

# PA6G wear

Polyamide 6 casted, beige

- Substitute for POM at bigger ODs than 280mm
- Resistant to mineral oil and diluted acids and bases
- Applicable for Backup Rings and Guide Rings

Properties	Value	Unit	DIN Standard
Hardness	85 ± 3	Shore D	DIN ISO 7619-1
Density	1,15	g/cm <sup>3</sup>	DIN 53479
Water absorption	6	%/24h	DIN 53495
Fire performance	94V-2		UL 94 Test
E-Modulus	3900-4200	MPa	DIN 53452
Elongation at break	40	%	DIN 53455
Tensile strength	88-90	MPa	DIN 53455
Impact strength	No break	kJ/m <sup>2</sup>	DIN 53453
Ball indentation hardness	163	MPa	DIN 53456
Heat distortion	0,28	W/mK	DIN 53461
Therm. coefficient of linear exp.	8	1/K.10 <sup>-5</sup>	DIN 53752
Melting point	220	°C	DIN 53736
min. Service temperature	-40	°C	
max. Service temperature	+110	°C	
Sliding coefficient	0,4	μ	

All above stated data result from random tests which were taken from the ongoing production. All data were established based on standard test-specimen according to ISO, DIN and ASTM standards and can basically not be carried over to the construction element.

Our applied technical advice, either oral, written or through tests is given according to our best knowledge. However, this information is to be considered as non-obligatory instruction, also in terms of any protective rights of a third party, and does not exempt you from testing our product in reference to its suitability for the intended process and purpose. Utilisation, application and processing of the products occur entirely outside of our control and are therefore exclusively your responsibility. However, should a case of liability come into question, it will be limited to all damages in the value of the product which we delivered and you used. By all means, we do warrant the impeccable quality of our products in accordance with our general sales and delivery conditions.

# PEEK diet

Poly-Ether-Ether-Keton, beige

- Very good chemical and mechanical properties
- Resistant to HFC, HFD-U, HETG = biological base, acid oils and gases, cold and hot water, diluted acids and steam
- Applicable for Rod and Piston Seals

Properties	Value	Unit	DIN Standard
Density	1,32	g/cm <sup>3</sup>	ISO 1183
Tensile strength	97	MPa	ISO 527
Elongation at break	≥ 60	%	ISO 527
Tensile modulus	3600	MPa	ISO 527
Hardness Rockwell (R/L/M)	M99		ISO 868, ISO 2039-2
Izod test at 23 °C	6,4	KJ/m <sup>2</sup>	ISO 180/1A
Charpy test at 23°C	8,2	KJ/m <sup>2</sup>	ISO 179/1eA
Thermal conductivity	0,25	W/K m	DIN 52 612
Linear expansion	47	10 <sup>-6</sup> /k	ISO 11359
Melting temperature	340	°C	ISO 11357
Temperature strength A	152	°C	ISO 75 HDT/A 1.8
max. Service temperature short	300	°C	
max. Service temperature constant	240	°C	
min. Service temperature	-65	°C	

## Confirmation according FDA

Hereby we, Trygonal, Kunststoffinnovationen GmbH, confirm, that all single components used for our compound named «PeeK diet» are listed on Code of Federal Regulation of U.S. Food and Drug Administration (FDA), Rockville MD. They are mentioned under following subchapters: **21 CFR 177.2415**

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# POM diet

Polyacetale, Copolymer, Standard colour: white

- Suitable for moist environments, good gliding material
- Resistant to mineral oil, HFC, HFD-U, HETG=biological base, acid oils and gases, cold water and diluted acids and bases
- Applicable for Backup Rings and Guide Rings

Properties	Value	Unit	DIN Standard
Hardness	85 ± 3	Shore D	DIN 53505
Density	1,41 – 1,43	g/cm <sup>3</sup>	DIN 53479
Water absorption	0,25	%/24h	DIN 53495
Fire performance	94HB		UL 94 Test
Modulus of elasticity in tension	3000	MPa	DIN 53452
Elongation at break	40	%	DIN 53455
Tensile strength at break	70	MPa	DIN 53455
Impact strength	no break	kJ/m <sup>2</sup>	DIN 53453
Ball indentation hardness	160	MPa	DIN 53456
Heat distortion	110	°C	DIN 53461
Therm. coefficient of linear exp.	11	1/K.10 <sup>-5</sup>	DIN 53752
Melting point	164-168	°C	DIN 53736
min. service temperature	-50	°C	
max. service temperature	+90	°C	
Sliding coefficient	0,27	μ	

## Confirmation according FDA

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# PTFE bronze wear

Poly-Tetra-Fluor-Ethylene +40% Bronze, brown

- PTFE reinforced with bronze, improved wear resistance
- Resistant to mineral oils, HFC, HFD-U, HETG, sour oils and gases, cold water, hot water and steam as well as diluted acids and bases
- Applicable for static seals as well as for glide rings with energizer

Properties	Value	Unit	DIN Standard
Hardness	60 ±3	Shore D	ISO 868
Density	3,150	g/m <sup>3</sup>	DIN 53479
Ball indentation at break	≥ 39	MPa	DIN 53456 H135/30
Tensile strength	≥ 22	MPa	ASTM D 4745-79
Elongation at break	≥ 216	%	ASTM D 4745-79
Compressive strength	≥ 10	MPa	DIN 53455
Thermal conductivity	4,0	kJ/m <sup>2</sup> *h*K	DIN 52612
lin. Coefficient of expansion	8,5	K <sup>-1</sup> * 10 <sup>-5</sup>	
Coefficient of friction	0,13	μ	
Tensile modulus	1375	MPa	DIN 53457
min. Service temperature	-200	°C	
max. Service temperature	+260	°C	

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# PTFE carbon slide

Poly-Tetra-Fluor-Ethylene +25% Charcoal, black

- PTFE reinforced with E-charcoal, improved hardness and wear resistance
- Resistant to mineral oils, HFC, HFD-U, HETG, sour oils and gases, cold water, hot water and steam as well as diluted acids and bases
- Applicable for static seals as well as for glide rings with energizer

Properties	Value	Unit	DIN Standard
Hardness	62 ±3	Shore D	ISO 868
Density	2,080	g/m <sup>3</sup>	DIN 53479
Ball indentation at break		MPa	DIN 53456 H135/30
Tensile strength	11,6	MPa	ASTM D 4745-79
Elongation at break	75	%	ASTM D 4745-79
Compressive strength	10	MPa	DIN 53455
Thermal conductivity	0,44	kJ/m*h*K	DIN 52612
lin. Coefficient of expansion		K <sup>-1</sup> * 10 <sup>-5</sup>	
Coefficient of friction		μ	
Tensile modulus		MPa	DIN 53457
min. Service temperature	-200	°C	
max. Service temperature	+260	°C	

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# PTFE ekonol diet

Poly-Tetra-Fluor-Ethylene +10% Ekonol

Standard colour: beige

- Higher mech. properties than PTFE virgin
- Resistant to mineral oil, HFC, HFD-U, HETG=biological base, acid oils and gases, cold water, hot water and steam, diluted acids and bases

Properties	Value	Unit	DIN Standard
Hardness	63 ± 3	Shore D	ISO 868
Density	1,56	g/cm <sup>3</sup>	DIN 53479
Tensile strength	13	MPa	ASTM D 4745-79
Elongation at break	180	%	ASTM D 4745 79
Compressive strength	11	MPa	DIN 53455
Thermal conductivity	5,4	kJ/m <sup>2</sup> *h*K	DIN 52612
linear thermal expansion coefficient	8,4	K <sup>-1</sup> * 10 <sup>-5</sup>	
Coefficient of friction	0,18	μ	
min. Service temperature	-200	°C	
max. Service temperature	260	°C	

## Confirmation according FDA

Hereby we, Trygonal, Kunststoffinnovationen GmbH, confirm, that all single components used for our compound named «PTFE ekonol diet» are listed on Code of Federal Regulation of U.S. Food and Drug Administration (FDA), Rockville MD. They are mentioned under following subchapters: FDA § 177.1550, CFR title 21

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# PTFE glass wear

Poly-Tetra-Fluor-Ethylene +15% glasfiber, +5% MoS<sub>2</sub>, grey

- PTFE reinforced with short glasfiber, lubricated with Molybdene, improved wear resistance
- Resistant to mineral oils, HFC, HFD-U, HETG, sour oils and gases, cold water, hot water and steam as well as diluted acids and bases
- Applicable for static seals, as well as for glide rings with energizer

Properties	Value	Unit	DIN Standard
Hardness	58 ±3	Shore D	ISO 868
Density	2,244	g/m <sup>3</sup>	DIN 53479
Ball indentation at break	≥ 26	MPa	DIN 53456 H135/30
Tensile strength	≥ 16	MPa	ASTM D 4745-79
Elongation at break	≥ 185	%	ASTM D 4745-79
Compressive strength	≥ 8	MPa	DIN 53455
Thermal conductivity	0,13	kJ/m <sup>2</sup> *h*K	DIN 52612
lin. Coefficient of expansion	11	K <sup>-1</sup> * 10 <sup>-5</sup>	
Coefficient of friction	0,13	μ	
Tensile modulus	1320	MPa	DIN 53457
min. Service temperature	-200	°C	
max. Service temperature	+260	°C	

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# PTFE virgin diet

Poly-Tetra-Fluor-Ethylene, virginal, white

- PTFE with approval according FDA as well as EU1935/2004
- Resistant to mineral oils, HFC, HFD-U, HETG, sour oils and gases, cold water, hot water and steam as well as diluted acids and bases
- Applicable for static seals

Properties	Value	Unit	DIN Standard
Hardness	55 ±3	Shore D	ISO 868
Density	2,160	g/m <sup>3</sup>	DIN 53479
Ball indentation at break	≥ 26	MPa	DIN 53456 H135/30
Tensile strength	≥ 27	MPa	ASTM D 4745-79
Elongation at break	≥ 350	%	ASTM D 4745-79
Compressive strength	≥ 4	MPa	DIN 53455
Thermal conductivity	0,08	kJ/m <sup>2</sup> *h*K	DIN 52612
lin. Coefficient of expansion	19	K <sup>-1</sup> * 10 <sup>-5</sup>	
Coefficient of friction	0,08	μ	
Tensile modulus	540	MPa	DIN 53457
min. Service temperature	-200	°C	
max. Service temperature	+260	°C	

## Confirmation according FDA

Hereby we, Trygonal, Kunststoffinnovationen GmbH, confirm, that all single components used for our compound named «PTFE virgin diet» are listed on Code of Federal Regulation of U.S. Food and Drug Administration (FDA), Rockville MD. They are mentioned under following subchapters: 21CFR 177.1550.

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# UHMW-PE diet

Ultra-high molecular weight polyethylene

Standard colour: white

- Very good chemical and mechanical properties
- Resistant to mineral oil, HFD-U, HETG = biological base, acid oils and gases, cold water
- Applicable for Rod and Piston Seals, Wiper seals, Rotary Seals and Static Seals

Properties	Value	unit	DIN Standard
density	0,93	g/cm <sup>3</sup>	ISO 1183
Tensile strength	17	MPa	ISO 527
Elongation at break	>50	%	ISO 527
Tensile strength	720	MPa	ISO 527
hardness Rockwell (R/L/M)	D63		ISO 868, ISO 2039-2
Izod test at 23 °C	80	KJ/m <sup>2</sup>	ISO 180/1A
Ball indentation hardness	38	MPa	ISO 2039-1
Thermal conductivity	0,42	W/K m	DIN 52 612
Linear expansion coefficient	200	10 <sup>-6</sup> /K	ISO 11359
Melting temperature	132	°C	ISO 11357
Temperature strength A	42	°C	ISO 75 HDT/A 1.8
Temperature strength B	65	°C	ISO 75 HDT/B 0,45
max. Service temperature short	120	°C	
max. Service temperature constant	80	°C	
min. Service temperature	-200	°C	

## Confirmation according FDA

Hereby we, Trygonal, Kunststoffinnovationen GmbH, confirm, that all single components used for our compound named «UHMW-PE diet» are listed on Code of Federal Regulation of U.S. Food and Drug Administration (FDA), Rockville MD. They are mentioned under following subchapters: FDA § 177.1520, CFR title 21 & 178.2010, CFR title 21

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