

**Marlon
FSX**

Polycarbonate Sheet
Material Properties

Material Properties

PLASTIC SHEETS

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TYPICAL PROPERTIES OF MARLON POLYCARBONATE RESINS					
	TEST METHOD			VALUE	UNIT
	DIN	ASTM	ISO		
PHYSICAL					
Density	53479	D 792	R 1183	1.2	g/cm³
water absorption in standard atmosphere	53473	D570		0.15	%
water absorption in equilibrium 23°C	53495:A		62	0.35	%
Water permeability	53122			<2.28	g/m²
Mould shrinkage	16901	D 955		0.5-0.7	%
OPTICAL					
transmittance		D 1003		87-91	%
Haze		D1003		0.7-1.5	%
Refractive index (nD 648)	53491	D 542		1.586	
THERMAL					
Heat distortion temperatures					
Method B (0.45 MPa) annealed	53461	D 648	75	145	°C
Method A (1.81 MPa) annealed	53461	D 648	75	135	°C
Method A (1.81 MPa) unannealed	53461	D 648	75	125	°C
Specific heat		D 2766		1.25	kJ/kg.K
Thermal conductivity	52612	C 177		0.2	W/K.m
Coefficient of thermal expansion	53752	D 696		68	m / m . K x10 ⁻⁶
Vicat softening point (B/50)	53460			148	°C
Service Temperature	-20 to +100°C (short term unstressed -40 to +130°C).				
FLAMMABILITY RATINGS					
Average extent of burning		D 635		<25	mm
UL 94, 1.6 mm		UL 94		HB	
UL 94, 3.2 mm		UL 94		HB	
Oxygen index		D2863		26	%
Glow wire test, 2mm	VDE 0471 PT2		IEC 695-2-1	850	°C

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MECHANICAL					
Tensile Strength at yield	53455	D 638	R 527	62	MPa
Tensile Strength at break	53455	D 638	R 527	72	MPa
Elongation at yield	53455	D 638	R 527	7	%
Elongation at break	53455	D 638	R 527	150	%
Tensile modulus	53457	D 638	R 527	2300	MPa
Flexural strength	53452	D 790	178	97	MPa
Flexural modulus	53452	D 790	178	2400	MPa
Compressive strength	53454	D 695	R 604	70	MPa
Shear strength at yield		D 732		40	MPa
Shear strength at break		D 732		60	MPa
Izod Impact strength, 23°C, notched, 3.2 mm thick		D 256	R 180	900	MPa
Izod Impact strength, 23°C, unnotched, 3.2 mm thick		D 256	R 180	no break	J/m
Charpy impact strength, 23°C	53453		179	no break	J/m
Charpy impact strength, -40°C	53453		179	no break	kJ/m ²
Charpy notched impact strength, 23°C	53453		179	50	kJ/m ²
Ball indentation hardness (H30)	53456		2039/2	110	kJ/m ²
Rockwell hardness, R		D 785		118	kJ/m ²
Rockwell hardness, M				72	N/m ²
Instrumented dart impact (4.3 m/s, 3.2 mm thick)				90	J
Taber abrasion resistance (100 cycles) (500 cycles) (1000 cycles)		D 1044		3-6 <12 <20	Δ%haze
ELECTRICAL					
Dielectric strength, 2 mm (in transformer oil)	VDE 0303 pt 2			>70	kV/mm
Volume resistivity	VDE 0303 pt 3			10 ¹⁶	Ω.cm
Dissipation factor tan δ x10 ⁴ , 50 Hz	VDE 0303 pt 4			5.5	
Dissipation factor tan δ x10 ⁴ , 1 kHz	VDE 0303 pt 4			9	
Dissipation factor tan δ x10 ⁴ , 300 kHz	VDE 0303 pt 4			80	
Surface resistivity	VDE 0303 pt 3			10 ¹⁵	Ω
Relative permittivity, 50 Hz	VDE 0303 pt 4			3	
Relative permittivity, 1 kHz	VDE 0303 pt 4			3	
Relative permittivity, 300 kHz	VDE 0303 pt 4			3	
Tracking CTI, 2 mm	VDE 0303 pt 1			250	Ω

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