

# Product parameters

Parameter	Typical PTFE composite specification / notes
Primary function	Low-friction dynamic sealing (pistons, rods, reciprocating/oscillating) with excellent chemical resistance and wide temperature capability. Often used where elastomers would swell, stick-slip or wear rapidly.
Construction / typical architectures	PTFE slide ring or PTFE jacket bonded/assembled onto an elastomer energizer (O-ring or elastomeric carrier); also monolithic PTFE rings with elastomer preload; spring-energized PTFE for extreme environments.
Materials used	Pure PTFE, filled PTFE grades (glass, carbon, graphite, bronze), Turcon® proprietary PTFE blends (Trelleborg), PTFE + elastomer energizer (NBR / HNBR / FKM). Choice depends on wear, temperature and media.
Temperature capability	Typical working ranges: $\approx -45^{\circ}\text{C}$ up to $+200^{\circ}\text{C}$ for many Turcon/PTFE designs; some PTFE grades and assemblies operate outside that window depending on energizer and filler. (Verify grade-specific datasheet.)
Pressure capability	PTFE composite piston/rod designs are used in high-pressure hydraulics. Manufacturer datasheets show designs rated to tens of MPa; e.g., Turcon® VL/Variseal materials cited for use up to $\sim 60$ MPa (selected designs) and some specialised Turcon® geometries are specified at still higher pressures in manufacturer literature — always confirm per part.
Friction & breakaway	Very low static and dynamic friction compared with elastomer seals $\rightarrow$ reduced stick-slip and improved control (servo/positioning applications). PTFE slide rings are selected for low breakaway torque and precision response.
Chemical compatibility	Excellent to almost universal for process fluids, lubricants, fuels and many aggressive chemicals (far better than standard elastomers). Filler choice influences wear and compatibility.
Wear & extrusion protection	PTFE has low wear but can be vulnerable to extrusion in large clearances — composite designs use energizers, back-up rings or anti-extrusion profiles; Parker documents recommend back-up/wedged rings for high-pressure use.
Typical dynamic speed capability	Selected PTFE materials (Turcon® families) are used at moderate linear speeds; datasheets provide specific m/s limits — check the material/profile datasheet for permitted speed and frequency.
Typical failure modes / selection cautions	Improper gland/groove, insufficient energizer preload, lack of backup rings at high pressure (extrusion), rough rod/bore surfaces causing abrasive wear — follow vendor groove & rod/hardness guidance.