

Manufacturer/distributor: PyraSied Xtreme Acrylic

Material: Acrylic (cast and extruded) and Polycarbonate tubes and rods

## Technical Properties

Typical property values  
(at 20° C and 50% relative humidity)

Mechanical Properties	NORM63	Unit	Cast PMMA	Extruded PMMA	Extruded Polycarbonate
Specific weight	DIN 53479	gt/cm <sup>3</sup>	1,19	1,19	1,19
Impact strength (Charpy)	DIN 53453	kJ/m <sup>2</sup>	15	15	65
Notched impact strength a iN (Izod)	DIN 53453	kJ/m <sup>2</sup>	1,6	1,6	4,5
Tensile strength $\delta M$	D638	Mpa			
-40° C			110	100	tbm
20° C			80	70	50
70° C			40	35	tbm
Elongation at break	DIN 53455	%	5,5	4,5	no break
Flexural strength (st. test specimen 80x10x4 mm <sup>3</sup> )	D790	Mpa	115	105	100
Compressive yield stress	-	MPa	110	103	tbm
Max safety stress $\delta_{max}$ (up to 40° C)	-	Mpa	5 ... 10	5 ... 10	5 ... 10
modulus of elasticity Et (short-term value)	D790	MPa	3300	3300	2300
Indentation hardness H 961/30	DIN 53456	MPa	175	175	110
Abrasion resistance in Taber abrader test (100 rev.; 5,4 N; CS-10F)	-	% Haze	20 ...30	20 ...30	30 ...40
Coefficient of friction $\mu$	-	-			
a) plastic/plastic			0,8	0,8	-
b) plastic/steel			0,5	0,5	-
c) stell/plaric			0,45	0,45	-
Poisson's ratio $\mu$ (dilatation spees of 5%/min; up to 2% dilatation; at 20°C)	-	-	0,37	0,37	-
Resistance to puck impact from thickness (FMPA Stuttgart - Germany)	similar to DIN 18032	-	12 mm	8 mm	-
Sound velocity	-	m/s	2700 ... 2800	2700... 2800	-

The norms indicated in this table are taken from:

- a) DIN: German Society for Standardisation;
- b) D (or ASTM): American Society for Testing Materials

	NORM63	Unit	Cast PMMA	Extruded PMMA	Extruded Polycarbonate
Weight sounded reduction index $R_w$ at thickness	-	dB			
4 mm			26	26	-
6 mm			30	30	-
10 mm			32	32	-
<b>Optical Properties</b>					
Transmittance $T_{D65}$	DIN 5036	%	~ 92	~ 92	~ 88
UV transmission	-	-	no	yes	yes
Reflection loss the visible range (each surface)	-	%	4	4	4
Adsorption in the visible range	-	%	<0,05	<0,05	-
Refractive index $n_{D20}$	-	-	1,491	1,491	-
<b>Electrical Properties</b>					
Volume resistivity $\rho_D$	DIN VDE 0303	ohm. cm	>1015	>1015	>1017
Dielectric strength $E_d$ (1 mm specimen thickness)	DIN VDE 0303	kV/mm	~ 30	~ 30	-
Dielectric constant at 50 MHz	DIN 53483	-	3.6	3.7	-
at 0,1 MHz			2.7	2.8	
Dielectric loss factor at 50 MHz	DIN 53483	-	0.06	0.06	-
at 0,1 MHz			0.02	0.03	
<b>Thermal Properties</b>					
Coefficient of linear thermal expansion	DIN 53752	mm/m °C	0,7	0,7	0,65
Possible expansion to heat and moisture	-	mm/m	5	5	6
Thermal conductivity at 20°C	DIN 52612	W/(mK)	0,19	0,19	-
U-value for thickness:	DIN 4701	W/m2K			
1 mm.			5,8	5,8	-
3 mm.			5,6	5,6	-
5 mm.			5,3	5,3	-
10 mm.			4,4	4,4	-
Specific Heat $c$	-	J/gK	1,47	1,47	-
Forming temperature	-	°C	110 - 175	110 - 160	160 - 180
Max. surface temperature (IR radiator)	-	°C	200	180	-
Max. service temperature (without mech. stress)	"	°C	80	70	120

	NORM63	Unit	Cast PMMA	Extruded PMMA	Extruded Polycarbonate
Ignition temperature	DIN 51794	°C	425	430	-
Fire rating (material thickness > 2 mm.)	EN13501	class	E	E	Bs1d0
Heat deflection temperature under load (HDT)		°C			
deflection 1,8 MPa			105	90	
deflection 0,45 MPa			113	95	
<b>Behavior Towards Water</b>					
Water absorption (24 h. 20° C) from dry state; specimen 60 x 60 x 2 mm <sup>3</sup>	DIN 53495	mg	41	38	45
Max weight gain during immersion	DIN 53495	%	2,1	2,1	2,1

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