

## Technical Data Sheet – TDS – Physical Properties of PTFE and Filled PTFE Products

Physical properties of Virgin PTFE & Filled Grade of PTFE are dependent upon many factors such as Grades of PTFE – Conventional, Modified PTFE or Filled PTFE, Particle size of resin – Fine Cut or Coarse, Particle Shape of Resin – Spherical, Flake, Irregular, Type & content of filler, Manufacturing Process – Compression Molding, Ram Extrusion, Isostatic, Paste Extrusion. Due to this – Physical Properties of PTFE & Filled PTFE Products – have the wide range of Values:-

Sr. No.	Property	Unit	Test Method	Virgin PTFE	Chemically Modified PTFE	15% Glass Filled PTFE	25% Glass Filled PTFE	5% Glass +5% MoS2 Filled PTFE	15% Glass +5% MoS2 Filled PTFE	25% Carbon / 23% Carbon + 2% Graphite Filled PTFE	35% Carbon / 33% Carbon + 2% Graphite Filled PTFE	15% Graphite Filled PTFE	40% Bronze Filled PTFE	40% Bronze + 5% MoS2 Filled PTFE	60% Bronze Filled PTFE	55% Bronze + 5% MoS2 Filled PTFE
				1	2	3	4	5	6	7	8	9	10	11	12	13
1	Colour	-	Visual	Milky White	Translucent White	Light Crème	Crème	Light Grey	Grey	Black	Jet Black	Dark Grey	Brown	Brownish Black	Dark Brown	Dark Brownish Black
2	Density	gm / cc	ASTM D-792	2.1 – 2.2	2.1 – 2.15	2.15 – 2.22	2.22 – 2.25	2.2 – 2.24	2.2 – 2.24	2 – 2.15	2 – 2.1	2.1 – 2.15	2.9 – 3.1	2.9 – 3.1	3.8 – 4	3.8 – 4
3	Tensile Strength	kgf/cm <sup>2</sup>	ASTM D-638	200 – 300	300 – 400	175 – 250	125 – 200	175 – 250	150 – 200	125 – 175	100 – 150	125 – 175	150 – 200	125 – 175	150 – 200	125 – 175
4	Elongation of Break	%	ASTM D-638	250 – 350	350 – 450	200 – 250	150 – 200	175 – 225	150 – 200	100 – 150	75 – 125	200 – 250	250 – 300	200 – 250	200 – 250	150 – 200
5	Compressive Strength (1% Deformation)	kgf/cm <sup>2</sup>	ASTM D-695	35 – 45	45 – 60	55 – 65	60 – 70	50 – 60	55 – 65	50 – 60	55 – 65	40 – 50	70 – 80	75 – 85	100 – 110	100 – 110
-	Compressive Strength (10% Deformation)			140 – 160	170 – 200	180 – 200	190 – 210	160 – 180	180 – 200	160 – 180	180 – 200	150 – 170	200 – 220	210 – 230	250 – 300	250 – 300
6	Deformation under load (Maximum)		ASTM D-621													
a	2 Hrs., 23 <sup>o</sup> C, 113 kgf	%		7	4	6	5	7	6	5	4	6	3	3	2	2
b	24 Hrs., 23 <sup>o</sup> C, 113 kgf	%		10	6	8	7	9	8	7	6	8	5	5	4	4
c	Permanent	%		8	5	7	6	8	7	6	5	7	4	4	3	3
7	Impact strength	J/cm	ASTM D-256	0.5 – 1	2 – 3	1 – 1.5	1 – 1.5	1.5 – 2	1 – 1.5	1.5 – 2	1 – 1.5	1.75 – 2.25	1.5 – 1.75	1.75 – 2.25	1.5 – 1.75	1.75 – 2.25
8	Hardness	Shore D	ASTM D-2240	50 – 55	55 – 60	55 – 60	56 – 62	55 – 60	56 – 62	60 – 65	62 – 68	58 – 62	60 – 65	60 – 65	62 – 68	62 – 68
9	Dimensional stability		ASTM-D-1710													
a	Length	%		0.5 – 1	0.5 – 1	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5
b	Diameter	%		0.5 – 1	0.5 – 1	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5
10	Coefficient of Friction (Maximum)		ASTM-D-1894													
a	Static			0.050	0.045	0.065	0.07	0.055	0.060	0.060	0.065	0.055	0.065	0.060	0.070	0.065
b	Dynamic			0.040	0.040	0.060	0.065	0.050	0.055	0.050	0.055	0.050	0.060	0.055	0.065	0.060
11	Wear Rate (Maximum) X 10 <sup>-4</sup>	$\frac{\text{mm}^3}{\text{N-m}}$	ASTM-G-137	3	2	2.5	2	2.5	2	2.5	2	2.5	1.5	1.5	1	1
12	Water Absorption (Maximum)	%	ASTM D-570	0	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
13	Service Temperature (Maximum)	<sup>o</sup> C	ASTM-D-648	260	260	260	260	260	260	260	260	260	260	260	260	260
14	Heat Deflection Temperature	<sup>o</sup> C	ASTM-D-648	55	60	65	65	65	65	65	65	65	65	65	65	65
15	Melting / Softening Temperature	<sup>o</sup> C	ASTM-D-1525	335	335	335	335	335	335	335	335	335	335	335	335	335
16	Dielectric Strength (Short Time)	Kv/mm	ASTM D-149	22 – 24	24 – 28	10 – 12	5 – 6	12 – 14	8 – 10	2 – 3	2 – 3	2 – 3	Conductive	Conductive	Conductive	Conductive
A	PTFE is chemically inert & unaffected by all known chemicals except molten or dissolved alkali metals–Sodium; Potassium; Rubidium; Cesium; Francium & Fluorine gas, certain fluorine compounds & complexes at elevated temperatures. Filled PTFE has inferior chemical resistance depending upon the particular filler.															
B	Data quoted are average values only & should not be used for designed purpose.															
C	Company has in-house test facility / Laboratory to test above properties. The testing equipments are calibrated as per procedures laid down in QMS-ISO-9001:2008, having traceability with NPL. The test procedures are self designed, based on & similar to above referred ASTMs.															