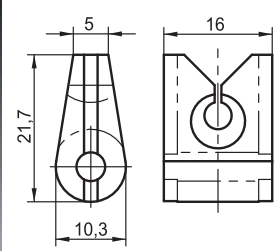
Mat: Titania

Art.-No.: 3.90258 GP



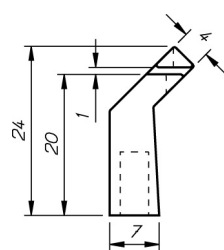
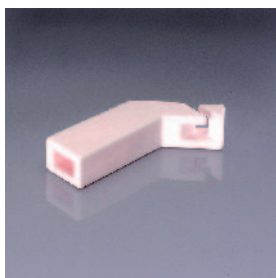
Mat: Rapal 200

Art.-No.: 3.91946 P
3.91946 LF



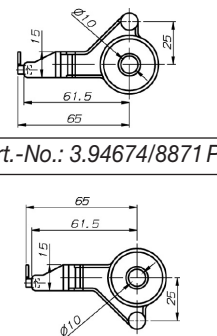
Mat: Titania

Art.-No.: 3.90366 GP



Mat: Rapal 200 PI

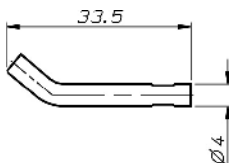
Art.-No.: 3.94696 PI



Art.-No.: 3.94674/8871 PIP

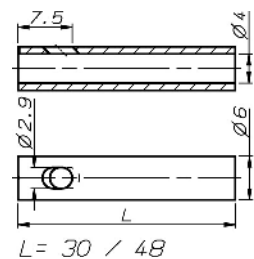
Art.-No.: 3.94674/8872 PIP

Mat: Rapal 200 PI



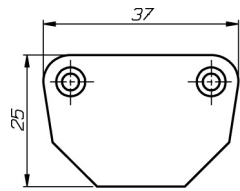
Mat: Titania

Art.-No.: 3.94006 G



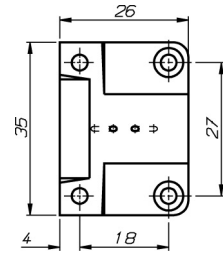
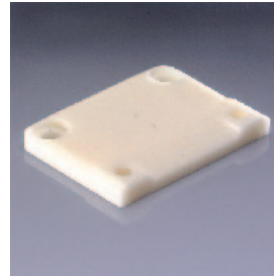
Mat: Rapal 100

Art.-No.: 3.97473 (48 mm)
3.97668 (30 mm)



Mat: Rapal 100 R

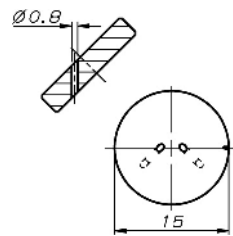
Art.-No.: 3.90174 R



Mat: Rapal 100

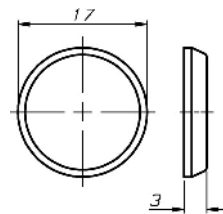
Art.-No.: 3.90173

Diameter of bore: 0,8 / 0,9 / 1,0 / 1,3



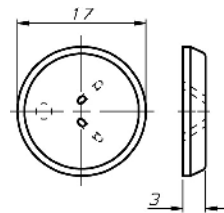
Mat: Rapal 200

Art.-No.: 3.90211



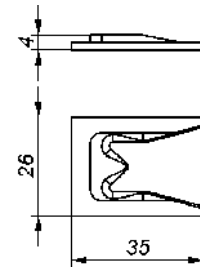
Mat: Rapal 200

Art.-No.: 3.90180



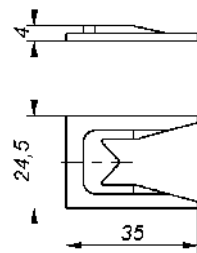
Mat: Rapal 200

Art.-No.: 3.90151



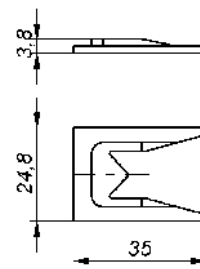
Mat: Rapal 200 PI

Art.-No.: 3.94650 PIP




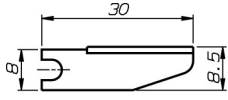
Mat: Rapal 200 AZ

Art.-No.: 3.94807 AZP




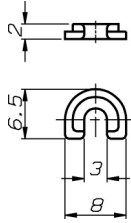
Mat: Titania

Art.-No.: 3.94808 GP


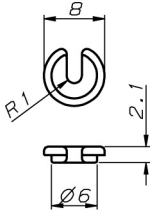



Thickness 0.5 mm


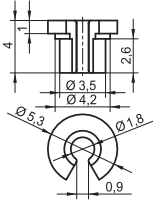
Mat: Zirconia Y Art.-No.: 3.30104


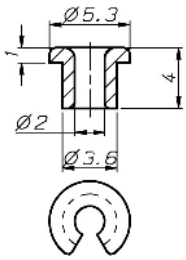
Mat: Rapal 200 Art.-No.: 3.94707

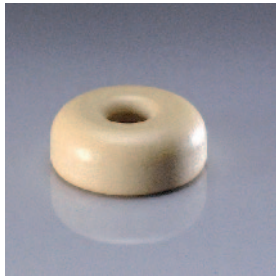
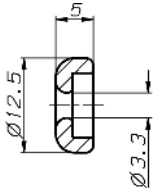
Mat: Rapal 100 R Art.-No.: 3.94055 R


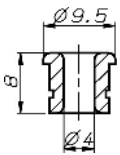
Mat: Titania Art.-No.: 3.94842 G


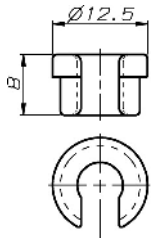
Mat: Titania Art.-No.: 3.94124 GP

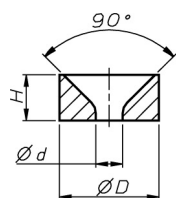
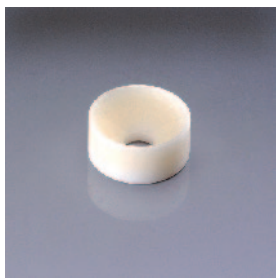
Mat: Titania Art.-No.: 3.90004 G

Mat: Rapal 100 R Art.-No.: 3.91823 R

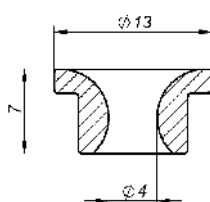



Mat: Rapal 100 Art.-No.: 3.91713



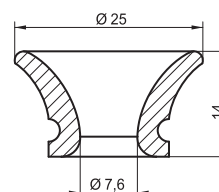
Art.-Nr.	D	d	H
3.90085	13	4,5	6
3.91721	13	3,5	6
3.90140	13	5,5	6

Mat: Rapal 200



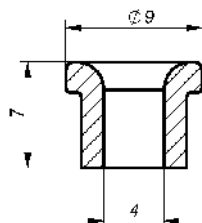
Mat: Titania C

Art.-No.: 3.90337 SP



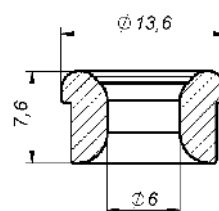
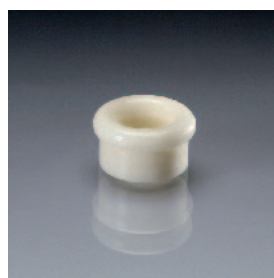
Mat: Titania C

Art.-No.: 3.90532/7.6 SP



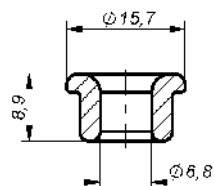
Mat: Titania C

Art.-No.: 3.90378 SP



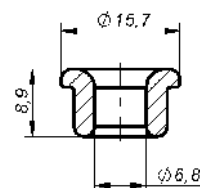
Mat: Rapal

Art.-No.: 3.90347 P



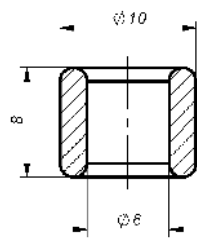
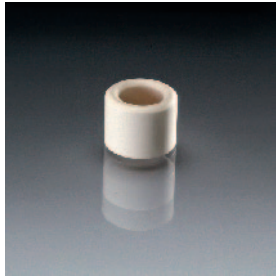
Mat: Titania C

Art.-No.: 3.90380 SP



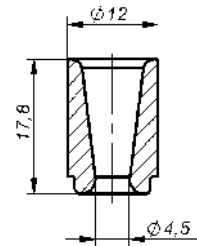
Mat: Titania

Art.-No.: 3.90380 GP



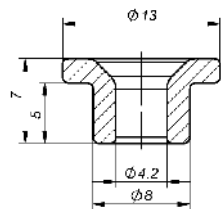
Mat: Rapal 200 AZ

Art.-No.: 3.90364 AZ



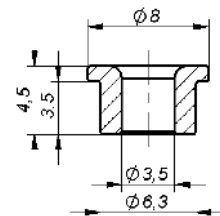
Mat: Titania

Art.-No.: 3.90338 GP



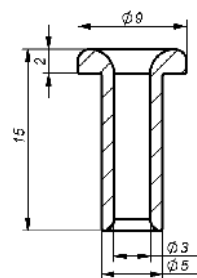
Mat: Rapal 200

Art.-No.: 3.99003



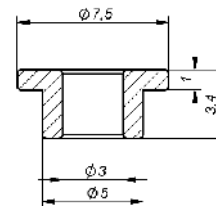
Mat: Rapal 200

Art.-No.: 3.99004



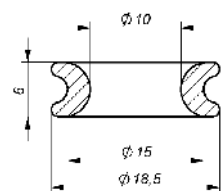
Mat: Titania C

Art.-No.: 3.90412 SP



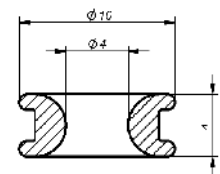
Mat: Rapal 200 PI

Art.-No.: 3.90047/3,4 PI



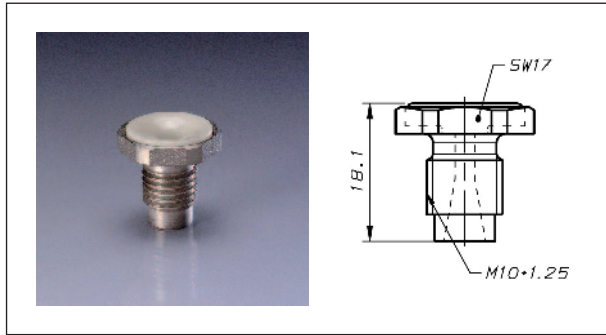
Mat: Rapal 100

Art.-No.: 3.90119 P

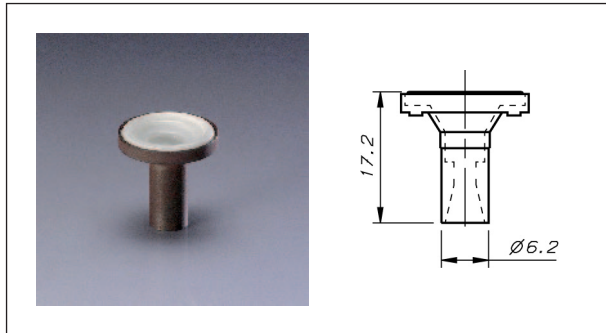


Mat: Titania

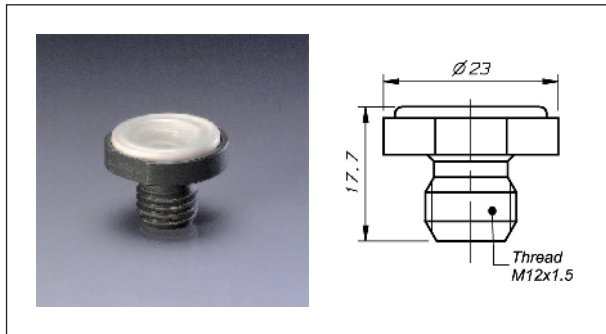
Art.-No.: 3.90416 GP



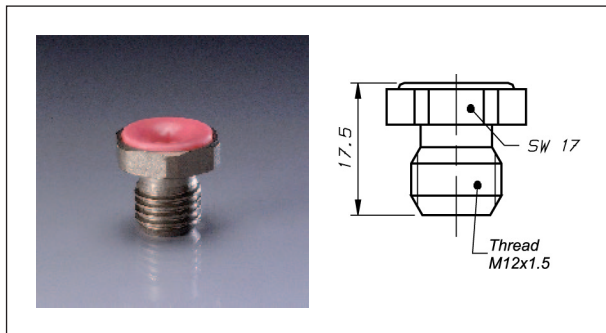
3.91989/8907 P	KN	white	
3.90076/8907 P	KN 3	white	
3.91988/8907 PIP	KN 4	pink	wide grooves
3.94709/8907 PIP	KN 4	pink	narrow grooves
3.94699/8907 P	KN 6	white	
3.91759/8907 P	KN 8	white	
3.94582/8904 P	KS	white	



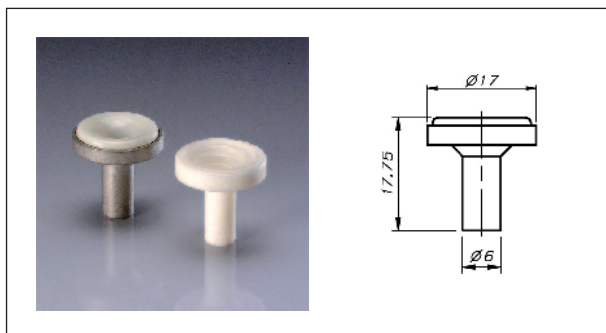
3.94781/8929 P	KN 6	white	
3.94722/8929 PIP	KN 4	pink	
3.94730/8929 P	KN 8	white	
3.94729/8929 P	KN	white	
3.94732/8930 P	KS	white	



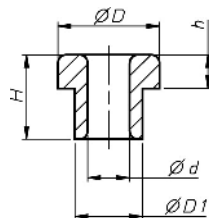
3.94583/8922 P	KS	white	
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3.91989/8920 P	KN	white	
3.90076/8920 P	KN 3	white	
3.91988/8920 PIP	KN 4	pink	wide grooves
3.94709/8920 PIP	KN 4	pink	narrow grooves
3.91759/8920 P	KN 8	white	
3.94699/8920 P	KN 6	white	



3.91989/8919 P	KN	white	
3.90076/8919 P	KN 3	white	
3.91988/8919 PIP	KN 4	pink	wide grooves
3.94709/8919 PIP	KN 4	pink	narrow grooves
3.91759/8919 P	KN 8	white	
3.94667 P	KS	white	all ceramic
3.94699/8919 P	KN 6	white	

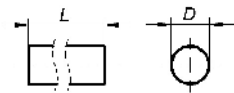


Mat: Rapal 100

**Further dimensions
on request**

Eyelets

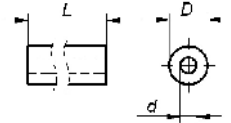
Article:	Material:	Colour:	Surface:	Dimensions:				
				D	D1	d	H	h
3.90047/3,4 PI	Rapal 100	pink	as fired	7,50	5,00	3,00	3,40	1,00
3.90047/5,0 PI	Rapal 100	pink	as fired	7,50	5,00	3,00	5,00	1,00
3.90047/6,3 PI	Rapal 100	pink	as fired	7,50	5,00	3,00	6,30	1,00
3.90079	Rapal 100	white	as fired	8,00	6,00	3,00	6,00	2,00
3.90103	Rapal 100	white	as fired	8,00	6,00	3,00	7,00	2,00
3.90103 P	Rapal 100	white	polished	8,00	6,00	3,00	7,00	2,00
3.90136	Rapal 100	white	as fired	9,70	7,70	4,20	12,00	2,00
3.90146	Rapal 100	white	as fired	17,00	12,00	7,50	14,00	5,50
3.90153	Rapal 100	white	as fired	10,50	7,50	4,00	8,50	2,00
3.90166	Rapal 100	white	as fired	15,00	13,00	9,00	10,00	1,50
3.91638	Rapal 100	white	as fired	20,80	19,20	13,70	9,20	2,20
3.91671	Rapal 100	white	as fired	12,50	10,50	6,00	8,00	3,00
3.91672	Rapal 100	white	as fired	12,00	8,00	5,00	10,00	4,00
3.91672 P	Rapal 100	white	polished	12,00	8,00	5,00	10,00	4,00
3.91678	Rapal 100	white	as fired	9,00	7,00	6,00	7,00	2,00
3.91691 P	Rapal 100	white	polished	7,80	6,20	3,20	2,60	1,00
3.91694	Rapal 100	white	as fired	5,50	4,00	2,00	6,50	1,50
3.91740	Rapal 100	white	as fired	8,50	7,50	5,00	2,90	0,90
3.91775	Rapal 100	white	as fired	7,80	6,20	3,20	4,50	1,00
3.91775 P	Rapal 100	white	polished	7,80	6,20	3,20	4,50	1,00
3.91776	Rapal 100	white	as fired	7,80	6,00	3,50	6,00	1,00
3.91776 R	Rapal 100	red	as fired	7,80	6,00	3,50	6,00	1,00
3.91779	Rapal 100	white	as fired	12,00	10,00	4,00	15,00	4,00
3.91797 R	Rapal 100	red	as fired	5,50	4,00	1,50	5,50	1,50
3.91807	Rapal 100	white	as fired	7,80	6,00	3,20	3,40	1,00
3.91822	Rapal 100	white	as fired	31,75	26,30	19,05	19,80	6,35
3.91883	Rapal 100	white	as fired	13,00	11,00	7,00	6,00	1,50
3.91939	Rapal 100	white	as fired	12,00	10,00	5,50	9,00	2,00
3.94036	Rapal 100	white	as fired	5,30	3,60	2,00	4,00	1,00
3.94160	Rapal 100	white	as fired	6,60	4,80	3,60	4,00	1,00
3.94292	Rapal 100	white	as fired	5,00	4,00	2,00	5,00	1,40



D (mm)	L (mm)	L (mm)
2 to 25	10 to 250	10 to 350

Mat: Rapal 100

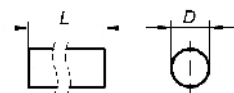
Art.-No.: 3. D x L



D (mm)	d (mm)	L (mm)	L (mm)
2 to 25	0.6 to 20	10 to 250	10 to 350

Mat: Rapal 100

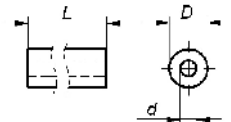
Art.-No.: 3. D x d x L



D (mm)	L (mm)	L (mm)
2 to 25	10 to 250	10 to 350

Mat: Rapal 100 R

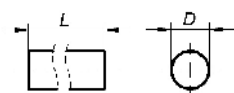
Art.-No.: 3. D x L



D (mm)	d (mm)	L (mm)	L (mm)
2 to 25	0.6 to 20	10 to 250	10 to 350

Mat: Rapal 100 R

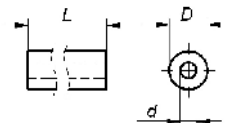
Art.-No.: 3. D x d x L



D (mm)	L (mm)	L (mm)
2 to 25	10 to 250	10 to 350

Mat: Titania

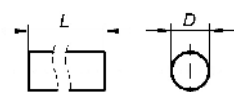
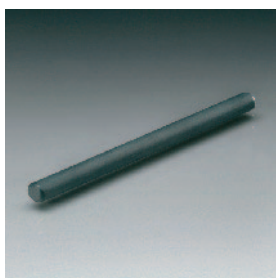
Art.-No.: 3. D x L



D (mm)	d (mm)	L (mm)	L (mm)
2 to 25	0.6 to 20	10 to 250	10 to 350

Mat: Titania

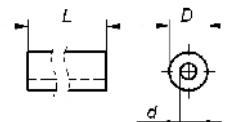
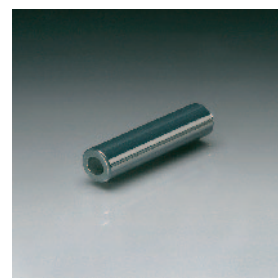
Art.-No.: 3. D x d x L



D (mm)	L (mm)	L (mm)
2 to 25	10 to 250	10 to 350

Mat: Titania (C)

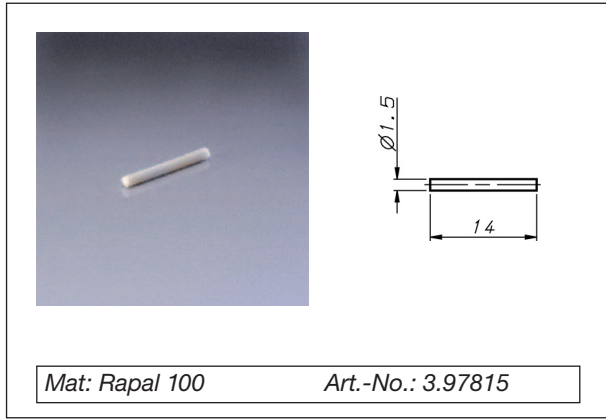
Art.-No.: 3. D x L



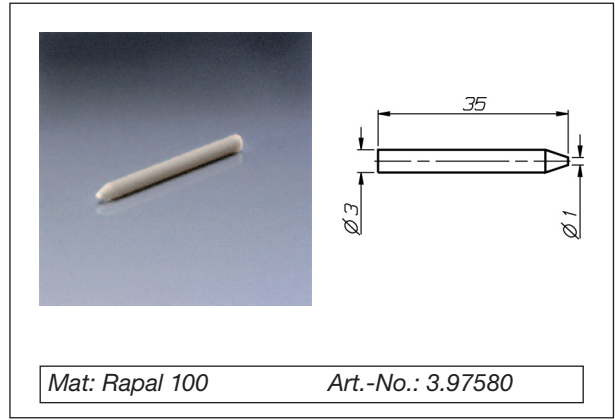
D (mm)	d (mm)	L (mm)	L (mm)
2 to 25	0.6 to 20	10 to 250	10 to 350

Mat: Titania (C)

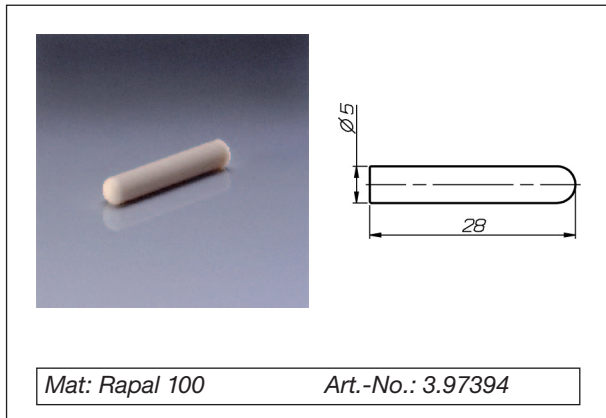
Art.-No.: 3. D x d x L



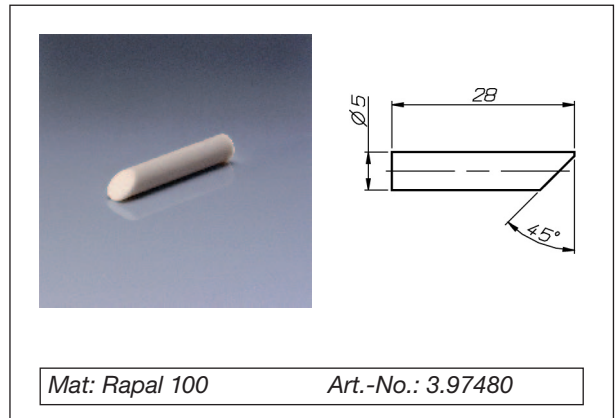
Mat: Rapal 100 Art.-No.: 3.97815



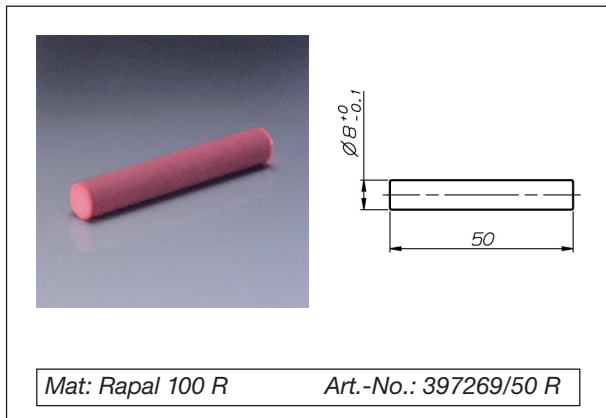
Mat: Rapal 100 Art.-No.: 3.97580



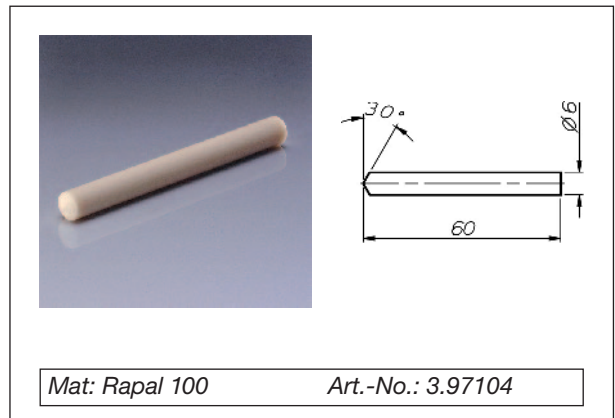
Mat: Rapal 100 Art.-No.: 3.97394



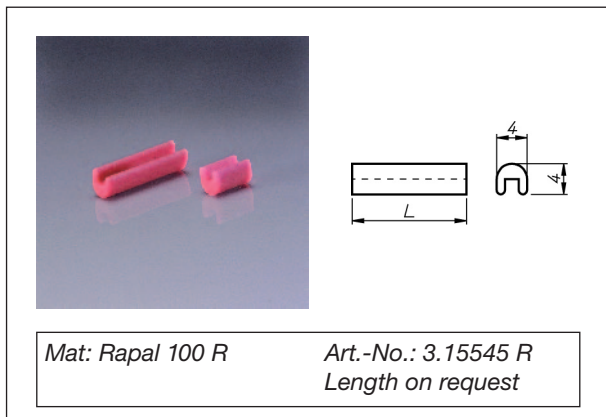
Mat: Rapal 100 Art.-No.: 3.97480



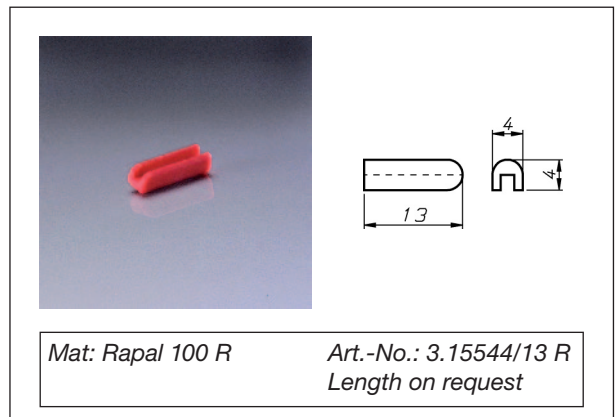
Mat: Rapal 100 R Art.-No.: 397269/50 R



Mat: Rapal 100 Art.-No.: 3.97104



Mat: Rapal 100 R Art.-No.: 3.15545 R Length on request



Mat: Rapal 100 R Art.-No.: 3.15544/13 R Length on request

Faxantwort an:
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 Niederlassung CH-Baar
 0041-41-7600458



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