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# SEMI-FINISHED PRODUCTS

The development, production and marketing of high quality semi-finished products in form of bars and tubes for the machining of sealing elements is an integral part of the core competence of Seal Maker Produktions-u. Vertriebs GmbH. Due to our most modern manufacturing technology we are able to cover the whole spectrum of seal applications. Our semi-finished billets, each of which is controlled several times

**PU | NBR | EPDM | FPM | TFE/P | SILICONE | POM | PA | PTFE | PEEK | and many more**

before dispatch, are one of the most important components for our customers, contributing to their competitiveness by offering high quality at a reasonable price. Besides the wide range of standard dimensions which are carried on stock, special dimensions are also available within short delivery times in all materials and FDA-qualities.



## Polyurethanes

Polyurethanes have gained a substantial importance in modern seal technology. They hold a dominant market share in the sector of rod seals and piston seals. Seal Maker's Polyurethane semi-finished products stand out due to their highest material quality. In many applications seals made of Seal Maker Polyurethane outperform the service life of seals made out of competitive manufacturers' materials. The reason for this can be attributed on the one hand to the careful selection of raw materials, and on the other hand to the "direct" manufacturing technology. Unlike the thermoplastic processed products, the cast semi-finished products of Polyurethane billets made by Seal Maker have the greatest degree of freedom to develop their physical properties during polymerization. Any kind of negative influence during the polymerization process by heating up and plastic deformation is avoided with our technology. Besides the standard materials we also produce materials with an optimized coefficient of

friction, and materials for direct contact with foodstuffs. A further important fact is that Seal Maker semi-finished products made of Polyurethane, up to a hardness of 95 Shore A, come with a clamping ring. This makes the use in lathe machines a lot easier, and also independent from the type of the production machine. With the Polyurethane series U5XX Seal Maker offers a wide-ranging delivery program which includes various optimized versions in addition to the standard version U500-R95. Be it high temperatures up to 135°C, or low temperature down to -50°C, or low friction, more hardness, less hardness, better chemical resistance, or an application in contact with food stuff, U5XX covers all the different sectors.

The high quality Polyurethane versions U5XX and U203 offered by Seal Maker are hydraulics resistant (H-PU). More information you can find in our material data sheets.





## Elastomers

Elastomers, often referred to as rubber materials, are a reasonable completion of the product range. Although they got widely pushed out of many applications by the modern Polyurethanes, the elastomer products remain important in seal technology due to their wide spectrum of thermal and chemical resistance. Seal Maker works exclusively with rubber compounds made by internationally highly recognized batch manufacturers. This, in conjunction with Seal Maker's modern processing technology, is the guarantee for well approved material compounds and an economical shaping. The resulting benefit for our customers is an excellent price-quality ratio, and also prompt availability of both standard and special dimensions and materials. All Seal Maker semi-finished products made of elastomer materials come in a hard shell, which makes them easy machinable in CNC lathes, despite the low hardness and high elasticity.

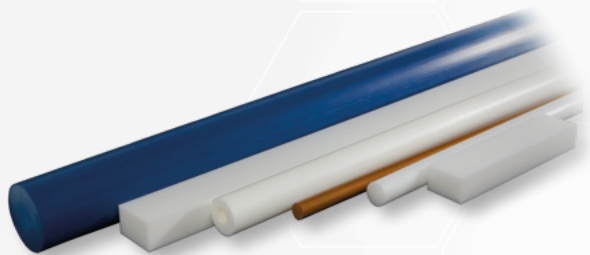
**NBR | EPDM | FPM | TFE/P | SILICONE**



## Plastics

Hard plastics and fluorinated thermoplastics, as used for back up rings and guide rings, as well as for special and pre-loaded seals, complete the product range of Seal Maker semi-finished products. Seal Maker takes care that the suppliers of these products fulfill the high quality requirements as set by ourselves and by our customers. The excellent business connection we maintain with our suppliers, a broad product line, in combination with efficient warehouse management, guarantee prompt availability. Not only the dimensional range of semi-finished products is well adapted to the requirements of machining, it is also the wide variety of different material compounds which covers all the requirements of seal application.

**POM | PA | PTFE | PEEK | diverse Compounds**



## Special Materials

These semi-finished material billets are high quality plastic products, produced solely by means of extrusion. The wide choice of thermoplastic products is convincing: sheets, bars and tubes are available in all important standard dimensions. Various material types are available in all standard and intermediate sizes as well as with well defined tolerances.

# CHEMICAL CONSISTENCY




























Semi-finished group	U203	U5XX	NBR	HNBR	EPDM	FPM	TFE/P	Silicone	POM	PA	PTFE	PEEK
Typical Seal Maker products	U203-G95	U5XX-R95	NBR N107	HNBR HN112	EPDM E131	FPM F109	TFE/P AF101	Silicone S102	POM P101	PA A112	PTFE T101	PEEK PK100
Air up to 100° C	R	R	R	R	R	R	R	R	R	R	R	R
Water up to 90°	R	R	R	R	R	R	R	R	R	S	R	R
Sea Water	R	R	R	R	R	R	R	R	R	S	R	R
Steam up to 140°C	U	U	U	S	R	U	R	S	U	U	R	R
Mineral oil and greases	R	R	R	R	U	R	R	S	R	R	R	R
ASTM 1 aliphatic motor- and gear oils	R	R	R	R	U	R	R	R	R	R	R	R
ASTM 3 aromatic mineral oils	S	R	R	R	U	R	R	U	R	R	R	R
Aliphatic hydro-carbons (Propane, Butane, natural gas, etc.)	R	R	R	R	U	R	R	U	R	R	R	R
Aromatic hydro-carbons (Benzol, Toluol, xylol, etc.)	U	U	U	U	U	R	R	U	R	R	R	R
Chlorinated hydro-carbons (Chloroform, Trichlorethylen, etc.)	U	U	U	U	U	R	R	U	U	U	R	R
Fuel (Benzine, Diesel, Kerosine)	S	R	R	R	U	R	R	U	R	R	R	R
Hydraulic oils with mineral oil basis	R	R	R	R	U	R	R	S	R	R	R	R
Hydraulik fluids of group HFA	R	R	R	R	U	R	R	S	R	S	R	R
Hydraulik fluids of group HFC (Glycol-water)	U	U	R	R	R	R	R	S	R	S	R	R
Hydraulik fluids of group HFD (Ester of phosphoric acid)	U	U	U	U	S	R	R	S	R	R	R	R
Breaking fluids based on Glycol	U	U	U	U	R	R	R	R	U	U	R	R
Silicone oils and greases	R	R	R	R	R	R	R	U	R	R	R	R
Animal and vegetarian oils and greases	R	R	R	R	U	R	R	R	R	R	R	R
Alcohol	U	U	S	S	R	S	R	R	R	R	R	R
Polar solvents (Acetone, MEK, Ethyl-Acetate, Di-Ethyl-Ether, etc.)	U	U	U	U	R	U	U	U	R	R	R	R
Diluted acids and leaches	R	R	S	S	R	R	R	S	S	S	R	R
Concentrated acids and leaches	U	U	U	U	R	R	R	U	U	U	R	R
Saline solution	R	R	R	R	R	R	R	R	R	S	R	R

R = resistant | S = suitable | U = unsuitable



The chart gives an overlook over the most common pressure fluids and seal materials, and of their applicability. Please bear in mind that several working conditions, like e. g. the temperature, may influence the usability of different materials in the hydraulic fluids. For further and more detailed information you call on us, or you look them up in our media resistance table. In case of remaining doubt even tests might become necessary, which we are prepared to carry out on request of our customers.

# PHYSICAL PROPERTIES









Sealing materials Semi-finished products		Color	Density	Hardness	Hardness	100% modulus	300% modulus	Tear strength
DIN/ASTM Standard			DIN ISO 1183-1	DIN ISO 7619-1	DIN ISO 7619-1	DIN 53504	DIN 53504	DIN 53504 / ASTM D4894
Units			g/cm³	Shore A	Shore D	N/mm²	N/mm²	N/mm²
POLYURETHANES	PU U500-R95		1,16 ±0,03	95 ±2	—	≥ 10	≥ 30	≥ 50
	PU U505-P79		1,15 ±0,03	79 ±3	—	≥ 5,5	≥ 25	≥ 30
	PU U510-G88		1,17 ±0,03	90 ±2	—	≥ 8	≥ 30	≥ 45
	PU U520-OR95-HT		1,16 ±0,03	96 ±2	—	≥ 10	≥ 25	≥ 45
	PU U530-B95-LT		1,11 ±0,03	95 ±2	—	≥ 7	≥ 15	≥ 40
	PU U535-B95		1,17 ±0,03	95 ±2	—	≥ 10	≥ 30	≥ 50
	PU U540-VI95-CR		1,16 ±0,03	95 ±2	—	≥ 10	≥ 30	≥ 45
	PU U550-GM95		1,16 ±0,03	95 ±2	—	≥ 10	≥ 30	≥ 45
	PU U570-D57		1,17 ±0,03	—	57 ±3	≥ 12	≥ 25	≥ 40
	PU U580-D57 G		1,17 ±0,03	—	57 ±3	≥ 13	≥ 25	≥ 45
	PU U203-G95		1,10 ±0,03	95 ±2	—	≥ 10	≥ 15	≥ 40
ELASTOMERS	NBR N107-B85		3,31 ±0,03	85 ±5	—	12,7 *	—	15,6 *
	NBR 95 N109-B95		3,31 ±0,03	95 ±3	—	—	—	21,2 *
	NBR-FDA N111-W85		1,38 ±0,03	85 ±5	—	5,8 *	—	10,6 *
	H-NBR HN112-B85		1,23 ±0,03	83 ±5	—	9,5 *	—	19,3 *
	HNBR HN900-B85-RGD		1,30 ±0,03	86 ±5	—	7,5 *	—	19,9 *
	HNBR HN901-B85-RGD-LT		1,39 ±0,03	83 ±5	—	3,4 *	—	7,8 *
	EPDM E131-B85		1,21 ±0,03	85 ±5	—	9,3 *	—	12,7 *
	EDPM FDA E132-W85		1,39 ±0,03	85 ±5	—	3,0 *	—	5,8 *
	EDPM KTW W270 E134-B85		1,27 ±0,03	85 ±5	—	—	—	16,1 *
	TFE/P AF101-B85		1,76 ±0,03	86 ±5	—	10,6 *	—	12,1 *
	FPM F109-BR85		2,41 ±0,03	84 ±5	—	6,7 *	—	9,4 *
	FPM F110-BR85		2,45 ±0,03	85 ±5	—	6,3 *	—	8,5 *
	FPM F111-B85		1,86 ±0,03	85 ±5	—	7,5 *	—	11,6 *
	FPM RGD F800-B85-RGD		2,0 ±0,03	86 ±3	—	8,5 *	—	12,5 *
	Silicone FDA S102-R85		1,525 ±0,03	85 ±5	—	6,8 *	—	7,7 *
	Silicone FDA S103-B85		1,54 ±0,03	85 ±5	—	6,1 *	—	7,5 *



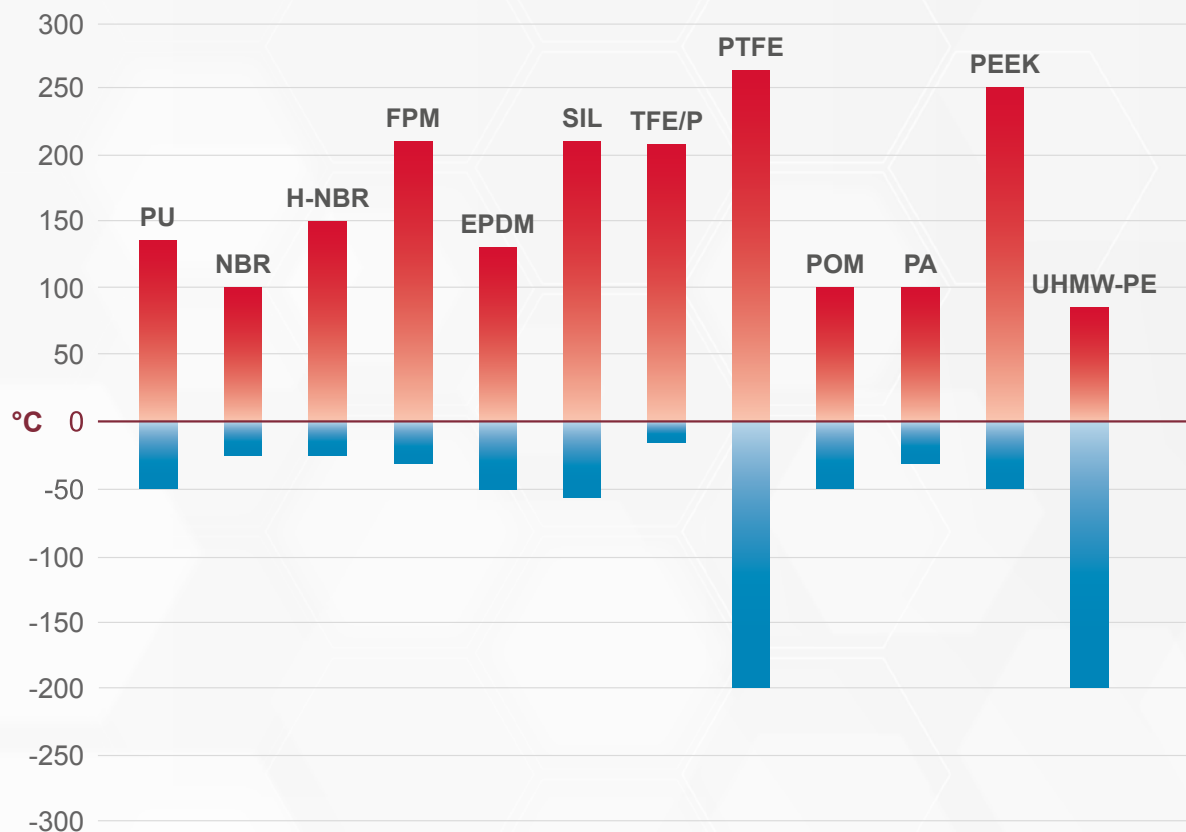
Elongation at break	Tear growth resistance	Compression set 22h/70°C	Compression set 22h/100°C	Compression set 22h/150°C	Compression set 22h/175°C	Coefficient of friction (dyn.)	Humidity absorption	Minimum service temperature	Maximum service temperature
DIN 53504 / ASTM D4894	DIN ISO 34-1	DIN ISO 815-1	DIN ISO 815-1	DIN ISO 815-1	DIN ISO 815-1	ASTM D1894	23°C/50% rel. M		
%	kN/m	%	%	%	%	μ	%	°C	°C
≥ 350	≥ 100	≤ 25	≤ 35	—	—	—	—	-30	125
≥ 310	—	≤ 30	≤ 35	—	—	—	—	-25	100
≥ 300	≥ 90	≤ 25	≤ 45	—	—	—	—	-30	115
≥ 350	≥ 110	≤ 25	≤ 30	—	—	—	—	-30	135
≥ 450	≥ 100	≤ 20	≤ 30	—	—	—	—	-50	105
≥ 350	≥ 100	≤ 25	≤ 35	—	—	—	—	-30	125
≥ 300	≥ 120	≤ 25	≤ 40	—	—	—	—	-30	115
≥ 320	≥ 110	≤ 25	≤ 35	—	—	—	—	-30	125
≥ 330	≥ 130	≤ 25	≤ 35	—	—	—	—	-30	125
≥ 310	≥ 120	≤ 25	≤ 30	—	—	—	—	-30	125
≥ 400	≥ 100	≤ 20	≤ 30	—	—	—	—	-30	105
169,0 *	19,9 *	6,2 *	12,5 *	—	—	—	—	-25	100
56,8 *	16,2 *	13,5 *	14,2 *	—	—	—	—	-25	100
285,1 *	7,2 *	11,0 *	14,3 *	—	—	—	—	-22	100
241,5 *	19,6 *	15 *	13,5 *	—	—	—	—	-25	150
236,7 *	16,6 *	13,7 *	11,5 *	≤ 27	—	—	—	-20	150
273,2 *	10,4 *	10,6 *	11,9 *	≤ 24	—	—	—	-40	150
120,3 *	34,4 *	10,8 *	9,2 *	—	—	—	—	-50	130
454,5 *	28,8 *	19,8 *	31,1 *	—	—	—	—	-50	100
145,0 *	6,9 *	7,0 *	12,0 *	—	—	—	—	-45	100
140,0 *	19,4 *	21,7 *	21,0 *	—	36,8 *	—	—	-15	210
168,0 *	16,8 *	7,3 *	7,1 *	—	12,6 *	—	—	-20	210
208,1 *	16,0 *	7,6 *	7,3 *	—	12,3 *	—	—	-25	210
211,6 *	20,4 *	4,0 *	10,5 *	—	16,5 *	—	—	-25	210
240,0 *	28,2 *	≤ 12	≤ 12	—	19,9 *	—	—	-30	210
130,0 *	24,2 *	4,0 *	4,1 *	—	9,8 *	—	—	-55	210
177,3 *	24,8 *	3,6 *	4,8 *	—	10,8 *	—	—	-55	180

\*The stated values are subject to a tolerance of ±25%

## PHYSICAL PROPERTIES

Sealing materials Semi-finished products		Color	Density	Hardness	Hardness	100% modulus	300% modulus	Tear strength
DIN/ASTM Standard			DIN ISO 1183-1	DIN ISO 7619-1	DIN ISO 7619-1	DIN 53504	DIN 53504	DIN 53504 / ASTM D4894
Units			g/cm <sup>3</sup>	Shore A	Shore D	N/mm <sup>2</sup>	N/mm <sup>2</sup>	N/mm <sup>2</sup>
PLASTICS	POM FDA P101-WE		1,41	—	—	—	—	68-70
	PA FDA A112-WC		1,15	—	—	—	—	80-85
	PTFE FDA T101-W		2,13 – 2,19	—	≥ 51	—	—	≥ 20
	PTFE-F T105-G		2,20 – 2,30	—	≥ 55	—	—	≥ 17
	PTFE-BR40 T110-BR40		3,00 - 3,15	—	≥ 60	—	—	≥ 15
	PTFE-C25 T125-C25		2,05 - 2,12	—	≥ 62	—	—	≥ 13
	PEEK PK100-CN		1,31	—	—	—	—	115
	UHMW-PE PE1000-HD		0,93	—	60 - 65	—	—	40



















## TEMPERATURE RANGE




















Elongation at break	Tear growth resistance	Compression set 22h/70°C	Compression set 22h/100°C	Compression set 22h/150°C	Compression set 22h/175°C	Coefficient of friction (dyn.)	Humidity absorption	Minimum service temperature	Maximum service temperature
DIN 53504 / ASTM D4894	DIN ISO 34-1	DIN ISO 815-1	DIN ISO 815-1	DIN ISO 815-1	DIN ISO 815-1	ASTM D1894	23°C/50% rel. M		
%	kN/m	%	%	%	%	μ	%	°C	°C
35	—	—	—	—	—	<0,4	0,2	-50	100
25	—	—	—	—	—	<0,4	2,2	-30	100
≥ 200	—	—	—	—	—	0,06 - 0,08	—	-200	260
≥ 200	—	—	—	—	—	0,08 - 0,18	—	-200	260
≥ 180	—	—	—	—	—	0,14 - 0,25	—	-200	260
≥ 60	—	—	—	—	—	0,12 - 0,25	—	-200	260
17	—	—	—	—	—	≤ 0,5	0,2	-50	250
17	—	—	—	—	—	≤ 0,025	0,01	-200	80

**i** When applying sealing materials in practice, apart from the mechanical and chemical properties the temperature resistance is of highest importance. Constant exposure of a material to varying temperatures may cause deviations of dimensions and / or of mechanical and chemical properties. The material might be damaged or the minimum and maximum application temperatures might be significantly changed and service life reduced. Thus, the indicated values should be regarded as reference values.

# TABLE OF MATERIALS

	Description	Color	Application temp.	Hardn. at 20°C	Main application
POLYURETHANES * all Polyurethane grades resistant to hydrolysis	PU U500-R95 red		-30 to +125°C	Shore A 95 +/-2	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water, dilute acids and alkaline solutions improved chemical and thermal resistance excellent wear and friction properties
	PU U505-P79 petrol		-25 to +100°C	Shore A 79 +/-3	U-cup seals and wipers in pneumatic applications, as a preload element replacing NBR especially in large diameter range   Hydraulic fluids, oil in water emulsions, water power applications and other applications that require high abrasion resistance and elasticity at the same time
	PU U510-G88 light green		-30 to +115°C	Shore A 90 +/-2	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water, dilute acids and alkaline solutions   Application for pneumatic and low pressure
	PU U520-OR95-HT orange		-30 to +135°C	Shore A 96 +/-2	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water, dilute acids and alkaline solutions   Applications at high temperature
	PU U530-B95-LT light blue		-50 to +105°C	Shore A 95 +/-2	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water   Applications at low temperature
	PU U535-B95 blue		-30°C to 125°C	Shore A 95 +/-2	Static and dynamic applications, primarily used for U-cut seals, wipers and chevron packings   particularly suitable for food contact applications   hydraulic liquids, oil-in-water emulsions, water power and mining applications, as well as presses
	PU U540-VI95-CR violet		-30 to +115°C	Shore A 95 +/-2	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water   Improved chemical resistance, suitable for CIP processes   Applicable for contact with foodstuff
	PU U550-GM95 dark red		-30 to +125°C	Shore A 95 +/-2	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water   Improved wear and friction properties for waterhydraulics and heavy duty applications with low lubrication
	PU U570-D57 blue		-30 to +125°C	Shore D 57 +/-3	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB fluids, water, sea water   High pressure and extrusion resistance
	PU U580-D57G grey		-30 to +125°C	Shore D 57 +/-3	Back-up rings or composite seals with preload element   Mineral oils, HFA, HFB fluids, water, sea water   High pressure and extrusion resistance   Improved wear and friction properties
NBR	PU U203-G95 green		-30 to +105°C	Shore A 95 +/-2	Lip seals, wiper rings, vee packings and other seal elements Mineral oils, HFA, HFB fluids, water, sea water
	NBR N107-B85 black		-25 to +100°C	Shore A 85 +/-5	Lip seals, wiper rings, vee packings and other seal elements Mineral oils, HFA, HFB, HFC fluids, cold water
	NBR 95 N109-B95 black		-25 to +100°C	Shore A 95 +/-3	Lip seals, wiper rings, vee packings and other seal elements Mineral oils, HFA, HFB, HFC fluids, cold water
H-NBR	NBR FDA N111-W85 white		-22 to +100°C	Shore A 85 +/-5	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB, HFC fluids, cold water   Applicable for contact with foodstuff
	H-NBR HN112-B85 black		-25 to +150°C	Shore A 83 +/-5	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB, HFC fluids at high temperature   Aliphatic hydrocarbons, dilute acids and bases
	H-NBR RGD HN900-B85-RGD black		-20 to +150°C	Shore A 86 +/-5	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB, HFC fluids at high temperature   Aliphatic hydrocarbons, dilute acids and bases   RGD (ED) optimized for use in Oil & Gas Industry
FPM	H-NBR RGD LT HN901-B85-RGD black		-40 to +150°C	Shore A 83 +/-5	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFA, HFB, HFC fluids at high temperature   Aliphatic hydrocarbons, dilute acids and bases   RGD (ED) optimized for low temperature use in Oil & Gas Industry   Meets the NORSOK M-710 requirements
	FPM F109-BR85 brown		-20 to +210°C	Shore A 84 +/-5	Lip seals, wiper rings, vee packings, oil seals at high speed and other seal elements   Mineral oils, HFD fluids at high temperature   Very good chemical resistance such as phosphates and chlorinated hydrocarbons, crude and sour gas



















































	Description	Color	Application temp.	Hardn. at 20°C	Main application
FPM	FPM FDA F110-BR85 brown		-25 to +210°C	Shore A 85 +/-5	Mineral oils, HFD fluids at high temperature   Very good chemical resistance such as phosphates and chlorinated hydrocarbons, crude and sour gas   Applicable for contact with foodstuff
	FPM F111-B85 black		-25 to +210°C	Shore A 85 +/-5	Lip seals, wiper rings, vee packings, oil seals at high speed and other seal elements   Mineral oils, HFD fluids at high temperature   Very good chemical resistance such as phosphates and chlorinated hydrocarbons, crude and sour gas
	FPM-RGD F800-B85-RGD black		-30 to +210°C	Shore A 86 +/-3	Lip seals, wiper rings, vee packings and other seal elements   Mineral oils, HFD fluids at high temperature   Very good chemical resistance such as phosphates and chlorinated hydrocarbons, crude and sour gas   RGD (ED) optimized for use in Oil & Gas Industry   Meets the NORSOK M-710 requirements
EPDM	EPDM E131-B85 black		-50 to +130°C	Shore A 85 +/-5	Lip seals, vee packings and other seal elements   Hot water and steam, ozone, dilute acids and alkaline solutions   EPDM is NOT resistant against mineral oils
	EPDM FDA E132-W85 white		-50 to +100°C	Shore A 85 +/-5	Lip seals, vee packings and other seal elements   Hot water and steam, ozone, dilute acids and alkaline solutions   EPDM is NOT resistant against mineral oil   Applicable for contact with foodstuff
	EPDM KTW W270 E134-B85 black		-45 to +120°C	Shore A 85 +/-5	Lip seals, vee packings and other seal elements   Hot water and steam, dilute acids and alkaline solutions   EPDM is NOT resistant against mineral oil   Applicable for use in drinking water
SILICONES	Silicone FDA S102-R85 red		-55 to +210°C	Shore A 85 +/-5	Flange seals, gaskets and other static seals   Mineral oils, HFA, HFB, HFC, HFD fluids, ozone Not recommended for dynamic applications   Applicable for contact with foodstuff
	Silicone FDA S103-BL85 blue		-55 to +180°C	Shore A 85 +/-5	Flange seals, gaskets and other static seals   Mineral oils, HFA, HFB, HFC, HFD fluids, ozone Not recommended for dynamic applications   Applicable for contact with foodstuff
TFE/P	TFE/P AF101-B85 black		-15 to +210°C	Shore A 86 +/-5	Lip seals, vee packings and other seal elements   Mineral oils, HFA, HFB, HFC, HFD fluids Hot water and steam, ozone, dilute acids and alkaline solutions, Sour oil and gas, amines
PTFE	PTFE-P FDA T101-W white		-200 to +260°C	Shore D ≥ 51	Composite seals with elastomer preload elements, spring loaded seals, Back-up and guide rings Resistance to almost all common chemicals and fluids except molten alkaline metals   Applicable for contact with foodstuff
	PTFE-F T105-G grey		-200 to +260°C	Shore D ≥ 55	Composite seals with elastomer preload elements   Spring loaded seals, back-up and guide rings   Resistance to almost all common chemicals and fluids except molten alkaline metals Glass fibre / MoS2 reinforced for improved wear and extrusion resistance
	PTFE-40% T110-BR40 bronze brown		-200 to +260°C	Shore D ≥ 60	Composite seals with elastomer preload elements   Resistance to almost all common chemicals except molten alkaline metals   Filled with 40% bronze for improved wear, pressure and extrusion resistance
	PTFE-25% T125-C25 carbon grey		-200 to +260°C	Shore D ≥ 62	Composite seals with elastomer preload elements   Spring loaded seals, back-up and guide rings, rotary seals   Resistance to almost all common chemicals except molten alkaline metals 25% carbon powder friction properties and increased extrusion resistance
PLASTICS	POM FDA P101-WE white		-50 to +100°C	-	Back-up and guide rings, machined parts with tight tolerances   Mineral oils, HFA, HFB, HFC fluids   Minor absorption of water, applicable for contact with foodstuff
	PA FDA A112-WC natural		-30 to +100°C	-	Back-up and guide rings, machined parts   Mineral oils, acids and dilute alkaline solutions Applicable for contact with foodstuff
	PEEK natural PK100-CN beige		-50 to +250°C	-	Composite seals with elastomer preload elements, Back-up and guide rings high precision parts   Excellent wear, friction and extrusion properties   Resistance to almost all common chemicals   Applicable for contact with foodstuff
	UHMW - PE PE1000-HD white		-200 to +80°C	Shore D 60 - 65	Back-up and guide rings, spring loaded seals   Mineral oils, HFC, HFD fluids, acids and dilute alkaline solutions, Sour oil and gas   Very low water absorption, excellent friction and wear properties   Applicable for contact with foodstuff

The indicated minimum application temperatures are thought as a general guideline, because a seal's function at low temperatures is dependent on the kind of the seal, the general application conditions, and on the kind of the surrounding metal parts the seal is in touch with. The indicated upper temperature limits may be exceeded, but this reduces the service life. Other materials available on request.  
**In case of doubt you are always welcome to contact our application engineers.**



# FOOD CONTACT MATERIALS

CONFORM WITH FDA AND EG 1935/2004

Materials		Technical properties					Standards					
		Color	Temp.		Hardness							
			min.	max.			EU1935/2004 10/2011	REACH	FDA 21 CFR 177.1680	3A	GB4806.7	
			[°C]	[°C]	[ShA]	[ShD]						ADI
POLYURETHANES	U500-R95		-30	125	95 ±2		+	+	+	+		+
	U530-B95-LT		-50	105	95 ±2		+	+	+	+		+
	U535-B95		-30	125	95 ±2		+	+	+	+	+	+
	U540-VI95-CR		-30	115	95 ±2		+	+	+	+		+
	U570-D57		-30	125		57 ±3	+	+	+	+		+
ELASTOMERS	N111-W85		-22	100	85 ±5		+	+	+	+		+
	E132-W85		-50	100	85 ±5		+	+	+	+		+
	E134-B85		-45	110	88 ±5		+	+	+	+		+
	F110-BR85		-25	210	85 ±5		+	+	+	+		+
	S102-R85		-55	210	85 ±5		+	+	+	+		+
	S103-BL85		-55	180	85 ±5		+	+	+	+		+
PLASTICS	POM P101-WE		-50	105			+	+	+	+		+
	PA A112-WC		-30	100			+	+	+	+		+
	PTFE T101-W		-200	260		>50	+	+	+	+		+
	PEEK PK100-CN		-50	250			+	+	+	+		+

+ resistant | \*on request

The charts on page 8-10 only represent an excerpt of our most important seal materials and their typical properties. The data represent the typical results of tests. It is not recommended to go to the limits of more than one property.

**An exhaustive overlook over all Seal Maker materials can be found on pages 12-13.**

More detailed information can be found in our material data sheets. In case of doubt we suggest to get in contact with our application engineers, or to carry out a test run.





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