

TYPICAL PROPERTIES OF SULFONE POLYMERS

ASTM Test	Property	Poly-sulfone (PSU)	Polyaryl-sulfone (PAS)	Polyether-sulfone (PES)
PHYSICAL				
D792	Specific gravity	1.24	1.37	1.37
D570	Water absorption, 24 h, 1/8-in thk (%)	0.3	0.40	0.43
MECHANICAL				
D638	Tensile strength (psi)	10,200	12,000	12,200
D638	Elongation at break (%)	50-100	40	40-80
D638	Tensile modulus (10 ⁵ psi)	3.6	3.9	3.9
D790	Flexural strength (psi)	15,400	16,100	18,650
D790	Flexural modulus (10 ⁵ psi)	3.9	4.0	3.8
D256	Impact strength, Izod (ft-lb/in of notch)	1.3	1.6	1.6
D785	Hardness, Rockwell M	69	85	88
THERMAL				
C177	Thermal conductivity (10 ⁴ cal-cm/sec-cm ² -°C)	6.2	—	3.2-4.4
D696	Coefficient of thermal expansion (10 ⁻⁵ in/in-°F)	3.1	2.7	3.1
D648	Deflection temperature (°F) At 264 psi	345	400	398
D2863	Oxygen index rating	30	33	34-38
ELECTRICAL				
D149	Dielectric strength (V/mil) Short time, 1/8-in thk	425	383	400
D150	Dielectric constant At 60 Hz to 1 MHz	3.07-3.13	3.51-3.54	3.5
D150	Dissipation factor At 60 Hz to 1 MHz	0.0008-0.0034	0.00171-0.00564	0.001-0.0035
D257	Volume resistivity (ohm-cm)	5×10 ¹⁶	7.71×10 ¹⁶	10 ¹⁷ -10 ¹⁸

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ISO Test	Property	Poly-sulfone (PSU)	Polyaryl-sulfone (PAS)	Polyether-sulfone (PES)
PHYSICAL				
ISO1183	Specific gravity	1.24	1.37	1.37
ISO62	Water absorption, 24 h, 3.1 mm thk (%)	0.3	0.40	0.43
MECHANICAL				
ISO527	Tensile strength (MPa)	70.33	82.74	84.12
ISO527	Elongation at break (%)	50-100	40	40-80
ISO527	Tensile modulus (10 ³ MPa)	2.48	2.69	2.69
ISO178	Flexural strength (MPa)	106	111	129
ISO178	Flexural modulus (10 ³ MPa)	2.69	2.76	2.62
ISO180	Notched izod impact strength (J/m)	69	85	85
ISO2039	Hardness, Rockwell M	69	85	88
THERMAL				
ISO8302	Thermal conductivity (W/(mK))	0.26	—	—
ISO11359	Coefficient of thermal expansion (10 ⁻⁴ /°C)	0.56	0.48	0.56
D648	Deflection temperature (°C) At 1.8 MPa	174	204	203
ISO4589	Oxygen index rating	30	33	34-38
ELECTRICAL				
IEC243	Dielectric strength (kV/mm) Short time, 3.1 mm thk	16.7	15.1	15.7
IEC250	Dielectric constant At 60 Hz to 1 MHz	3.07-3.13	3.51-3.54	3.5
IEC250	Dissipation factor At 60 Hz to 1 MHz	0.0008-0.0034	0.00171-0.00564	0.001-0.0035
IEC60093	Volume resistivity (ohm-cm)	5×10 ¹⁶	7.71×10 ¹⁶	10 ¹⁷ -10 ¹⁸