









3M Advanced Materials Division

3D Printed PTFE

Introduction

3D Printed PTFE (polytetrafluoroethylene) parts are customized 3D printed articles made of the high-performance polymer 3M™ PTFE, combining the unique properties and versatility of PTFE with the flexibility of additive manufacturing.

-  Nearly universal chemical resistance
-  Wide service temperature range of -200°C to +260°C
-  High limiting oxygen index (LOI)
-  Low surface energy
-  Excellent dielectric properties
-  Low coefficient of friction
-  High weathering and UV stability
-  No dripping above melt temperature

Typical Physical Properties

Test results are based on 3D printed PTFE test specimens. Due to the layer-by-layer approach of 3D printing, direction dependent properties aren't atypical for most additive manufacturing processes. The table to the right comprises values for different print directions, illustrating the isotropic nature of 3D printed PTFE.

General Physical Properties	Value	Test Method	
		Condition	Standard
Appearance	White		
Density	2.14 g/cm ³	23°C	EN ISO 1183-1

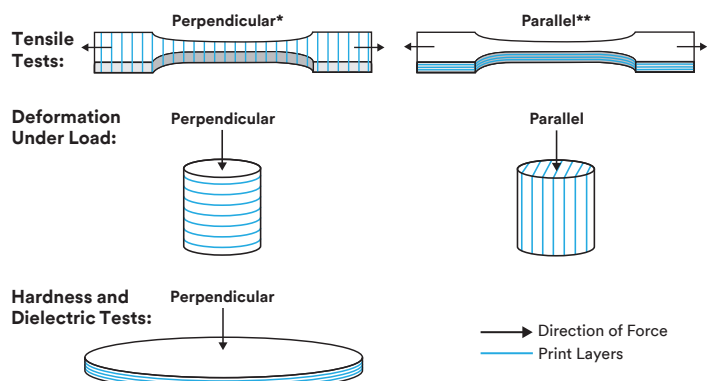
Thermal Properties	Value	Test Method
Melting Point	329°C	EN ISO 20568-2

Mechanical Properties	Value		Test Method	
	Perpendicular*	Parallel**	Condition	Standard
Tensile Stress at Break	35 MPa 20 MPa	40 MPa 24 MPa	23°C 200°C	EN ISO 12086-2
Elongation at Break	280% 350%	320% 410%	23°C 200°C	EN ISO 12086-2
Yield Strength at 10% Offset	13 MPa 3 MPa	13 MPa 4 MPa	23°C 200°C	EN ISO 12086-2
Tensile Creep Strain	3%		23°C 5 MPa	EN ISO 899-1 /12086
Deformation Under Load	12% after 24 hours load 12% after 100 hours load 6% remaining/49% recovery after 24 hours relaxation		23°C 15 MPa	ASTM D621
Hardness Shore D	55	-	23°C	ISO 868

Dielectric Properties	Value Perpendicular*	Test Method	
		Condition	Standard
Dielectric Constant	2.1	23°C 1 MHz	ASTM D150
Dielectric Loss	<0.0002	23°C 1 MHz	ASTM D150

(Not for specification purposes. Properties of printed articles may differ according to part design.)

Direction of force relative to print layers:



Product Storage, Handling and Safety

Storage: No special storage requirements. Ideal storage conditions include unopened cartons in a dry and temperature-controlled warehouse to prevent dust contamination from static charge accumulation.

Handling: This product does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

Safety: For product Health and Safety Information, refer to the Safety Data Sheet (SDS).

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