SealConcept
DICHTUNGEN & HYDRAULIK

PROFILES

Seals and semi-finished products

SEALINGSOLUTIONS

CONCEPTS | SOLUTIONS | SERVICES

Seal Concept
DICHTUNGEN & HYDRAULIK

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Please find the exact limitations of use and technical data of the above listed sealing types in our main catalog or our datasheets which you may ask for under phone number +49 (0) 8234/9671-0. All limitations of use and technical data mentioned in this catalog are non-binding reference values which may be exceeded or underrun. The liability in a precise case of operation is excluded. We will be glad to advise you for special applications.

Please note our general terms and conditions under: www.sealconcept.com/Conditions. We take these as a basis for our consignments. Subject to errors and misprints.

The indications given in this catalog are based on the findings gathered through experience over the years in the production and application of sealing components. Despite this experience, unknown factors may considerably restrict the general statements in practical use.

AGQS
certified management system
DIN EN ISO 14001

AGQS
certified management system
DIN EN ISO 9001

Piston Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	KKD [KGD]	NBR TPC Polyacetal	400	-40 to +110	0.5	double-acting piston seal, 5-piece
	KD2	NBR Polyester elastomer Polyacetal	700	-30 to +110	0.5	double-acting piston seal, 5-piece
	KD3	NBR Fabric Polyacetal	500	-30 to +110	0.5	double-acting piston seal, 3-piece
	KD4	NBR Fabric Polyacetal	350	-30 to +110	0.8	double-acting piston seal, 3-piece
	KD6	Polyurethane NBR Polyacetal	400	-30 to +110	0.6	compact piston seal, 4-piece
	KD8 [KHD]	PTFE Compound NBR Polyacetal	500	-30 to +120	1.5	compact piston seal, 4-piece
	NPS	PTFE Compound O-Ring NBR / FKM	800	-30 to +110 -30 to +200	15	double-acting piston seal, 2-piece
	KSO	PTFE Compound O-Ring NBR / FKM X-Ring NBR / FKM	400	-30 to +110 -30 to +200	2	double-acting piston seal, 3-piece
	KSO2	PTFE Compound O-Ring NBR / FKM X-Ring NBR / FKM	600	-30 to +110 -30 to +200	3	double-acting piston seal, 4-piece
	NPR	PTFE Compound O-Ring NBR / FKM	800	-30 to +110 -30 to +200	15	single-acting piston seal, 2-piece
	NPW [KPD]	Polyurethane O-Ring NBR	400	-30 to +100	0.5	double-acting piston seal, 2-piece
	KD9 [KHT]	Polyester NBR	500	-30 to +100	0.5	double-acting piston seal, 2-piece
	NPQ [KPR]	Polyurethane Ring NBR	400	-30 to +100	0.5	double-acting piston seal, 2-piece
	KE1 [KD]	Polyurethane	400	-40 to +100	0.5	single-acting piston seal with asymmetric lip shape
	KE1/S [KDA]	Polyurethane Polyacetal	500	-40 to +110	0.5	single-acting piston seal with asymmetric lip shape and back-up ring
	KE2 [KDF]	Polyurethane Polyacetal	400	-40 to +100	0.5	single-acting piston seal with guide ring
	KE3	NBR Fabric Polyacetal Back-up Ring	700	-30 to +110	0.5	single-acting piston seal, 2-piece

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Piston Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	KE5	NBR Fabric Polyacetal Support/Retaining and Guide Ring	450	-30 to +110	0.5	single-acting piston seal, 2-piece with support/ retaining and guide ring
	KE6	NBR Fabric	700	-30 to +110	0.5	single-acting piston seal, 2-piece
	VP3	NBR-Fabric/NBR FKM-Fabric/FKM NBR-POM FKM-POM	400	-30 to +100 -30 to +140	0.5	single-acting piston seal, 3-piece, chevron-type seal
	VP4	NBR-Fabric/NBR FKM-Fabric/FKM NBR-POM FKM-POM	400	-30 to +100 -30 to +140	0.5	single-acting piston seal, 4-piece, chevron-type seal

Rod Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	T1	NBR Fabric FKM	250	-30 to +100 -30 to +140	0.5	Rod seal compact design
	T2	NBR Fabric Polyacetal FKM / PGM	400	-30 to+100 -30 to +140	0.5	Rod seal compact design with anti-extrusion ring
	T3	NBR Fabric FKM	250	-30 to +100 -30 to +140	0.5	Rod seal, compact groove ring
	T4 [SGA]	NBR Fabric Polyester elastomer	700	-30 to +100	0.5	Rod seal, 2-piece with back-up ring
	VP5	NBR-Fabric/NBR FKM-Fabric/FKM NBR-POM FKM-POM	400	-30 to +100 -30 to +140	0.5	Rod seal, 5-piece with chevron-type seal
	VP6	NBR-Fabric/NBR FKM-Fabric/FKM NBR-POM FKM-POM	400	-30 to +100 -30 to +140	0.5	Rod seal, 6-piece with chevron-type seal
	VP7	NBR-Fabric/NBR FKM-Fabric/FKM NBR-POM FKM-POM	400	-30 to +100 -30 to +140	0.5	Rod seal, 7-piece with chevron-type seal
	T7 [S}	Polyurethane	400	-40 to +100	0.5	Rod seal, compact groove ring
	T7/L [SD]	Polyurethane	400	-40 to +100	0.5	Rod seal, compact groove ring with secondary lip
	T7/LS [SDA]	Polyurethane Polyacetal	700	-40 to +100	0.5	Rod seal, compact groove ring with secondary lip and anti-extrusion ring
	T10 A10	Polyurethane	400	-40 to +100	0.5	Groov ring with asymmetric lip shape

Rod Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	T10/L A10/L	Polyurethane	400	-40 to +100	0.5	Groove ring with asymmetric lip shape and sec. lip
	T10/LS [ADA]	Polyurethane Polyacetal	700	-40 to +100	0.5	Groove ring with asymmetric lip shape, sec. lip and back-up ring
	T11 UP	Polyurethane	400	-40 to +100	0.5	Groove ring with symmetric lip shape
	SDAN	Polyurethane O-Ring NBR Polyacetal	700	-40 to +100	0.5	Groove ring with symmetric lip shape, back-up ring and O-ring
	UPN	Polyurethane O-Ring NBR	400	-40 to +100	0.5	Groove ring with symmetric lip shape and O-ring
	*T16	Polyurethane Polyacetal	700	-40 to +100	0,5	Groove ring with asymmetric lip shape and back-up ring
	NCR	PTFE Compound O-Ring NBR / FKM	800	-30 to +110 -30 to +200	15	single-acting rod seal, 2-piece
	SE9 [SHT]	Polyester O-Ring NBR	500	-30 to +100	0.5	single-acting rod seal, 2-piece
	NCS	PTFE Compound O-Ring NBR / FKM	800	-30 to +110 -30 to +200	15	double-acting rod seal, 2-piece

***T16: up to 4,2 groove width without backring (-250 bar). from groove width 6,3 with backring (-700 bar).**

Wiper/Scraper Rings

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	W1 [SAF]	Polyurethane Polyester elastomer NBR / FKM	-	-40 to +100 -40 to +100 -30 to +110 /+ 200	0,8	Wiper/Scraper ring, single-acting
	WI1 [SA-SAP]	Polyurethane Polyester	-	-40 to +100	0,8 4,0	Wiper/Scraper ring, single-acting
	WA1 [SAA]	Polyurethane	-	-40 to +100	0,8	Outer wiper/scraper ring, single-acting
	W2 [SAG]	Polyurethane NBR FKM	-	-40 to +100 -30 to +110 -30 to +200	0,8	Wiper/Scraper ring, single-acting
	W2S [SAC]	Polyurethane	-	-40 to +100	0,8	Wiper/Scraper ring for rough conditions, single-acting
	W3 [SAB]	Polyurethane	-	-40 to +100	0,8	Wiper/Scraper ring, double-acting
	W9 SAD	Polyurethane NBR FKM	-	-40 to +100 -30 to +110 -30 to +200	0,8	Wiper/Scraper ring, double-acting
	W3M	Polyurethane Metal cage	-	-30 to +100	1	Wiper/Scraper ring, double-acting with metal cage
	W4	Polyurethane NBR / FKM Metal cage	-	-40 to +100 -30 to +110 -30 to +200	1	Wiper/Scraper ring, single-acting with metal cage
	W4K	Polyurethane Metal cage	-	-30 to +100	1	Wiper/Scraper ring, single-acting with metal cage
	W5	NBR FKM Metal reinforcement	-	-30 to +110 -30 to +200	1	Wiper/Scraper ring, single-acting with integral metal reinforcement
	W6	PTFE Compound O-Ring NBR / FKM	-	-30 to +110 -30 to +200	15	Wiper/Scraper ring, double-acting
	W7	PTFE Compound O-Ring NBR / FKM	-	-30 to +110 -30 to +200	15	Wiper/Scraper ring, single-acting
	W8	PTFE Compound O-Ring NBR / FKM	-	-30 to +110 -30 to +200	15	Wiper/Scraper ring, double-acting
	W10	PTFE Compound Metal wiper rings Metal cage	-	-60 to +200	15	Metal/ice wiper/scraper ring with metal cage, metal wiper rings and support ring
	W12 [SAW]	Polyamide	-	-40 to +100	0,8	Wiper/Scraper ring, single-acting

Guide Bands / Guide Components

Profile	Type	Standard Material	Compressive strength (N/mm²)	Temperature (°C)	Sliding Speed (m/sec)	Description
	FR	Polyacetal with glass fiber	20-40	-40 to +110	1,0	Guide ring for piston and rod
	FRS	Polyacetal with glass fiber	20-40	-40 to +110	0.8	Guide ring for piston, rod and plunger cylinder
	FHG	Cotton fabric Phenolic resin	310	-40 to +130	1	Guide ring for piston and rod
	FHM	Synthetic fiber with bonded PTFE and epoxy resin	340	-40 to +130	1	Guide ring modified for piston and rod
	FIL	Polyacetal with glass fiber	20-40	-40 to +110	1,0	Guide ring for rod
	FIT	Polyacetal with glass fiber	20-40	-40 to +110	1,0	Guide ring for rod
	FB	PTFE Compound PTFE Carbon PTFE Bronze	5-25	-80 to +200	15	PTFE guide band for piston and rod, cut to length
	FHCB FHOB	Synthetic fiber Polyester resin	345	-50 to +130	1	Fabric guide band for piston and rod, cut to length

Rotary Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	NPG	PTFE Compound O-Ring NBR / FKM	300	-30 to +110 -30 to +200	2	External rotary seal, double-acting
	NCG	PTFE Compound O-Ring NBR / FKM	300	-30 to +110 -30 to +200	2	Internal rotary seal, double-acting
	VA	NBR FKM	-	-30 to +110 -30 to +200	12	V-rings, axially acting for shaft and bearing
	VS	NBR FKM	-	-30 to +110 -30 to +200	12	V-rings, axially acting for shaft and bearing
	VL	NBR FKM	-	-30 to +110 -30 to +200	12	V-rings, axially acting for shaft and bearing
	DV	Polyurethane	-	-40 to +100	-	V-ring
	A	NBR FKM	0.5	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape A, DIN 3760

Rotary Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	AV	NBR FKM	8	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape A, DIN 3760
	AS	NBR FKM	0.5	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape A, DIN 3760 with dust lip
	ASV	NBR FKM	8	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape A, DIN 3760 with dust lip
	B	NBR FKM	0.5	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape B, DIN 3760
	BS	NBR FKM	0.5	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape B, DIN 3760 with dust lip
	C	NBR FKM	0.5	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape C, DIN 3760
	CS	NBR FKM	0.5	-30 to +100 -30 to +200	12	Rotary shaft seal, standard shape C, DIN 3760 with dust lip

Static Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)	Description
	OP	Polyurethane	500	-40 to +100	static	Alternative to combinations of O-rings/ back-up rings available in 3 versions
	PFS	Polyurethane	500	-40 to +100	static	Flange seal for SAE flanges

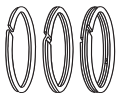
O-Rings / X-Rings / Profile Rings

Profile	Standard Material	Profiles	Standard Material
	NBR 70 / 80 / 90° Shore A FKM / EPDM / Silicone / Polyurethane		Round cord yard goods NBR/ FKM / EPDM / Silicone
	PTFE O-rings		O-rings, FDA approved
	NBR 60 / 70 / 80° Shore A FKM / Polyurethane / PTFE		NBR 80° Shore A FKM / EPDM / Silicone coated

Back-up Rings

Profile	Type	Standard Material	Version
	BRE	Polyester elastomer Polyurethane PTFE	endless for metric/inch size O-rings
	BRK	NBR	concave, endless/split
	BRG	PTFE	split

Special Parts

Profile	Standard Material	Profile	Standard Material
	Screw packing NBR / FKM		Piston and rod seal PTFE compound with metal spring
	Screw packing, self-centering NBR / FKM		Single-acting shaft seal PTFE compound with metal spring
	Spring steel metal rings gap seal 15-1300 mm		machined seals and special seals from our own fabrication

Tools

	An overview of the individual tools can be found on page	23

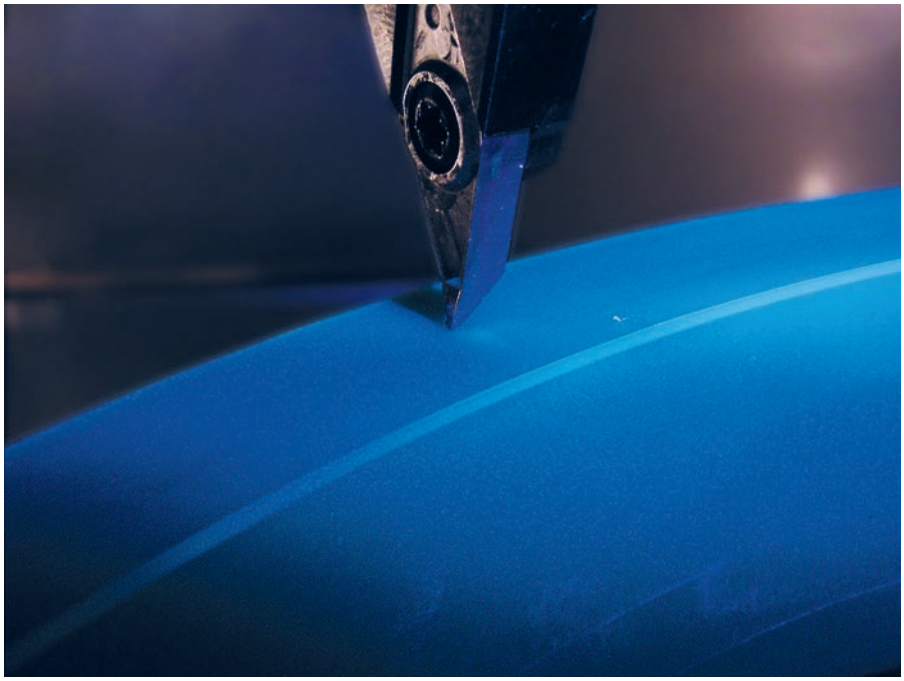
Construction Parts / Semi-finished Products

Plastic construction and profile parts, elastomer shapes, D-rings according to ISO 2852, SMS and clamp seals as well as further sealing elements according to drawings and samples are available on request.

Nearly all sealing types made of conventional materials are also available as machined/turned parts within short lead-times (pages 12-23).

Semi-finished products of PTFE, NBR, FKM, MVQ, EPDM, polyurethane, POM, PA, glass/MoS_2 filled materials, FDA qualities as well as bronze and carbon filled PTFE materials are available on request.

As a problem solver in the sealing sector, we are taking matters into our own hands and "machine" your suitable solution.



- Machined Seals
- Individual Solutions
- Construction Parts
- Installation Tools
- Material Overview/Material Hornbook

The seal geometries contained in this profile overview are standard profiles.

Due to of our special manufacturing technology we are able to provide a swift, customized sealing solution, even for extraordinary applications.

All seals up to 720 mm external diameter are available at short notice. Larger sizes up to 2,000 mm external diameter are available on request.

In addition, all profiles can be adapted to your particular operating conditions.

Should you have any questions, please do not hesitate to contact our application engineers.

Attention:
The given application parameters are maximum values of single material combinations. These should not be utilized simultaneously.

Piston Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	PS01	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	PS01A	PU NBR FKM	25	-30 to +105 -25 to +100 -20 to +210	1
	PS01B	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	PS01C	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	PS02	PU/POM NBR/POM FKM/PGM	700 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	PS02A	PU/POM NBR/POM FKM/PGM	700 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	PS03	PU/NBR	400	-25 to +100	0.5
	PS04	PU/NBR/POM	700	-25 to +100	0.5
	PS05	NBR	25	-25 to +100	1
	PS08	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	PS08A	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	PS08B	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	PS08C	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	2
	PS08D	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	2
	PS08E	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	PS08F	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	PS81	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	PS81B	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15

Piston Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	PS81C	PU/NBR	400	-25 to +100	0.5
	PS09	PU/NBR/POM	400	-25 to +100	0.5
	PS09A	NBR/POM	400	-25 to +100	0.5
	PS16	NBR	160	-25 to +100	0.5
	PS16A	NBR	160	-25 to +100	0.5
	PS17	PU/POM NBR/POM	400 250	-25 to +100	0.5
	PS17A	PU/POM NBR/POM	400 250	-25 to +100	0.5
	PS17B	PU/POM NBR/POM	400 250	-25 to +100	0.5
	PS19	PGM / 1.4310	160	-200 to +260	15
	PS19A	PGM / 1.4310	160	-200 to +260	15
	PS20	PU/POM NBR/POM	700	-25 to +100	0.5
	PS23	PU/NBR/POM	400	-25 to +100	0.5
	PS35	PU NBR	400	-25 to +100 -30 to +105	0.4
	PS35A	PU NBR	400	-25 to +100 -30 to +105	0.4

Rod Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	RS01	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	RS01A	PU NBR FKM	25	-30 to +105 -25 to +100 -20 to +210	1

Rod Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	RS01B	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	RS01C	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	RS02	PU/POM NBR/POM FKM/PGM	700 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	RS02A	PU/POM NBR/POM FKM/PGM	700 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	RS02B	PU/POM NBR/POM FKM/PGM	700 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	RS03	PU/NBR	400	-25 to +100	0.5
	RS04	PU/NBR/POM	700	-25 to +100	0.5
	RS05	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	RS05A	PU NBR FKM	400 160 160	-30 to +105 -25 to +100 -20 to +210	0.5
	RS08	PU NBR	400 160	-30 to +105 -25 to +100	0.3
	RS09	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	RS09A	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	RS09B	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	RS91	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	RS91B	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	1 15
	RS16	NBR	160	-25 to +100	0.5
	RS17	PU	400	-30 to +105	0.5
	RS17A	PU/POM	700	-30 to +100	0.5

Rod Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	RS17B	PU/NBR	400	-25 to +100	**0.5**
	RS17C	PU/NBR/POM	700	-25 to +100	**0.5**
	RS17D	PU NBR	400 160	-30 to +105 -25 to +100	**0.3**
	RS17E	PU/POM	700	-25 to +100	**0.3**
	RS19	PGM / 1.4310	160	-200 to +260	**15**
	RS19A	PGM / 1.4310	150	-200 to +260	**2**
	RS20	PU/POM NBR/POM	700	-25 to +100	**0.5**
	RS31	PU/POM	500	-25 to +100	**0.5**
	RS35	PU	400	-30 to +105	**0.5**
	RS91	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	**1** **10**
	RS91B	PU/NBR PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	400 800 800	-25 to +100 -25 to +100 -20 to +210	**1** **10**

Symmetric Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	PRS06	PU NBR	400 160	-30 to +105 -25 to +100	**0.5**
	PRS06A	PU NBR	400 160	-30 to +105 -25 to +100	**0.5**
	PRS06B	PU NBR	400 160	-30 to +105 -25 to +100	**0.5**
	PRS06C	PU NBR	400 160	-30 to +105 -25 to +100	**0.5**
	PRS06D	PU NBR	400 160	-30 to +105 -25 to +100	**0.5**

Symmetric Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	PRS06E	PU NBR	400 160	-30 to +105 -25 to +100	0.5
	PRS07	PU/NBR	400	-25 to +100	0.5
	PRS10-12	PU/POM NBR/POM FKM/PGM	500 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	PRS 10 SP	POM PGM		-50 to +100 -200 to +260	
	PRS-11 SP	PU NBR FKM		-30 to +105 -25 to +100 -20 to +210	
	PRS-12 SP	POM PGM		-50 to +100 -200 to +260	
	PRS13-15	PU/POM NBR/POM FKM/PGM	500 250 250	-30 to +100 -25 to +100 -20 to +210	0.5
	PRS13	POM PGM		-50 to +100 -200 to +260	
	PRS14	PU NBR FKM		-30 to +105 -25 to +100 -20 to +210	
	PRS15	POM PGM		-50 to +100 -200 to +260	
	PRS18	PU/NBR	400	-25 to +100	0.5
	PRS19	PGM/1.4310	160	-200 to +260	5
	PRS19B	PGM/1.4310	160	-200 to +260	5
	PRS19C	PGM/1.4310	160	-200 to +260	5
	PRS19D	PGM/1.4310	160	-200 to +260	5
	PRS22	PU/POM NBR/POM FKM/PGM	400 160 160	-30 to +100 -25 to +100 -20 to +210	0.5

Wiper/Scraper Rings

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	WR01	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR01A	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR02	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR02A	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR02B	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR02C	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR03	PU/POM NBR/POM FKM/PGM	-	-30 to +100 -25 to +100 -20 to +210	1
	WR04	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR07	PU POM	-	-30 to +105 -50 to +100	1
	WR08	PU POM	-	-30 to +105 -50 to +100	1
	WR11	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR12	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1
	WR13	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	-	-25 to +100 -20 to +210	15
	WR13E2	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	-	-25 to +100 -20 to +210	15
	WR14	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	-	-25 to +100 -20 to +210	15
	WR15	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	-	-25 to +100 -20 to +210	15
	WR16	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	-	-25 to +100 -20 to +210	1
	WR17	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1

Wiper/Scraper Rings

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	WR18	PU NBR FKM	-	-30 to +105 -25 to +100 -20 to +210	1

O-Rings / X-Rings and Flange Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	OR	PU NBR FKM	600 160 160	-30 to +105 -25 to +100 -20 to +210	-
	OR-H	PU NBR FKM	600 160 160	-30 to +105 -25 to +100 -20 to +210	-
	OR-V	PU NBR FKM	600 160 160	-30 to +105 -25 to +100 -20 to +210	-
	QR01	PU NBR FKM	600 160 160	-30 to +105 -25 to +100 -20 to +210	-
	QR02	PU NBR FKM	600 160 160	-30 to +105 -25 to +100 -20 to +210	-
	FL01A	PU NBR FKM	400 250 250	-30 to +105 -25 to +100 -20 to +210	-
	FL02B	PU NBR FKM	400 250 250	-30 to +105 -25 to +100 -20 to +210	-
	FL03	PU NBR FKM	400 250 250	-30 to +105 -25 to +100 -20 to +210	-
	FL06	PGM/1.4310	160	-200 to +260	5
	FL07	PGM/1.4310	160	-200 to +260	5
	FL08	PGM/1.4310	160	-200 to +260	5
	SCOP	PU	500	-30 to +105	-

Rotary Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	OS01A	PU/POM/1.4310 NBR/POM/1.4310 FKM/PGM/1.4310	0.5 0.5 0.5	-30 to +100 -25 to +100 -20 to +210	5 10 15

Rotary Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	OS02A	PU/POM/ 1.4310 NBR/POM/1.4310 FKM/PGM/1.4310	0.5 0.5 0.5	-30 to +100 -25 to +100 -20 to +210	5 10 15
	OS03A	PU/1.4310 NBR/1.4310 FKM/1.4310	0.5 0.5 0.5	-30 to +100 -25 to +100 -20 to +210	5 10 15
	OS08	PU NBR	-	-30 to +105 -25 to +100	5 10
	OS08A	PU NBR	-	-30 to +105 -25 to +100	5 10
	R03	PU / POM NBR/POM	400 250	-30 to +100 -25 to +100	0.2 0.2
	R04	PU NBR	160 100	-30 to +105 -25 to +100	0.2 0.2
	R04A	PU NBR	160 100	-30 to+ 105 -25 to +100	0.2 0.2
	R05	PU NBR	160 100	-30 to +105 -25 to +100	0.2 0.2
	R05A	PU NBR	160 100	-30 to +105 -25 to +100	0.2 0.2
	VR06	NBR FKM	-	-25 to +100 -20 to +210	25
	VR07	NBR FKM	-	-25 to +100 -20 to +210	25
	R08	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R08D	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R09	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R09A	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R10	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R10A	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4

Rotary Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	R11	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R11D	PB, PK, PGM, PT, PEK/NBR PB, PK, PGM, PT, PEK/FKM	350	-25 to +100 -20 to +210	0.4
	R35A	PU	400	-30 to +105	0.5
	R35B	PU	400	-30 to +105	0.5
	R33*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33A*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33B*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33C*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33D*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33E*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33F*	PTFE/TFM Compounds	6.0	-60 to +200	25
	R33G*	PTFE/TFM Compounds	30	-60 to +200	25

***In detail, depending on the material combination of the sealing components, *R35A for pressure from inside, R35B for pressure from outside**

Back-up Rings / Guide Rings

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	BUR08	PU POM PTFE	-	-30 to +105 -50 to +100 -200 to +260	-
	BUR09	PU POM PTFE	-	-30 to +105 -50 to +100 -200 to +260	-
	BUR10	PU POM PTFE	-	-30 to +105 -50 to +100 -200 to +260	-

Back-up Rings / Guide Rings

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	BUR11	PU POM PTFE	-	-30 to +105 -50 to +100 -200 to +260	-
	BUR12	PU POM PTFE	-	-30 to +105 -50 to +100 -200 to +260	-
	BUR13	PU POM PTFE	-	-30 to +105 -50 to +100 -200 to +260	-
	BWR01	POM PGM	-	-50 to +100 -200 to +260	4
	BWR01A	POM PGM	-	-50 to +100 -200 to +260	4
	BWR01C	POM PGM	-	-50 to +100 -200 to +260	4
	BWR03	POM PGM	-	-50 to +100 -200 to +260	4
	BWR04	POM PGM	-	-50 to +100 -200 to +260	4
	BWR05	POM PGM	-	-50 to +100 -200 to +260	4
	BWR06	POM PGM	-	-50 to +100 -200 to +260	4
	BWR07	POM PGM	-	-50 to +100 -200 to +260	4
	BWR08	POM PGM	-	-50 to +100 -200 to +260	4

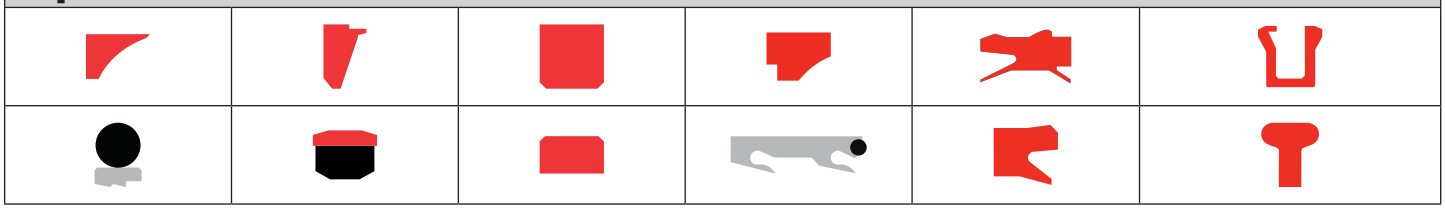
Mining Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	BWR01 P PS	POM PTFE	-	-50 to +100 -200 to +260	4
	BWR01 P RS	POM PTFE	-	-50 to +100 -200 to +260	4
	P50	PU/POM	dyn. 400 stat. 1500	-30 to +100	dyn. 0.5 stat. 0.2
	P50A	PU/POM	dyn. 400 stat. 1500	-30 to +100	dyn. 0.5 stat. 0.2

Mining Seals

Profile	Type	Standard Material	Pressure (bar)	Temperature (°C)	Sliding Speed (m/sec)
	P51	PU/NBR/POM	dyn. 400 stat. 1500	-25 to +100	dyn. 0.5 stat. 0.2
	P51A	PU/NBR/POM	dyn. 400 stat. 1500	-25 to +100	dyn. 0.5 stat. 0.2
	P51G	PU/NBR/POM	dyn. 400 stat. 1500	-25 to +100	dyn. 0.5 stat. 0.2
	P52	PU/POM	dyn. 700 stat. 1500	-30 to +100	dyn. 0.5 stat. 0.2
	P53	PU/NBR/POM	dyn. 700 stat. 1500	-25 to +100	dyn. 0.5 stat. 0.2
	P54	PU/NBR/POM	400	-25 to +100	0.5
	P54A	PU/NBR/POM	400	-25 to +100	0.5
	P58	PU	400	-30 to +105	0.3
	R50	PU/NBR/POM	700	-25 to +100	0.5
	R50A	PU/POM	700	-30 to +100	0.5
	R51	PU/NBR	400	-25 to +100	0.5
	R52	PU/POM	700	-30 to +100	0.5
	R53	PU	400	-30 to +105	0.5
	W50	PU	-	-30 to +105	2
	W51	PU	-	-30 to +105	2
	W53	PU/POM	-	-30 to +100	2
	W54	PU	-	-30 to +100	2

Special Seals and Constructional Parts

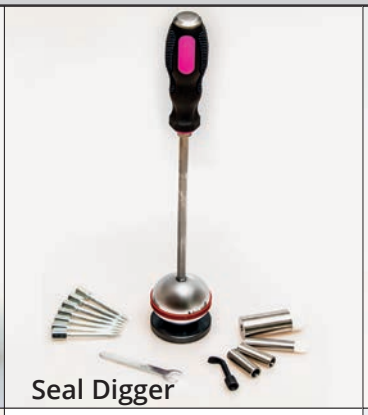


Besides the standard profiles mentioned above, we also provide special profiles and machined parts according to customer drawings or geometries which are especially developed by Seal Concept GmbH according to the corresponding requirements.

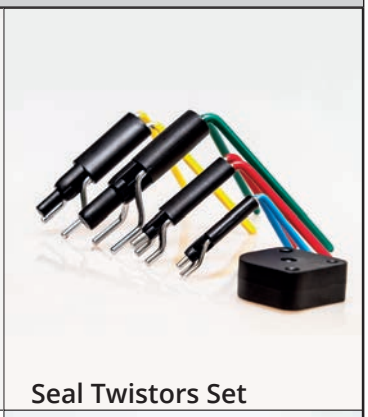
Installation Tools

PTFE Seal Stretcher

Miter Cutter



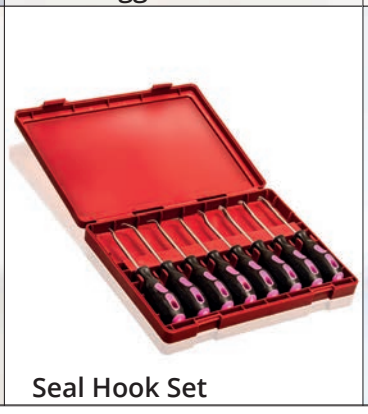
Seal Digger



Seal Twistors Set

O-Ring Gauge

O-Ring Cone



Seal Hook Set

Seal Clasper

The Seal Concept seal installation tools help to simplify the assembly and disassembly of various types of seals and sealing materials. Even difficult installations can be carried out fast and easy with the help of the right installation tools.

Above mentioned data are non-binding reference values, which may be exceeded or underrun. The liability in a precise case of operation is excluded. We will be glad to advise you for special applications.

Please note our general terms and conditions under: www.sealconcept.com/Conditions. We take these as a basis for our consignments. Subject to errors and misprints.

Seal Concept
DICHTUNGEN & HYDRAULIK

SEALS MATERIAL HORNBOOK

Seal Concept - Material Hornbook - CNC-fabricated Seals

Sealing Materials/Semi-finished Products

With this material hornbook we want to provide our customers with a means to recognize and evaluate themselves the sealing materials we use at delivery or project preparation and how we designate them. We consider this to be necessary as we prepare our sealing concepts on the basis of information provided or gathered, but it is up to our customers to check this proposed solution according to their actual conditions of use.

Material Structure and Material Designation of the Sealing Materials

Within the scope of our quality management and the ERP "Microsoft Dynamics NAV", Seal Concept GmbH has been transitioning for years now, and is now structuring the materials used for its sealing concepts consistently across all divisions and using a standard designation. This is intended to enhance the transparency of internal and external interfaces and thus give all parties involved the possibility to asses and evaluate their special basic conditions and tasks. Seal Concept GmbH mainly uses two material groups for the fabrication of its seals, elastomers and thermoplastic polymers, that are to ensure the desired properties of the sealing application. The acronyms of the materials assigned here are normalized in DIN EN ISO 1629 for elastomers and DIN EN ISO 1043-1 for plastics, and thus internationally known and accepted. Therefore, the designation of our materials is mainly based on these normalized acronyms and, to ensure unambiguity, on the running identification number of the material in the internal materials database of Seal Concept GmbH.

Example: **NBR119**

Raw material	Nitrile-butadiene rubber
Acronym DIN EN ISO 1629	NBR
SC database ID	119

At the same time, the SC database ID is the direct and unambiguous assignment to all external documents of Seal Concept GmbH relating to the material, like material datasheets or declarations of conformity.
It is printed separately in these documents.

The internal material designation valid to date will be cancelled and replaced by the new designations.
In the following material tables, the "old" designations will be mentioned once more face to face to facilitate the assignment.

Material Overviews of Sealing Materials
Elastomers

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
EPDM	112	EPDM		85 ShA	-50...130	RoHS
	113	EPDM/W/FDA		85 ShA	-50...100	GMP EU, FDA, EU, 3AS
	422	EPDMD		85 ShA	-45...130	RoHS
	691	EPDM/B/FDA		81 ShA	-30...130	GMP EU, FDA, EU
	706	EPDM/FDA		85 ShA	-40...130	GMP EU, FDA, 3AS
	775	EPDM/B/MDx		81 ShA	-30...130	GMP EU, FDA, EU, 3AS

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
FEPM	114	AFL		85 ShA	-15...210	RoHS

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
FKM	115	FPM		85 ShA	-20...210	RoHS
	116	FPM/S		85 ShA	-25...210	RoHS
	117	FPM/FDA		85 ShA	-25...210	GMP EU, FDA, EU, 3AS
	687	FPM/ED		86 ShA	-30...210	NORSOK
	689	FPM/B/FDA		80 ShA	-17...200	GMP EU, FDA, EU, 3AS
	777	FPM/B/MDx		80 ShA	-17...200	GMP EU, FDA, EU, 3AS, detectable

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
HNBR	118	HNBR		83 ShA	-25...150	RoHS
	552	HNBR90		90 ShA	-20...150	FDA, 3AS
	557	HNBR/ED		87 ShA	-15...150	NORSOK

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
NBR	119	NBR/FDA		85 ShA	-22...100	GMP EU, FDA, EU, 3AS
	120	NBR		85 ShA	-25...100	RoHS
	121	NBR95		95 ShA	-25...100	RoHS
	285	NBR-T		80 ShA	-50...110	
	411	NBRD		85 ShA	-30...110	
	571	NBR73		75 ShA	-30...90	
	754	NBR/B/FDA		80 ShA	-30...100	GMP EU, FDA, EU
	878	NBR/B/DTx		85 ShA	-30..100	GMP EU, FDA, EU, detectable

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
VMQ	138	SIL		85 ShA	-55...210	GMP EU, FDA, EU, 3AS
	139	SILBL		85 ShA	-55...180	GMP EU, FDA, EU
	597	SILTR		85 ShA	-60...200	FDA, EU, BfR
	692	SILW		85 ShA	-60...200	FDA

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
HPU	111	HPU72D		70 ShD	-20...110	
	132	HPUG		95 ShA	-30...105	FDA, EU, 3AS
	364	HPUD		95 ShA	-20...115	GMP EU, FDA, EU, 3AS
	498	HPU58E		58 ShD	-70...130	
	480	PUSLD		96 ShA	-20...110	
	555	HPUTD		96 ShA	-55...110	
	580	HPU		95 ShA	-30...125	GMP EU, FDA, EU, 3AS
	583	HPUT		95 ShA	-50...105	GMP EU, FDA, EU, 3AS
	585	PUMOS2		95 ShA	-30...125	
	586	PUH		57 ShD	-30...125	GMP EU, FDA, EU, 3AS
	587	PUHMOS2		57 ShD	-30...125	
	606	HPU72E		72 ShD	-30...130	
	684	HPUV		95 ShA	-30...115	GMP EU, FDA, EU, 3AS
	690	HPUDB		95 ShA	-20...115	GMP EU, FDA, EU, 3AS
	693	HPUDN		95 ShA	-20...115	GMP EU, FDA, EU
	776	HPU/B/MDx		93 ShA	-40...90	GMP EU, FDA, EU, detectable
RSP	351	RSP		95 ShA	-50...120	

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
PA6	122	TI		165 MPa	-30...100	FDA, RoHS
PA12	283	LAUB		76 ShD	-40...120	RoHS
	607	PA12		100 MPa	-40...120	RoHS
	694	LAUF		76 ShD	-40...120	GMP EU, FDA, EU, RoHS, USP -C VI

DIN Short	ID Number	Material Desig.		Hardness	Temperature [°C]	Approvals
PEEK	245	PEEK		190 MPa	-50...250	FDA, EU
	609	PEEK		90 ShD	-40...260	FDA, RoHS
	751	PEEK		210 Mpa	-50...310	FDA, EU
	790	PEEK/B/MD		190 Mpa	-50...250	GMP EU, FDA, EU, detectable

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
POM	127	POM		140 MPa	-50...100	GMP EU, FDA, EU, RoHS
	610	POMS		81 ShD	-50...100	RoHS
	792	POM/B/MD		155 Mpa	-30...105	GMP EU, FDA, EU, detectable

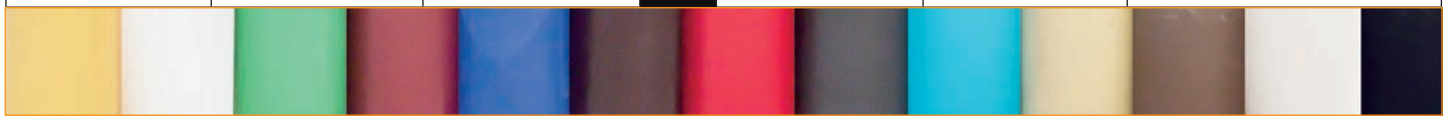
DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
PVDF	176	PVDF		95 MPa	-30...150	EU

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
PE-UHMW	368	PEUHMW368		61 ShD	-265...80 (100)	FDA, EU
	608	PE1000G		63 ShD	-250...80	FDA, RoHS
	681	PEUHMW681		61 ShD	-250...80	GMP EU, FDA, EU
	791	PE/B/MD		62 ShD	-150...80	GMP EU, FDA, EU, detectable

Material Overviews of Sealing Materials Plastics

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
PTFE	128	P		60...65 ShD	-200...260	GMP EU, FDA, EU, RoHS
PB	123	PB		62...67 ShD	-200...260	RoHS
	48	PB60		34 MPa	-200...260	
	570	PB46		63 ShD	-200...260	

DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
PEKO	56	PEK		29 MPa	-200...260	FDA, EU
PG	46	PG		34 MPa	-200...260	FDA, EU
	125	PGM		55...60 ShD	-200...260	RoHS
	568	PGD		60 ShD	-200...260	FDA, EU, 3AS, USP
PK	126	PK		62...67 ShD	-200...260	RoHS
	393	PKE		67 ShD	-200...260	
	670	PKE25		41 MPa	-200...260	
	671	PKE15		34 MPa	-200...260	
PKF	282	PKF15		37 H	-150...250	



DIN Short	ID Number	Material Desig.	Color	Hardness	Temperature [°C]	Approvals
PM	322	PT/FDA		28 H	-200...260	GMP EU, FDA, EU
	574	TFM/M2		32 H	-200...260	
	575	P/PEEK		32 H	-200...260	FDA, EU, 3AS
	576	TFM/M1		31 H	-200...230	FDA
	590	TFM/M3		37 H	-200...260	
	613	TFM/M4		32 H	-200...230	FDA, EU

DIN Short	ID Number	Material Desig.		Hardness	Temperature [°C]	Approvals
PF	18	PF		220 MPa		
	676	KRÜTEX100		130 MPa	...120	

DIN Short	ID Number	Material Desig.		Hardness	Temperature [°C]	Approvals
EP	109	FHM		218 MPa	...130	
	668	KRÜTEX200		150 MPa	...130	

Blue marked supplementary designations are internal specifications of Seal Concept GmbH for the standard acronyms.

RPS = Branding "Red Super Polymer"

PA6 = Polyamide with 6 carbon atoms in the basic molecule
PA12 = Polyamide with 12 carbon atoms in the basic molecule

PB = PTFE modified with bronze additive
PEKO = PTFE modified with ekonol additive
PEKO = PTFE modified with glass/glass fiber additive
PK = PTFE modified with graphite additive
PKF = PTFE modified with graphite fiber additive
PM = PTFE modified with other specific additives

PF = Phenolic resin fabric
EP = Epoxy resin fabric

General Material Information on Elastomers

Acronym according to DIN 1629 / DIN 1043-1	Chemical designation	Properties (extract)
EPDM	Ethylene propylene diene rubber	• good resistance to ozone and aging • high elasticity • high resistance to hot water and vapor • good resistance to cold and chemicals • not resistant to mineral oils

Acronym according to DIN 1629 / DIN 1043-1	Chemical designation	Properties (extract)
FEPM	Tetrafluoroethylene propylene rubber	• very good chemical resistance • very good high-temperature properties
FKM	Fluororubber	• very good resistance to oil and chemicals • wide range of application • low gas permeability • usable in high temperatures
HNBR	Hydrogenated nitrile-butadiene rubber	• very good mechanical properties • high resistance to wear • good ozone and weather resistance • good resistance to mineral oils, hot water and refrigerants
NBR	Nitrile-butadiene rubber	• good mechanical properties • resistant to mineral oils and greases, without flavoring or chlorine additives • restricted ozone and light resistance
VMQ	Vinyl methyl polysiloxane rubber	• good behavior at high and low temperatures • average mechanical properties • good ozone and weather resistance • very good elasticity • not resistant to mineral oils

Shelf Life of Sealing Materials

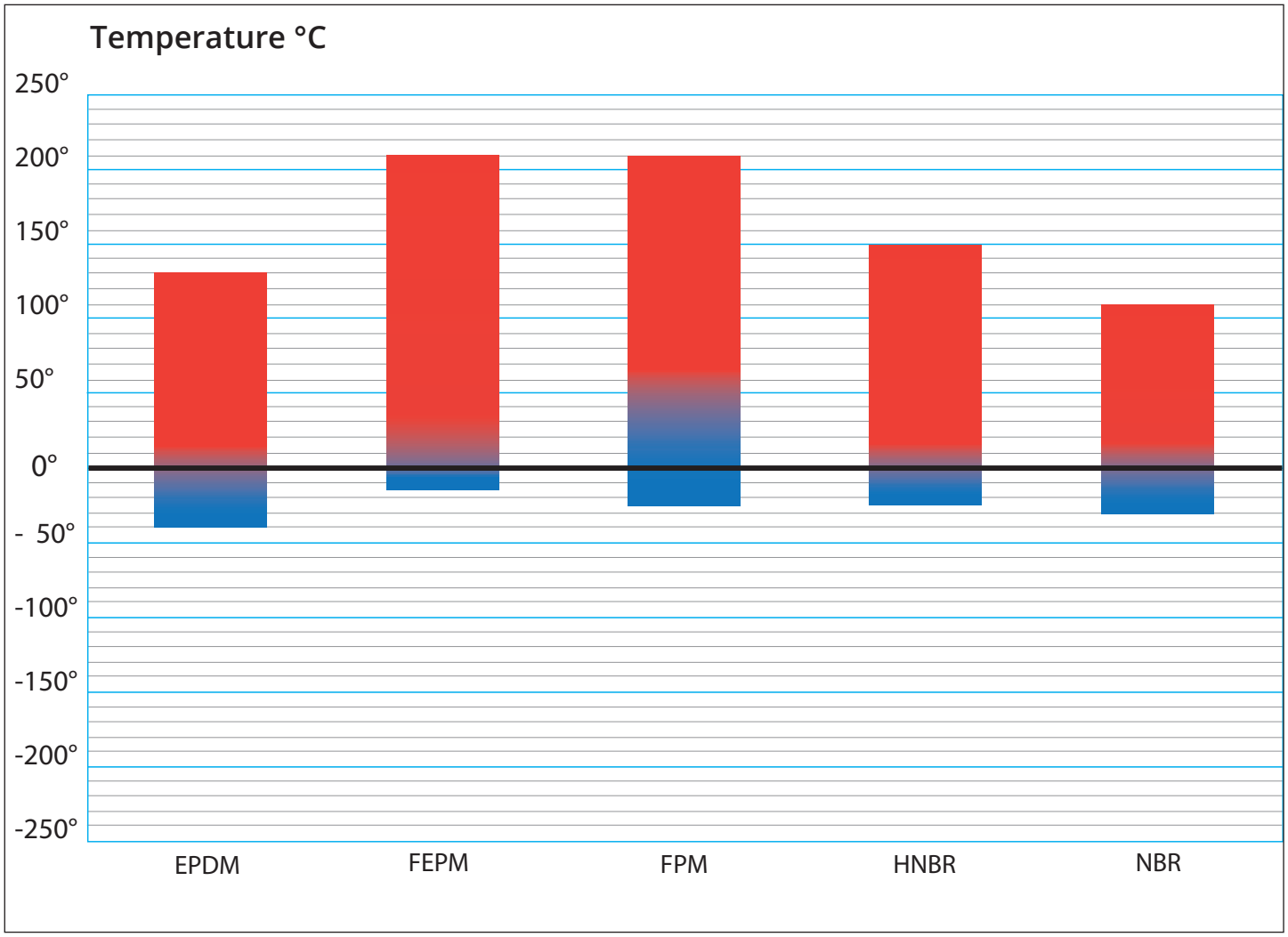
Definition of the maximum storage period of products as a function of their material composition
The main materials used in the products of Seal Concept are subject to a natural aging process under storage conditions with regard to the quality of their resistance, i.e. the state in which they are to ensure their technical properties guaranteed by the manufacturer. The consequence of this is that the properties can no longer be guaranteed by Seal Concept after a certain period. However, in order to guarantee these material parameters to our customers beyond the legally guaranteed warranty period, the company establishes the following summarized maximum storage periods of the articles with regard to their material composition. In this connection, the material service life customary in business is assumed and that

- if not stated precisely by the manufacturer or the supplier, the actual date of manufacturing of the article is no longer than 1 year from the storage date at Seal Concept. This is set by the suppliers in the specific supplier agreements.
- the articles were stored by Seal Concept GmbH under optimum storage conditions (cool, dry, dust-free, moderately ventilated, no direct sunlight and metal contact, stress-free, temperature +12...+25°C - briefly over that, relative humidity 65%).

Maximum storage period of products as a function of their material composition

Acronym	Storage period of finished parts	Storage period of semi-finished products/ raw material
NBR, PF	7 years	5 years
PU, PUR	7 years	8-12 years
H-NBR	7 years	8 years
FKM, FFKM, VMQ, POM, PA, EP	10 years	10 years
EPDM	10 years	8 years
PTFE, PEEK	12 years	12 years

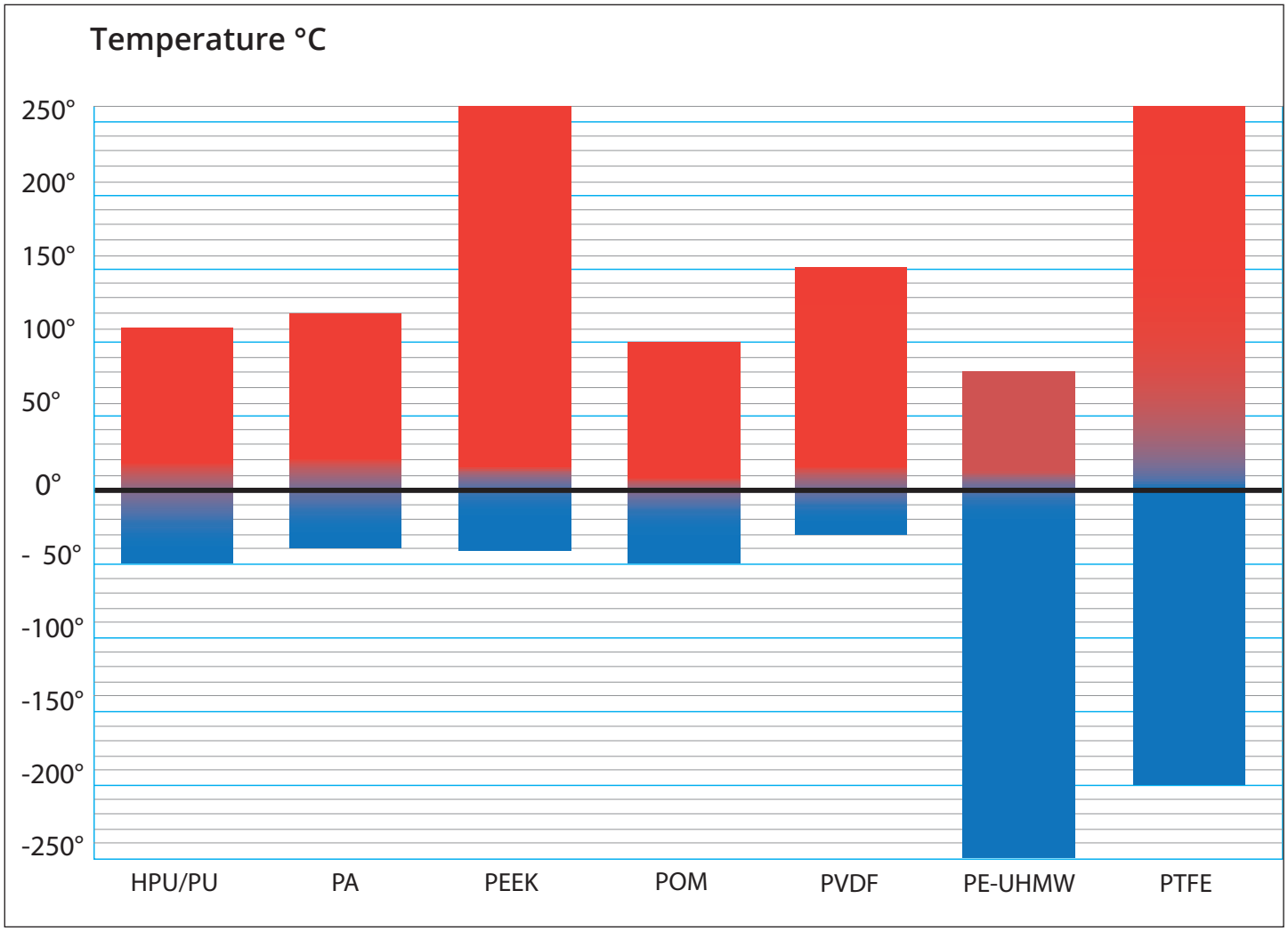
The actual storage period of the articles is established once a year at the end of the business year by a monitoring run of the inventory management system. Articles that have exceeded the specified storage period will be scrapped.



General Material Information on Plastics

Acronym according to DIN 1629 / DIN 1043-1	Chemical designation	Properties (extract)
HPU	Hydrolysis-resistant polyurethane	• good abrasion resistance • high extrusion resistance • good media resistance (mineral oils, greases) • good resistance to ozone and aging
PU	Polyurethane	
PA	Polyamide	• high mechanical resistance • high resistance to wear • high dimensional stability • high buffering capacity
PEEK	Polyetheretherketone	• very good mechanical properties • high resistance to deformation under heat • high resistance to hydrolysis • high resistance to chemicals
POM	Polyacetal (polyoxymethylene)	• high toughness, even at low temperatures • dimensional stability at good elasticity • low water absorption • favorable sliding/wear behavior

Acronym according to DIN 1629 / DIN 1043-1	Chemical designation	Properties (extract)
PVDF	Polyvinylideneflouride	• good behavior at high and low temperatures • average mechanical properties • good ozone and weather resistance • very good elasticity
PE-UHMW	Ultra-high molecular weight polyeth-ylene	• very favorable frictional behavior • high resistance to wear • very low water absorption
PTFE	Polytetrafluor ethylene	• very good chemical resistance • low coefficient of friction • adaptable with additives • usable in high temperatures



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Overall material overview in ascending ID number order

DIN Short	ID Number	"old name"	Color	Basis
PF	18	PF		Plastic
PG	46	PG		Plastic
PB	48	PB60		Plastic
PEKO	56	PEK		Plastic
UP	109	UP		Plastic
HPU	111	HPU72D		Plastic
EPDM	112	EPDM		Elastomer
EPDM	113	EPDM/W/FDA		Elastomer
FFKM	114	AFL		Elastomer
FKM	115	FPM		Elastomer
FKM	116	FPM/S		Elastomer
FKM	117	FPM/FDA		Elastomer
HNBR	118	HNBR		Elastomer
NBR	119	NBR/FDA		Elastomer
NBR	120	NBR		Elastomer
NBR	121	NBR95		Elastomer
PA6	122	TI		Plastic
PB	123	PB		Plastic
PG	125	PGM		Plastic
PK	126	PK		Plastic
POM	127	POM		Plastic
PTFE	128	P		Plastic
HPU	132	HPUG		Plastic
VMQ	138	SIL		Elastomer
VMQ	139	SILBL		Elastomer
PVDF	176	PVDF		Plastic
PKF	282	PKF15		Plastic
PEEK	245	PEEK		Plastic

DIN Short	ID Number	"old name"	Color	Basis
PA12	283	LAUB		Plastic
NBR	285	NBR-T		Elastomer
PM	322	PT/FDA		Plastic
RSP	351	RSP		Plastic
HPU	364	HPUD		Plastic
UHMW	368	PE1000		Plastic
PA12	378	LAUF		Plastic
PK	393	PKE		Plastic
NBR	411	NBRD		Elastomer
EPDM	422	EPDMD		Elastomer
PU	480	PUSLD		Plastic
HPU	498	HPU58E		Plastic
HNBR	552	HNBR90D		Elastomer
HPU	555	HPUTD		Plastic
HNBR	557	HNBR/ED		Elastomer
PG	567	PGD		Plastic
PB	570	PB46		Plastic
NBR	571	NBR73		Elastomer
PM	574	TFM/M2		Plastic
PM	575	P/PEEK		Plastic
PM	576	TFM/M1		Plastic
HPU	580	HPU		Plastic
HPU	583	HPUT		Plastic
PU	585	PUMOS2		Plastic
HPU	586	PUH		Plastic
HPU	587	PUHMOS2		Plastic
PM	590	TFM/M3		Plastic
VMQ	597	SILTR		Elastomer
HPU	606	HPU72E		Plastic

DIN Short	ID Number	"old name"	Color	Basis
PA12	607	PA12		Plastic
PE-UHMW	608	PE1000G		Plastic
PEEK	609	PEEK		Plastic
POM	610	POMS		Plastic
PM	613	TFM/M4		Plastic
PK	670	PKE25		Plastic
PF	668	KRÜTEX200		Plastic
PF	676	KRÜTEX100		Plastic
PK	671	PKE15		Plastic
PE-UHMW	681	PE1000S		Plastic
HPU	684	HPUV		Plastic
FKM	687	FPM/ED		Elastomer
FKM	689	FPM/B/FDA		Elastomer
HPU	690	HPUDB		Plastic
EPDM	691	EPDMDB		Elastomer
VMQ	692	SILW		Elastomer
HPU	693	HPUDN		Plastic
PA12	694	LAUF		Plastic
EPDM	706	EPDM/FDA		Elastomer

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A Choice of Our Food-safe Materials:

Description	Material Designation	Color	Datasheet no.	Hardness at 23 °C	°C Service temperature	GMP EU 2023/2006	FDA conformity	VO (EU) 1935/2004	VO (EU) 10/2011	BSE/TSE-free	BfR Recommendation	3A Sanitary	USP Class VI
HPU	HPU580	red	580	95±2 ShA	-30 to 125 °C	x	x	x	x	x		x	
HPUD	HPU364	red	364	95±2 ShA	-20 to 115 °C	x	x	x	x	x		x	
HPUV	HPU684	violet	684	95±2 ShA	-30 to 115 °C	x	x	x	x	x		x	
HPUT	HPU583	blue	583	95±2 ShA	-50 to 105 °C	x	x	x	x	x		x	
HPUDB	HPU690	blue	690	95±2 ShA	-20 to 115 °C	x	x	x	x	x		x	
HPUDN	HPU693	nature	693	95±2 ShA	-20 to 115 °C	x	x	x	x	x			
PUH	HPU586	blue	586	57±3 ShD	-30 to 125 °C	x	x	x	x	x		x	
NBR/FDA	NBR119	white	119	85±5 ShA	-22 to 100 °C	x	x	x		x		x	
NBR/B/FDA	NBR754	blue	754	80±5 ShA	-30 to 100 °C	x	x	x		x			
HNBR90	HNBR552	black	552	90±5 ShA	-20 to 150 °C		x			x		x	
EPDM/W/FDA	EPDM113	white	113	85±5 ShA	-50 to 100 °C	x	x	x		x		x	
EPDM/FDA	EPDM706	black	706	85±5 ShA	-45 to 130 °C	x	x	x		x		x	
EPDM/B/FDA	EPDM691	blue	691	81±5 ShA	-30 to 130 °C	x	x	x		x			
FPM/FDA/brown	FKM117	brown	117	85±5 ShA	-25 to 210 °C	x	x	x		x		x	
FPM/B/FDA	FKM689	blue	689	80±5 ShA	-17 to 200 °C	x	x	x		x		x	
SIL	VMQ138	red	138	85±5 ShA	-55 to 210 °C	x	x	x		x		x	
SILB	VMQ139	blue	139	85±5 ShA	-55 to 180 °C	x	x	x		x			
SILW	VMQ692	white	692	85±5 ShA	-60 to 200 °C		x			x			
SILTR	VMQ597	transp	597	85±5 ShA	-60 to 200 °C	x	x	x		x	x		
PTFE Virginal	PTFE128	white	128	60-65 Sh D	-200 to 260 °C	x	x	x	x	x			
PTFE 25% Glas	PG046	gray	46	34 Mpa	-200 to 260 °C	x	x	x	x	x			

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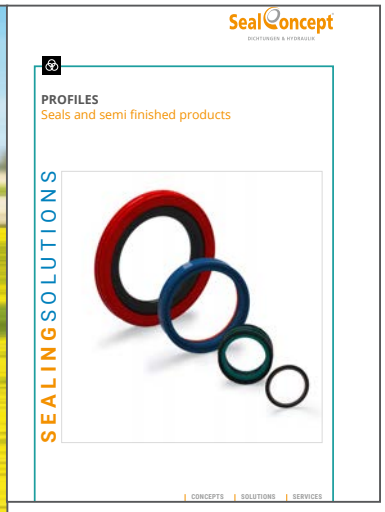
A Choice of Our Food-safe Materials:

Description	Material Designation	Color	Datasheet no.	Hardness at 23 °C	°C Service temperature	GMP EU 2023/2006	FDA conformity	VO (EU) 1935/2004	VO (EU) 10/2011	BSE/TSE-free	BfR Recommendation	3A Sanitary	USP Class VI
PTFE 25% Glas	PG568	gray	568	60±3 ShD	-200 to 260 °C		x	x	x	x		x	x
PTFE turquoise	PT322	turquoise	322	28 Mpa	-200 to 260 °C	x	x	x	x	x			
PTFE+PEEK	PM575	beige	575	32 Mpa	-200 to 260 °C	x	x	x	x	x		x	
PTFE+Ekonol	PM056	beige	56	29 Mpa	-200 to 260 °C	x	x	x	x	x			
TFM/M1	PM576	brown	576	31 Mpa	-200 to 230 °C	x	x	x	x	x			
TFM/M4	PM613	brown	613	32 Mpa	-200 to 230 °C	x	x	x	x	x			
Polyamid	PA122	white	122	165 Mpa	-30 to 100 °C		x			x			
POM	POM127	white	127	140 Mpa	-50 to 100 °C	x	x	x	x				
PEEK	PEEK245	gray	245	190 Mpa	-50 to 250 °C	x	x	x	x	x			
PVDF	PVDF176	beige	176	95 Mpa	-30 to 150 °C	x		x	x				
PE-UHMW	PE-UHMW681	black	681	61 ShD	-250 to 80 °C		x						
PE-UHMW	PE-UHMW368	white	368	61 ShD	-250 to 80 °C	x	x	x	x	x			
PA12G	PA694	beige	694	76 ShD	-40 to 120 °C	x	x	x	x	x			x

Our detectable material

Description	Material Designation	Color	Datasheet no.	Hardness at 23°C	°C Service temperature	GMP EU 2023/2006	FDA conformity	VO (EU) 1935/2004	VO (EU) 10/2011	BSE/TSE-free	BfR Recommendation	3A Sanitary	USP Class VI	Detectable
HPU/B/MDx	HPU776	blue	776	93±2 ShA	-40 to 90 °C	x	x	x	x	x				x
EPDM/B/MDx	EPDM775	blue	775	81±5 Sh	-30 to 130 °C	x	x	x		x		x		x
FPM/B/MDx	FKM777	blue	777	80±5 Sh	-17 to 200 °C	x	x	x		x		x		x
POM/B/MD	POM792	blue	792	155 Mpa	-30 to 105 °C	x	x	x	x					x
PEEK/B/MD	PEEK790	blue	790	190 Mpa	-50 to 250 °C	x	x	x	x					x
PE/B/MD	PE791	blue	791	62 ShD	-150 to 80°C	x	x	x	x					x
NBR/B/DTx	NBR878	blue	878	85±5 Sh	-30 to 100 °C	x	x	x						x

Blue color as visual detection because this dye in natural foods and the nature rare occurs



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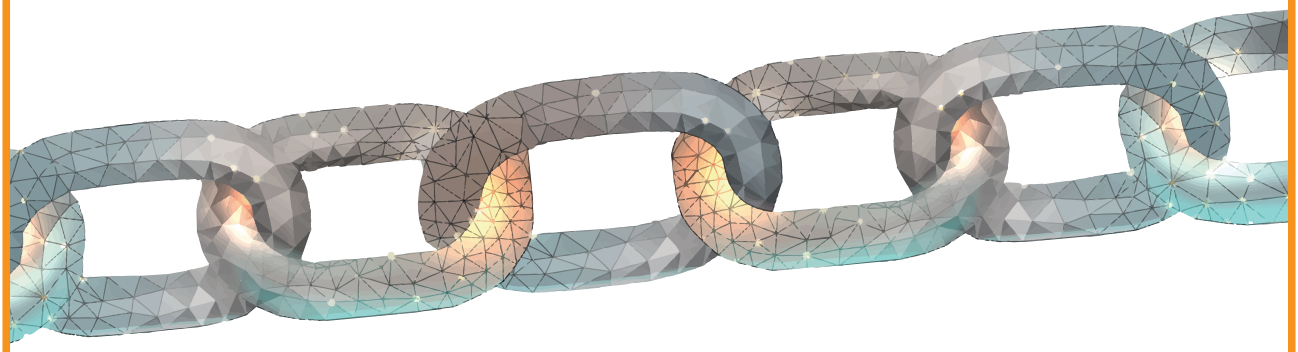

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