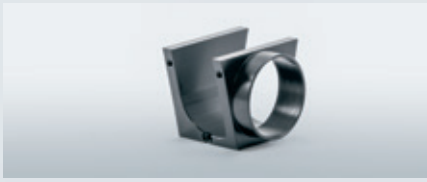
trygonal
GROUP

Plastic Turned and Milled Parts



- We are a sealing and plastic parts manufacturer
- We see ourselves as a partner to our customers
- We are independent, holistic and solution-oriented
- We are an international network company and we work world-wide
- We see our company culture like life: varied, complex and exciting
- We value greatly the individuality and the expertise of the staff
- We are committed to high professional ethics and integrity in all we do

All this creates a passionate, innovative and dynamic team to support your business.

Trygonal
Plastic Turned and Milled Parts

We are an international group of independent seal manufacturers and plastics processors. Our group offers all types of seals and plastic parts such as o-rings, molded rubber parts, rubber-metal compounds, foam parts, semi-finished materials and lathe machines for the machined seals production.

For all these products mentioned above modern manufacturing techniques are being used.

We develop and produce plastic parts from all known engineered materials such as: PTFE, PEEK, PPS, POM, PA, PE, PVC etc.

The finished or assembled parts are based on customers drawings, sketches or samples. Modern CNC machines as well as conventional machines for turning, milling or drilling are being used.

As well as our prototypes, and small or large batches, we can advise you on stamping, water jet and laser parts, not forgetting forming, molding, extrusion, vulcanization. Injection molding parts are also available.

Because plastic applications are always evolving and developing, our own experts are always ready to help you make the right choice for your application. Thanks to constantly ongoing developments, new materials with excellent properties are getting launched. Ask us about all the latest developments in new materials and their behaviours so we can direct you to the best solution for your needs.

During our discussions we can indentify and recommend you the most suitable solution.

We are constantly monitoring developments and offer a comprehensive range of services for virtually all applications.

Production method

Modern CNC turning and milling centers as well as CAD / CAM systems and measuring equipment are being used

- Milling: 3 -, 4 - and 5-axis machine centers
- Turning: Conventional lathes or CNC multi-axis machines with y-axis and counter spindles
- Heat treatment: Annealing in plastic
- Deburring / Finishing: Manual or Thermal (cooling / heating)
- QS metrology: Optical and tactile CNC measuring machines

Plastic variety

- Standard plastics up to 100 °C
  PP (Plastic Parts)
- Engineering plastics up to 150 °C
  EPP (Engineered Plastic Parts)
- High performance and special plastics to 300 °C
  AEPP (Advanced Engineered Plastic Parts)
- FP (Fluor Polymers)

Material modifications

For complex applications, we also offer materials including additives such as modified glass fiber, carbon fiber, friction modified fillers and also different material with certifications such as FDA, KTW, NSF, etc. to.

Applications

Automotive, construction, mining, railway, power generation (power plants, solar energy and wind power), aerospace, semiconductor, food and beverage, engineering, medical, mobile hydraulics, oil and gas, paper, pharmaceutical, steel mills, chemical.

QS certificats

- ISO 9001:2008 (Management)
- DIN EN ISO 14001:2009 (Environnement)

Material Selection Criteria – Plastic Parts

Material Short Term	Density (g/cm3)	Colour	Modifications, additives and reinforcing materials	Operating temperature (°C)	Operating temperature short-term (°C)		Food compliance	Drinking water compliance	Biocompatibility	Hardness / Rigidity	Impact strength	Wear resistance	Suitability for sliding applications	Outdoor use	Acid diluted	Acid concentrated	Lye diluted	Lye concentrated	Hot water / steam	UV radiation	Gamma radiation
Thermoplastics																					
SB	1,05	white		-40 to +70	+80		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVC-U	1,42	grey, red, transparent		-0 to +60	+75		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVC-U FO	0,55	white, grey	foamed[4]	-0 to +60	+75		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVC-U FO COLOR	0,60	colored	foamed[4]	-0 to +60	+75		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVC-U FO ED	0,55	white	foamed[4], static dissipative	-0 to +60	+75		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVC-U FO UV	0,67	white	foamed[4], weather stabilized	-0 to +60	+75			●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-LD PE-LD	0,92	nature		-50 to +65	+75		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-HD PE-HD	0,95	black		-50 to +80	+90			●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-HMW	0,95	nature, maroon and other		-100 to +80	+90		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-UHMW	0,93	nature, black and colored		-260 to +95	+100		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-UHMW ED	0,93	black	static dissipative	-260 to +95	+100		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-UHMW ED FDA	0,94	black	static dissipative	-260 to +95	+100		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PE-UHMW FR	1,05	black	flame retardant	-260 to +95	+100		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PP	0,91	grey, colored		-0 to +100	+110		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PP LSG[1]	0,92	nature, black	heat-stabilized	-0 to +100	+110		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PP GM40	1,21	black	reinforced glass material	-0 to +100	+110			●	●	●	●	●	●	●	●	●	●	●	●	●	●
PP GF30	1,14	black	30% glass fiber	-0 to +100	+110		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
ABS	1,06	grey		-40 to +91	+101		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Thermoplastics transparent																					
PMMA-XT	1,19	transparent, colored		-40 to +75	+90		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PMMA-GS	1,19	transparent, colored		-40 to +75	+90		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PMMA-XT ED	1,19	transparent	electrostatic dissipative[2]	-40 to +75	+90		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PET-A	1,34	transparent		-20 to +115	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PET-G	1,27	transparent	glycol modified	-20 to +115	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PC	1,20	nature, transparent		-60 to +125	+135		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PC LSG[1]	1,20	nature (translucent)		-60 to +125	+135		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PC EC	1,20	transparent	electrically conductive[2]	-60 to +125	+135		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PC FR	1,20	transparent	flame retardant	-60 to +125	+135		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Thermosets – Laminates[5]																					
PF CP Hp 2061	1,35	dark brown	paper	-30 to +120	+150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PF CP MKHP	1,40	grey	paper and melamine	-30 to +120	+150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PF CC Hgw 2082	1,35	brown	cotton fabric	-30 to +120	+150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PF CC Hgw 2088	1,35	brown	cotton fabric	-30 to +120	+150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
EP GC Hgw 2372.1	1,80	brownish-green	glass filament	-40 to +113	+123		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
EP GC Hgw 2372.4	1,80	brownish-green	glass filament	-40 to +155	+180		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
EP GM	1,85	yellow-brownish	glass filament material	-40 to +115	+125		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
UP GM Hm 2471	1,80	white	glass filament material	-40 to +116	+126		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
UP GM Hm 2472	1,90	white	glass filament material	-40 to +117	+127		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Thermosets - Pultrusion material[5]																					
GFK UP	1,90	white	glass fibre[3]	-100 to +155	+180		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

[1] LSG: plastics for medical and food applications
[2] surface coating
[3] unidirectional, endless
[4] closed cells
[5] on demand

● suitable / resistant
● partly suitable / partly resistant
● not suitable / not resistant

Short descriptions

Styrene-butadiene copolymer (SB)

- The key properties of Styrene-butadiene copolymer are: high stiffness and hardness as well as high impact resistance and good low-temperature strength.
- It is non-toxic and can be glued and warm formed. Moreover, it is an inexpensive material but not weather resistant.

Polyvinyl chloride (PVC)

- Polyvinylchloride offers: good strength properties, stiffness and hardness, but low impact strength and also a good chemical resistance.
- Polyvinyl chloride is sensitive to stress cracking, but it can be glued as well as welded.

Polyethylene (PE)

- Polyethylenes are characterized by: good wear and abrasion resistance, high impact strength, high chemical resistance, low coefficient of friction and almost no water absorption.
- Very good electrical insulators, with high dielectric strength and the material is physiologically harmless.
- It is also highly resistant to energetic radiation.

Polypropylene (PP)

- Polypropylene (PP) has a higher mechanical strength, stiffness, and hardness than polyethylene (PE), but it has a lower impact strength, especially at low temperatures.
- You will find Polypropylene as well as polyethylene applications in the food sector.

Acrylonitrile-butadiene-styrene (ABS)

- Acrylonitrile-butadiene-styrene has a high surface hardness and is therefore scratch-resistant; it is suitable for matt glossy surface applications, it has a good impact strength and good oil resistance. The material can be also glued.

Polymethylmethacrylate (PMMA)

- Polymethlmethacrylate has a good mechanical strength, stiffness and hardness, but a low impact strength.
- Polymethlmethacrylate is sensitive to stress cracking, but has good ageing resistance.

Polyethylene terephthalate (PET)

- PET-A / G is used for transparency parts like foils. The bonding of PET-A foils is possible with solvent-free adhesives.

Polycarbonate (PC)

- Polycarbonate has a high mechanical strength and excellent impact strength, good temperature resistance and good electrical properties.
- Polycarbonate is sensitive to stress cracking; it can be used in the food industries.

Material Selection Criteria – Engineered Plastic Parts

Material Short Term	Density (g/cm3)	Colour	Modifications, additives and reinforcing materials	Operating temperature (°C)	Operating temperature short-term (°C)		Food compliance	Drinking water compliance	Biocompatibility	Hardness / Rigidity	Impact strength	Wear resistance	Suitability for sliding applications	Outdoor use	Acid diluted	Acid concentrated	Lye diluted	Lye concentrated	Hot water / steam	UV radiation	Gamma radiation
Thermoplastics																					
PA 6 E	1,14	○ ● nature, black		-40 to +85	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 6 MO	1,14	● black	MoS2	-20 to +95	+180		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 66	1,14	○ ● nature, black		-30 to +95	+180		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 66 MO	1,15	● anthracite	MoS2	-20 to +95	+180			●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 66 GF30	1,29	● black	30% glass fibre	-20 to +120	+240		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 66 CF20	1,23	● black	20% carbon fibre	-40 to +75	+85		●	●	●	●	●	●	●	●	●	●	●	●	●		
PA 46	1,18	● maroon		-40 to +155	+200		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 12	1,02	○ ● nature, black		-40 to +77	+87		●	●	●	●	●		●	●	●	●	●	●	●	●	●
PA 6 G	1,15	○ ● ● nature, black, blue		-30 to +105	+170		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 6 G MO	1,16	● anthracite	MoS2	-30 to +105	+170			●	●	●	●	●	●	●	●	●	●		●	●	●
PA 6 G HS	1,15	● black	heat stabilized	-40 to +80	+90		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 6 G LO	1,14	● yellow green	oil	-40 to +81	+91		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 6 G LO FDA	1,14	○ ● nature, blue	oil	-40 to +82	+92		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA 6 G PLUS	1,15	● blue	impact-modified	-40 to +83	+93		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA6 G SL	1,14	● grey	solid lubricant	-40 to +84	+94		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PA6 G SL PLUS	1,11	● dark blue	solid lubricant	-40 to +85	+95		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C	1,41	○ ● ◎ nature, black, colored		-50 to +115	+140		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C LSG[1]	1,41	○ ● ◎ nature, black, colored		-40 to +88	+98		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C SL	1,35	● blue	solid lubricant	-40 to +89	+99		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C EC elektrisch	1,45	● black	electrically conductive	-40 to +90	+100		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C ED	1,33	● beige	electrostatically dissipative	-40 to +91	+101		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C GF25	1,58	● grey	25% glass fibre	-40 to +92	+102			●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C ID	1,48	● ◎ grey, colored	detectable	-40 to +93	+103		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-C SAN	1,41	○ white	antimicrobial	-40 to +94	+104			●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-H	1,43	○ ● nature, black		-50 to +105	+150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
POM-H SL	1,50	● grey brown	PTFE	-20 to +105	+150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PET-C	1,39	○ ● nature, black		-20 to +115	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PET-C SL	1,44	● grey	solid lubricant	-20 to +115	+160		●	●	●		●	●	●	●	●	●	●	●	●	●	●
PET-H	1,36	○ white		-40 to +65	+73		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

[1] LSG: plastics for medical and food applications

- ● suitable / resistant
- ● partly suitable / partly resistant
- ● not suitable / not resistant

Short descriptions

Polyamide (PA)

- Polyamides have good mechanical properties, high wear resistance and are therefore suitable for moving machine elements.
- The physical properties such as impact strength, stiffness and hardness are dependent on the moisture content.
- In general Polyamides show good chemical properties and are resistant to high energetic radiation.
- By the adding of specific fillers, the properties can be modified.

Polyacetate (POM)

- Polyacetates show a high mechanical strength, high stiffness and hardness and they are both abrasion and wear resistant.
- Due to their lower moisture absorption, polyacetates show better dimensional stability than the polyamides.
- Additionally they have a high impact strength, good creep resistance and good chemical properties.
- For preparing, homopolymers (POM-H) and those with a higher hardness and stiffness better abrasion resistance is used.
- Furthermore, copolymers (POM-C) with a higher impact strength and higher chemical and thermal resistance can be chosen and used.

Polyethyleneterephthalate (PET)

- Polyethyleneterephthalates show good mechanical strength, stiffness and hardness, as well as having a high wear resistance and very good sliding properties.
- Compared to the polyacetate, polyethyleneterephthalate has a better dimensional stability and a lower creep tendency.
- Polyethyleneterephthalates have good electrical insulation properties and show higher resistance to acids than polyamides and polyacetates.

Material Selection Criteria – Advanced Engineered Plastic Parts

Material Short Term	Density (g/cm3)	Colour	Modifications, additives and reinforcing materials	Operating temperature (°C)	Operating temperature short-term (°C)		Food compliance	Drinking water compliance	Biocompatibility	Hardness / Rigidity	Impact strength	Wear resistance	Suitability for sliding applications	Outdoor use	Acid diluted	Acid concentrated	Lye diluted	Lye concentrated	Hot water / steam	UV radiation	Gamma radiation
Thermoplastics																					
PPE	1,06	grey, black		-40 to +100	+130																
PPE LSG [1]	1,08	colored		-40 to +100	+130																
PPE GF30	1,21	beige, black	30% glass fibre	-40 to +110	+130																
PPE LSG XRO [1]	1,08	colored	contrast	-40 to +110	+130																
PSU	1,24	nature		-50 to +150	+180																
PSU LSG	1,24	nature, colored		-50 to +150	+180																
PPSU	1,29	black		-50 to +180	+210																
PPSU LSG	1,29	black		-50 to +180	+210																
PPSU LSG XRO [1]	1,30	black, colored	contrast	-50 to +180	+210																
PEI	1,27	nature		-50 to +170	+200																
PEI LSG [1]	1,27	nature		-50 to +170	+200																
PEI EC	1,41	black	electrically conductive	-50 to +170	+200																
PPS GF40	1,64	black	40% glass fibre	-50 to +170	+200																
PPS GF SL	1,43	dark blue	glass fibre + solid lubricant	-50 to +170	+200																
PPS SL	1,47	black	carbon fibre + graphite + PTFE	-50 to +170	+200																
PEEK	1,30	nature		-60 to +250	+300																
PEEK LSG	1,30	nature, black, colored		-60 to +250	+300																
PEEK CLASSIX® LSG [1]	1,38	white		-60 to +250	+300																
PEEK SL	1,45	black	carbon fibre + graphite + PTFE	-60 to +250	+300																
PEEK SL FDA	1,39	blue	solid lubricant	-60 to +250	+300																
PEEK GF30	1,51	nature	30% glass fibre	-20 to +250	+300																
PEEK GF30 LSG [1]	1,51	blue	30% glass fibre	-20 to +250	+300																
PEEK CF30	1,41	black	30% glass fibre	-20 to +250	+300																
PEEK CF30 LSG [1]	1,40	black	30% glass fibre	-20 to +250	+300																
PEEK EC	1,44	black	carbon fibre nanotubes, conductive	-20 to +250	+300																
PAI SL	1,41	ochre	TiO2 + PTFE	-200 to +250	+270																
PAI SL PLUS	1,45	black	graphite + PTFE	-200 to +250	+270																
PAI GF30	1,61	khaki grey	30% glass fibre	-200 to +250	+270																
PAI ED	1,58	khaki grey	static dissipative	-200 to +250	+270																
PI	1,43	brown		-250 to +250	+270																
PI GR15	1,51	anthracite	15% graphite	-250 to +250	+450																
PI GR40	1,65	anthracite	40% graphite	-250 to +250	+450																
PI GRP15	1,55	anthracite	15% graphite + PTFE	-250 to +250	+450																
PBI	1,30	black		-200 to +310	+500																

[1] LSG: plastics for medical and food applications

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Short descriptions

Polyphenylene ether (PPE)

- Polyphenylene has a high heat resistance, dimensional stability and form stability.
- Further it is distinguished by its resistance to hot water and its lower water absorption as well as its high impact strength.

Polysulfone (PSU)

- Over a high temperature range Polysulfones keep their mechanical values.
- They are highly resistant to chemicals and hydrolysis but sensitive to stress cracking.

Polyethere-Imide (PEI)

- Polyethere-Imide has excellent mechanical, thermal and electrical properties.
- Furthermore, the material is highly flame resistant, but sensitive to stress cracking.

Polyphenylene Sulfide (PSS)

- Polyphenylene Sulfide has an excellent chemical and hydrolytic resistance, good insulation and achieves high service temperatures.

Polyetheretherketone (PEEK)

- Polyetheretherketone has a high mechanical strength, stiffness and hardness. It is wear resistant and its friction behaviour is outstanding.
- It is also characterized by its high chemical resistance and its restistance against energetic rays.

Polyamide-Imide (PAI)

- Polyamide-Imide is highly flame retardant, has excellent wear and friction characteristics and has a very low thermal expansion coefficient.

Polyimide (PI)

- Polyimide shows excellent mechanical properties and is well known for its radiation resistance.
- Furthermore, this material has excellent wear and abrasion abilities as well as good gliding properties.

Polybenzimidazole (PBI)

- Polybenzimidazole offers the highest temperature resistance and the best mechanical properties in the group of unfilled thermoplastics.
- It is very wear-resistant and has a very low thermal expansion coefficient.

Material Selection Criteria – Fluor Polymers

Material Short Term	Density (g/cm3)	Colour	Modifications, additives and reinforcing materials	Operating temperature (°C)	Operating temperature short-term (°C)		Food compliance	Drinking water compliance	Biocompatibility	Hardness / Rigidity	Impact strength	Wear resistance	Suitability for sliding applications	Outdoor use	Acid diluted	Acid concentrated	Lye diluted	Lye concentrated	Hot water / steam	UV radiation	Gamma radiation
Thermoplastics																					
PTFE	2,18	white		-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE GF25	2,25	beige	25% glass fibre	-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE CF25	2,11	black	25% carbon powder	-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE BF60	3,9	bronze	60% bronze powder	-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE GF30M	2,28	light blue	30% glass fibre + metal	-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE MICA	2,30	beige	glimmer (MICA)	-180 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE GL	2,32	beige	glimmer	-180 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE CF	2,08	black	carbon fibre	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE GFM	2,25	dark red	glass fibre + metal	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE CFGR	2,10	black	carbon powder + graphite	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE BM	3,82	dark brown	bronze + MoS2	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE P	1,97	light yellow	polymer	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE CFL	2,09	black	carbon fibre long	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE PCFGRMO	1,89	dark grey	polymer + carbon powder + graphite + MoS2	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE GR	2,16	black	graphite	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE PLV	2,06	crème	polymer	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE PHV	2,06	crème	polymer	-260 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE EC	2,14	black	electrically conductive	-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE beschichtete Gewebe	–	various	various types	-150 to +260	+260		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE Bänder	–	various	various types	-80 to +260	+260		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTFE Folien	–	various	various types	-200 to +260	+260		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
FEP Folien	2,15	transparent		-200 to +205	+220		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PFA Folien	2,15	transparent		-200 to +260	+280		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PCTFE	2,12	nature (white)		-250 to +150	+180		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVDF	1,79	nature (white)		-60 to +150	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVDF EC	1,78	nature	electrically conductive	-60 to +150	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVDF PK	1,78	nature	with polyester knitted	-60 to +150	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PVDF GK	1,78	nature	with glass fibre knitted	-60 to +150	+160		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
ECTFE	1,68	nature		-60 to +180	+180		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● suitable / resistant
● partly suitable / partly resistant
● not suitable / not resistant

Short descriptions

Polytetrafluoroethylene PTFE

- Fluoropolymers have excellent electrical and excellent chemical properties.
- Other physical properties, such as mechanical strength and stiffness are dependant on the fluorine content and any other specific additives.

Fluorinated ethylene propylene (FEP)

- Fluorinated ethylene propylene has also excellent chemical properties.
- The material can be welded and is therefore also suitable for special encapsulated O-rings.

Perfluoroalkoxy (PFA)

- Perfluoroalkoxy behaves with a non-stick effect and its dialectical properties are similar to that of PTFE.
- Compared to PTFE, PFA has a greater hardness and shape stability.

Polychlorotrifluoroethylene (PCTFE)

- Polychlorotrifluoroethylene has the lowest coefficient of thermal expansion as well as the highest stiffness and hardness over all fluoropolymers.

Polyvinylidene fluoride (PVDF)

- Polyvinylidene fluoride has an excellent UV resistance and is suitable for food and medical technology applications.

Ethylene chlorotrifluoroethylene (ECTFE)

- Ethylene chlorotrifluoroethylene is suitable when in use where high friction and little wear is desired.
- It has a high impact resistance and a good chemical resistance.

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