

Fluoroplastics

Typical Properties



	Test Method	Unit	PTFE	TFM (Modified PTFE)	PFA	FEP	ETFE	PVDF
Physical Properties								
Specific Gravity	ASTM D792, ISO 1183	g/cm ³	2,16	2,16	2,15	2,15	1,73	1,78
Melting Point	ASTM D4591	°C	327	327	310	260	266	174
Service Temperature								
minimum		°C	-200	-200	-200	-200	-190	n.a.
maximum		°C	260	260	260	205	150	n.a.
Mechanical Properties								
Tensile Strength at Break	DIN EN ISO 527							
at 23 °C		MPa	36	35	30	30	46	35-50
at 100 °C		MPa	22	25	24	14	20	n.a.
Elongation at Break								
at 23 °C		%	400	560	380	350	450	20-50
at 100 °C		%	520	590	440	320	600	n.a.
Tensile Modulus	DIN EN ISO 527							
at 23 °C		MPa	600	630	530	600	1200	2500
at 100 °C		MPa	210	255	160	85	250	n.a.
Yield Strength								
at 23 °C		MPa	12,4	13,2	16	14	26	53-57
at 100 °C		MPa	7,5	8,2	7	6	10	n.a.
Flexural Modulus	ASTM D790 3pt bend	MPa	n.a.	n.a.	550	580	110 0	2100
Deformation Under Load after 100h stress & 24h recovery	ASTM D621							
at 23 °C / 15 MPa		%	11	4	2	n.a.	n.a.	n.a.
at 150 °C / 8,8 MPa		%	34,5	20	10	n.a.	n.a.	n.a.
at 205 °C / 5,2 MPa		%	18,5	5,5	14,5	n.a.	n.a.	n.a.
Hardness	ISO 868	ShD	56	59	60	57	69	78
Surface Roughness			0,9	0,3	0.34 (UHP grades <0.1)	0.044	n.a.	n.a.
Electrical Properties								
Dielectric Constant	ASTM D150 at 1MHZ		2,1	2,1	< 2,15	< 2,15	2,58	n.a.
Dissipation Factor	ASTM D150 at 1MHZ	10 ⁻⁴	0,7	0,7	<5	<9	n.a.	n.a.
Dielectric Strength (0.20-0,25 mm film)	ASTM D149	kV/mm	60	80	75	63	59	n.a.
Flame Resistance								
Limiting Oxygen Index	ASTM D2863	%	96	96	>95	>95	>30	44
Flammability Rating	UL 94		V-0	V-0	V-0	V-0	V-0	V-0
Permeation Properties								
HCl	DIN 53380 Part 4.1.2	(cm ³ *1000µm)/(m ² *d*bar)						
at 23 °C			630	445	160	n.a.	190	n.a.
at 100 °C			1600	1150	1400	n.a.	2700	n.a.
H ₂ O (Permeation)	DIN 53122 Part 2	(g*1000µm)/(m ² *d)						
at 23 °C			0,02	0,017	0.018	n.a.	0,11	< 0.04
at 100 °C			3,5	2,43	4.54	n.a.	7,0 0	n.a.