



# 1 | PRODUCT INFORMATION

## TRIBOFORCE®

### High-performance compounds for tribological applications

TRIBOFORCE® is the latest generation of tribologically optimized thermoplastics. Complex combinations of different additives mean these materials define a new class of wear behavior. Extraordinary wear resistance and low friction coefficients paired with outstanding dimensional stability make TRIBOFORCE® the ideal antifriction materials for extreme requirements.

TRIBOFORCE® materials come in a range of base polymers, covering a temperature spectrum of between -40 °C and +260 °C and even allowing temporary operating temperatures of up to 300 °C.

TRIBOFORCE® materials are preferred materials for use as gears and for antifriction purposes, almost never requiring lubrication. Furthermore, forgoing conventional lubricants such as e.g. PTFE makes possible the manufacture of TRIBOFORCE® materials with high mechanical strengths because of our new additive combinations.

Additionally we also offer wear measurement on tribological test stands (see picture). We can simulate almost any operating condition you stipulate in order to determine wear and friction behaviour, allowing extensive test series to be dispensed with.

# 2 | TECHNICAL DATA



## Physical, mechanical and tribological properties

TRIBOFORCE®			PA66 C0200	PPS C1800	PEEK C2300 <sup>2)</sup>	PEEK C2301 <sup>3)</sup>
property	standard	unit	values			
density	ISO 1183	g/cm <sup>3</sup>	1,51	1,61	1,59	1,57
tensile strength dry	ISO 527	MPa	160	115	145	165
elongation at break dry	ISO 527	%	1,5	1	2,2	1,9
tensile modulus dry	ISO 527	MPa	16 000	16 000	13 000	14 300
charpy impact strength unnotched dry	ISO 179/1eU	kJ/m <sup>2</sup>	20	15	35	32
charpy impact strength notched dry	ISO 179/1eA	kJ/m <sup>2</sup>	3	2	4	—
melt temperature	ISO 3146 (10K/min)	°C	260	275	340	340
wear rate k	ASTM G 137	10 <sup>-6</sup> mm <sup>3</sup> /Nm				
at 3 MPa, 1 m/s, dry / steel			0,2	0,7	—	—
at 5 MPa, 1 m/s, dry / steel			1,0	1,7	1,0	0,3
coefficient of friction	ASTM G 137	1				
at 3 MPa, 1 m/s, dry / steel			0,20	0,29	—	—
at 5 MPa, 1 m/s, dry / steel			0,22	0,19	0,19	0,12
Coefficient of Linear Thermal Expansion longitudinal (CLTE)	ISO 11359 (23 °C - 55 °C)	$\alpha \cdot 10^{-6}/K$	—	11	—	—
Coefficient of Linear Thermal Expansion transverse (CLTE)	ISO 11359 (23 °C - 55 °C)	$\alpha \cdot 10^{-6}/K$	—	45	—	—
moulding shrinkage	ISO 294 <sup>1)</sup>	%	0,1 - 0,4	0,05 - 0,2	0,05 - 0,2	0,05 - 0,2

Differences exist between the individual products particularly relating to their long-time temperature of use and their resistance to chemicals.

## Long-time temperature of use

TRIBOFORCE®	PA66 C0200	PPS C1800	PEEK C2300 <sup>2)</sup>	PEEK C2301 <sup>3)</sup>
to 130 °C	yes	yes	yes	yes
130 °C - 200 °C	no	yes	yes	yes
200 °C - 260 °C	no	no	yes	yes
to 300 °C, temporary	no	no	yes	yes

1) Internal test method based on ISO 294 (test specimen 60 mm x 60 mm x 2 mm) | 2) can be implemented in extrusion | 3) injection moulding type  
These property values are guideline values and should only inform about application possibilities. The suitability for concrete application purposes will not be assured. It must be examined for each individual case. We also refer to our terms of sale and supply.



Resistance to chemicals

TRIBOFORCE®	PA66 C0200	PPS C1800	PEEK C2300 <sup>2)</sup>	PEEK C2301 <sup>3)</sup>
hydrous	limited	yes	yes	yes
biological media	limited	yes	yes	yes
salt spray	limited	yes	yes	yes
hydrolysis resistance	no	yes	yes	yes
can be sterilized by superheated steam	no	yes	yes, to + 200 °C	yes, to + 200 °C
oil	yes	yes	yes	yes
benzine	yes	yes	yes	yes
light mineral acid	limited	limited	yes	yes
dilute leach	limited	yes	yes	yes
intensive leach	no	limited	yes	yes
nitric acid and other oxidizing acid	no	no	no	no

The logo for LEIS POLYTECHNIK features the word "LEIS" in a large, bold, blue sans-serif font. To its right, "POLYTECHNIK" is written in a smaller, grey sans-serif font. A thick blue horizontal line is positioned below "POLYTECHNIK". Below this line, the words "POLYMERE WERKSTOFFE GMBH" are written in a grey sans-serif font. The entire logo is enclosed in a grey L-shaped frame on the right side.

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**TRIBO  
FORCE<sup>®</sup> PEEK**  
based on VESTAKEEP<sup>®</sup> PEEK polymers