

Grades and Physical Properties Chart - Electrical and Electronic Applications

		Unit	Test method	C series	A	R	L	E	N	Remarks			
				(For	electrical	and	electronic	parts)	flame-retardant				flame-retardant
Physical Properties			ASTM	C215	C230	C240	C230N	C240N	CH230N	CH245NK	PA46	PPS	LCP
Glass fiber content		%	-	15	30	40	30	40	30	45	30	40	30
Specific gravity		-	D792	1.30	1.42	1.53	1.72	1.75	1.63	1.77	1.68	1.67	1.62
Mechanical Properties													
Tensile strength	dry	MPa	D638	110	170	210	170	180	160	160	160	170	140
	(moist)*1			(90)	(140)	(180)	(140)	(150)	(140)	(140)	(12.0)	(-)	(-)
Tensile elongation	dry	%	D638*2	3	3	3	3	3	4	3	4	2	3
	(moist)*1			(3)	(3)	(3)	(3)	(3)	(3)	(3)	(4)	(-)	(-)
Flexural strength	dry	MPa	D790	180	260	300	260	280	240	250	250	250	220
	(moist)*1			(150)	(220)	(260)	(220)	(240)	(200)	(210)	(190)	(-)	(-)
Flexural modulus	dry	MPa	D790	6,000	10,000	13,000	12,000	13,000	11,000	14,000	10,000	13,000	13,000
	(moist)*1			(4,000)	(7,000)	(9,000)	(8,500)	(9,000)	(8,000)	(10,000)	(7,500)	(-)	(-)
Izod Impact strength (notched)	dry	J/m	D256	50	80	85	70	75	80	90	80	80	110
	(moist)*1			(55)	(90)	(90)	(80)	(80)	(90)	(100)	(100)	(-)	(-)
Rockwell hardness		M scale	D 785	105	110	110	110	110	95	95	-	100	-
Thermal Properties													
Melting point		°C	-	310	310	310	310	310	310	310	295	280	-
Glass transition point		°C	-	85	85	85	85	85	85	85	60	90	-
Deflection temp. under load (1.82MPa)		°C	D648	295	300	300	295	295	290	290	285	265	280
Coefficient of linear thermal expansion	Flow direction	X10 ⁻⁵ /°C	D696	3.4	2.4	2.0	2.4	2.0	3.0	2.5	-	2.0	-
	Vertical direction			5.5	5.0	4.5	5.0	4.5	6.0	5.5	-	4.0	-
Electrical Properties													
Volume resistivity	(dry)	Ω · cm	D257	10 ¹⁶	10 ¹⁶	10 ¹⁶	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁶	10 ¹⁶
Dielectric constant (10 ⁵ Hz)	(dry)	-	D150	4.2	4.5	4.5	3.9	4.0	4.0	4.3	3.8	3.8	4.0
Dielectric dissipation factor (10 ⁵ Hz)	(dry)	-	D150	0.020	0.018	0.018	0.012	0.011	0.013	0.011	-	0.0014	-
Dielectric breakdown voltage	(dry)	kV/mm	D149	25	28	30	20	22	25	22	-	17	-
Other Properties													
Mold shrinkage (2mmt)	Flow direction	%	D955	0.6	0.5	0.4	0.4	0.3	0.4	0.3	-	0.2	-
	Vertical direction			0.9	0.8	0.8	0.8	0.7	0.8	0.7	-	0.4	-
Water absorption (24 hr in water) (2mmt)	23°C	%	D570	0.4	0.3	0.2	0.3	0.2	0.3	0.2	0.8	0.02	0.02
	100°C	%		3.8	3.0	2.8	3.0	2.8	3.0	2.8	4.7	0.3	0.06
Flammability		-	UL94	H B	H B	H B	V-0	V-0	V-0	V-0	V-0	V-0	V-0

Notes:

The above figures are just representative values but not specification values.

*1 Moist: In a saturated state in the atmosphere at 23°C and a relative humidity of 65%

*2 Elongation was measured between the chucks.

Unit conversion:

Tensile strength, flexural strength, flexural modulus.

1 Mpa = 10.2 kg/cm²

Izod impact strength.

1 J/m=0.102 kg · cm/cm