

Polyvinyl Chloride (PVC)

IAPD THERMOPLASTICS RECTANGLE

AMORPHOUS COMMODITY THERMOPLASTICS

TYPICAL PROPERTIES OF POLYVINYL CHLORIDE (PVC)				
ASTM Test	Property	Rigid	Flexible	Foam
PHYSICAL				
D792	Specific gravity	1.30-1.58	1.20-1.70	0.45-0.8
D792	Specific volume (in ³ /lb)	19.1-20.5	—	—
D570	Water absorption, 24 h, 1/8-in thk (%)	0.04-0.4	0.15-0.75	0.03-0.04
MECHANICAL				
D638	Tensile strength (psi)	6,000-8,000	1,500-3,500	2000-3000
D638	Elongation (%)	50-150	200-450	—
D638	Tensile modulus (10 ⁵ psi)	3.5-10	—	1-2.4
D790	Flexural modulus (10 ⁵ psi)	3-8	—	—
D256	Impact strength, Izod (ft-lb/in of notch)	0.4-20.0	—	0.4-0.6
D785	Hardness, Shore	D65-85	A50-100	4-9
D256	Charpy Impact unnotched	—	—	0.4-0.6
THERMAL				
C177	Thermal conductivity (10 ⁻⁴ cal-cm/sec-cm ² -°C)	3.5-5.0	3.0-4.0	0.05-3
D696	Coefficient of thermal expansion (10 ⁻⁵ in/in-°F)	1.2-5.6	3.9-13.9	3-4.5
D648	Deflection temperature (°F) At 264 psi 140-170 At 66 psi 135-180	—	—	145-150
UL 94	Flammability rating	V-0 (Cell Class 12454-B)	—	VO-SV
Max Service Temperature, Long term 122°F-176°F				
E 84	Flame spread	—	—	15-25
ELECTRICAL				
D149	Dielectric strength (V/mil) Short time, 1/8-in thk	350-500	300-400	—
D150	Dielectric constant At 1 kHz 3.0-3.8	4.0-8.0	—	—
D150	Dissipation factor At 1 kHz 0.009-0.017	0.07-0.16	—	—
D257	Volume resistivity (ohm-cm) At 73°F, 50% RH	>10 ¹⁶	10 ¹¹ -10 ¹⁵	—
D495	Arc resistance (s)	60-80	—	—

TYPICAL PROPERTIES OF POLYVINYL CHLORIDE (PVC)				
ISO Test	Property	Rigid	Flexible	Foam
PHYSICAL				
ISO1183	Specific gravity	1.30-1.58	1.20-1.70	0.45-0.8
ISO1183	Specific volume (cm ³ /g)	0.687-0.738	—	—
ISO62	Water absorption, 24 h, 3.1mm thk (%)	0.04-0.4	0.15-0.75	0.03-0.04
MECHANICAL				
ISO527	Tensile strength (MPa)	41.37-55.16	10.34-24.13	13.79-20.68
ISO527	Elongation (%)	50-150	200-450	—
ISO527	Tensile modulus (10 ³ MPa)	2.41-6.89	—	0.69-1.65
ISO178	Flexural modulus (10 ³ MPa)	2.07-5.51	—	—
ISO180	Notched izod impact strength (J/m)	21-1068	—	21-32
ISO868	Hardness, Shore	D65-85	A50-100	4-9
ISO179	Charpy Impact unnotched	—	—	0.4-0.6
THERMAL				
ISO8302	Thermal conductivity (W/(mK))	0.17	0.17	0.17
ISO11359	Coefficient of thermal expansion (10 ⁻⁴ m/m-°C)	0.21-1.00	0.71-2.50	0.54-0.90
ISO75	Deflection temperature (°C) At 1.80 MPa At 0.45 MPa	60-77 57-82	—	— 63-66
UL 94	Flammability rating	V-0 (Cell Class 12454-B)	—	VO-SV
E 84	Flame spread	—	—	15-25
ELECTRICAL				
IEC243	Dielectric strength (kV/mm) Short time, 3.1mm thk	13.8-19.7	11.8-15.7	—
IEC250	Dielectric constant At 1 kHz 3.0-3.8	4.0-8.0	—	—
IEC250	Dissipation factor At 1 kHz 0.009-0.017	0.07-0.16	—	—
IEC93	Volume resistivity (ohm-cm) At 23°C, 50% RH	>10 ¹⁶	10 ¹¹ -10 ¹⁵	—
ASTM D495	Arc resistance (s)	60-80	—	—