

Properties	A.S.T.M. Test Method	Acetal	Acrylic Cast	PVC		Nylon		
				Rigid	Flexible	Type 6 Cast	Type 6 inj. Moulding & extr.	Type 6/6 inj. Moulding & extr.
Specific gravity	D792	1.42	1.17-1.20	1.35-1.45	1.16-1.35	1.15	1.13	1.09-1.14
Specific volume, cu. Cm per Kg.	D792	704.6	855.4-8341	740.7-689.9	860.3-740.7	868.5	884.9-875.1	920.9-875.1
Refractive index nD	D542	1.48	1.48-4.50	1.52-1.55	-	-	-	1.53
Tensile strength (at yield), MPa	D638 D651	69	55-76	34-62	10-24	76-97	70-83	48-75
Elongation %	D638	15(inj.)-75(extr.)	2.7	2-40	200-450	10-60	90-320	90
Modulus of elasticity in tension, 10 ⁵ kPa	D747	28.3	24.1-34.5	24.1-41.4	-	17.9-27.6	10.3-24.8	17.9 – 27.6
Compressive strength, MPa	D695	124	76-131	55-90	6-12	97	46-67	50-90
Flexural strength, MPa	D790	97	83-117	69-110	-	114-121	55-110	55-95
Impact strength, Izod test	D256	1.4(inj.)-2.3(extr.)	0.4-0.5	0.4-20	Varies depending on type&amount	1.2-2.5	1.0-3.6	1.0
Hardness, Rockwell	D785	M94-R118	M80-M100	70-90(Shores)	-	R110-R120	R103-R18	R111-R118
Thermal conductivity	C177	5.5	4-6	3.0-7.0	3.0-4.0	-	-	5.2-5.8
Specific heat, cal per °C per gm.	-	0.35	0.35	0.2-0.28	0.3-0.5	-	-	0.4
Thermal expansion, 10 ⁵ Per °C	D696	8.1x10 ⁻⁵	5.9	5-18.5	7.25	9.0	8-13	10-15
Resistance to heat °C	-	85-121	60-93	49-71	66-79	177	79	132-149
Heat distortion tem., °C	D648	170(455kPa)	66-99	54-74	-	210-216(455 kPa)	127-171(455kPa)	149-182(455kPa)
Volume resistivity	D257	6x10 ¹⁴	>10 ¹⁵	>10 ¹⁵	10 ¹¹ 10 ¹³	-	10 ¹² -10 ¹⁵	(0.45-4)x10 ¹⁴
Dielectric strength	D149	465	450-550	425-1300	300-1000	380	440-510	385-470
Dielectric constant, 60 cycles	D149	400	3.5-4.5	3.2-3.6	5.0-9.0	4.0	5.0-14.0	4.1-4.6
Dielectric constant, 10 ³ cycles	D150	-	3.0-3.5	3.0-3.3	4.0-80	3.8	4.9-10.1	4.0-4.5
Dielectric constant, 10 ⁵ cycles	D150	3.7	2.2-3.2	2.8-3.1	3.3-4.5	3.3	4.0-4.7	3.4-3.5
Dissipation (power) factor, 60 cycles	D150	3.7	0.05-0.06	0.007-0.02	0.08-0.15	0.15	0.06-0.10	0.014-0.04
Dissipation (power) factor, 10 ³ cycles	D150	-	0.04-0.06	0.009-0.017	0.07-0.16	0.02	0.06-0.11	0.02-0.04
Dissipation (power) factor, 10 ⁵ cycles	D150	0.004	0.02-0.03	0.006-0.019	0.04-0.14	0.05	0.04-0.13	0.03-0.04
Arc resistance, sec.	D495	0.004	No track	60-80	-	-	-	130-140
Water absorption, %	D570	129(burns)	0.3-0.4	0.07-0.4	0.15-0.75	0.06	1.9-3.3	0.4-1.5
Burning rate	D635	0.12	Slow	Self extinguishing	Slow to self extinguishing	Self-extinguishing		
Effect of sunlight	-	Slow	Very slight	Darkens on prolonged intense exposure		Slight discolouration		
Effect of weak acids	D543	Chalks slightly	Practically nil	None		Resistant		
Effect of strong acids	D543	Resistant to some	Attacked only by high concentrations of oxidizing acids	None		Attacked		
Effect of weak alkalis	D543	Attacked	Practically nil	None		None		
Effect of organic solvents	D543	Excellent resistance to practically all solvents	Soluble in ketones esters, aromatic, chlorinated hydrocarbons	Resist alcohols, aliphatic hydrocarbons and oils. Soluble in ketones and esters, swells in aromatic hydrocarbons		Resistant to common solvents		
clarity	-	Translucent to opaque	Transparent(92% light transmission) translucent and opaque	Transparent to opaque		Translucent to opaque		

Properties	Test Method	Lexan Poly carbonate	Polyethylene				Poly propylene	Poly styrene	PTFE
			1 Low - density	2 High - density	3 High molecular	4 Ultra High			
Specific gravity	D792	1.2	0.910-0.925	0.941-0.965	0.940-0.942	0.93	0.900-0.915	0.98-1.10	2.13-2.2
Specific volume, cu. Cm per Kg.	D792	830.8	-	1061.9-1037.3	1076.6	-	1047.1-1119.2	1014.1-911.1	476.9-455.6
Refractive index nD	D542	1.586	1.51	1.54	1.54	-	1.49	-	1.35
Tensile strength (at yield), MPa	D638 D651	55-68	7-16	21-38	17	20	22-37	24-45	14-21
Elongation %	D638	60-100	90-650	15-100	5.25	350	200-700	7-60	200
Modulus of elasticity in tension, 10 ⁵ kPa	D747	22.1	1.2-2.4	5.5-10.3	7.0	-	9.0-137.9	20.1-31	4.0
Compressive strength, MPa	D695	76	-	17	17	-	59-69	27.6-62	12
Flexural strength, MPa	D790	76-90	-	7	7	172	-	34-69	-
Impact strength, Izod test	D256	12-16	>16	1.5-12	No break	32	0.6-6.0	0.5-11.0	3.0
Hardness, Rockwell	D785	M70,R-188	D41- D46(shore)	D60- D70(shore)	R38	D66(shore)	R85-110	M35-70, R50-100	D50- D65(shore)
Thermal conductivity	C177	4-6	8.0	11-12.4	11-12.4	Non con	2.8	1.0-3.0	6
Specific heat, cal per °C per gm.	-	0.30	0.55	0.55	0.55	0.55	0.46	0.32-0.35	0.25
Thermal expansion, 10 ⁵ Per °C	D696	7	16-18	11-13	7.2	2x10 ⁴	6-8.5	3.4-2.1	10
Resistance to heat °C	-	121	100	121	121	-	121-160	60-79	288
Heat distortion tem. °C	D648	132-138(2510kPa)	41-49(455kPa)	60-82(455kPa)	73	-	99-104	64-93	121(455kPa)
Volume resistivity	D257	2.1x10 ¹⁶	>10 ¹⁶	10 ¹⁵ -10 ¹⁶	>10 ¹⁶	>10 ¹⁵	6.5X10 ¹⁶	>10 ¹⁵	>10 ¹⁴
Dielectric strength	D149	400	460-700	450-500	710	900	500-660	300-600	480
Dielectric constant, 60 cycles	D149	3.17	2.25-2.35	2.25-2.35	2.25-2.35	-	2.25	2.45-4.75	2.0-
Dielectric constant, 10 ³ cycles	D150	3.02	2.25-2.35	2.25-2.35	2.25-2.35	-	2.25	2.4-4.5	2.0
Dielectric constant, 10 ⁵ cycles	D150	2.98	2.25-2.35	2.25-2.35	2.30	-	2.0-2.25	2.4-3.8	2.0
Dissipation factor 60 cycles	D150	0.0009	<0.0005	<0.005	0.0005	-	0.0005	0.0004-0.002	<0.0002
Dissipation factor 10 ³ cycles	D150	0.0021	<0.0005	<0.00021	0.00021	-	0.0002-0.0008	0.0004-0.002	<0.002
Dissipation factor 10 ⁵ cycles	D150	0.010	<0.0005	<0.0003	0.0002	-	0.0001-0.0005	0.0004-0.002	<0.0002
Arc resistance, sec.	D495	10-120	135-160	-	-	-	185	20-100	>200
Water absorption, %	D570	0.15	<0.015	<0.01	<0.01	<0.01	<0.01	0.01-0.3	0.00
Burning rate	D635	Self extinguishing	Slow				Slow	Slow	None
Effect of sunlight	-	Slight colour change, slight embrittlement	Surface crazing(except black and brown)	Requires black			Requires Black	Some strength loss	None
Effect of weak acids	D543	None	Resistant	Very resistant			Very Resistant	None	None
Effect of strong acids	D543	Resistant (limited)	Attacked by oxidizing acids	Attacked slowly by oxidizing acids			Attacked slowly by oxidizing acids	Attacked by oxidizing acids	None
Effect of weak alkalis	D543	Attacked	Resistant	Very resistant			None	None	None
Effect of organic solvents	D543	Soluble in chlorinated hydrocarbons. Partially soluble in aromatic hydrocarbons, ketones and esters	Soluble in aromatic solvents above 60°C	Resistant below 80°C			Resistant below 80°C	Soluble in aromatic and chlorinated hydrocarbons	None
clarity	-	Transparent to opaque	Translucent to opaque				Transparent translucent, opaque	Transparent to opaque	Opaque



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