



Makrolon® Rx3440

/ high viscosity; MVR (300 °C/1.2 kg) 4.5 cm³/10 min; medical devices; high lipid resistance; suitable for sterilization with high-energy radiation; biocompatible according to many ISO 10993-1 test requirements; improved oncology drug resistance; injection molding - melt temperature 280 - 320 °C; transparent parts for medical devices

ISO Shortname

PC

Property	Test Condition	Unit	Standard	typical Value
Rheological properties				
C Melt volume-flow rate	300 °C/ 1.2 kg	cm ³ /10 min	ISO 1133	4.5
Melt mass-flow rate	300 °C/ 1.2 kg	g/10 min	ISO 1133	4.7
C Molding shrinkage, parallel	60x60x2 mm/ 500 bar	%	ISO 294-4	0.7
C Molding shrinkage, normal	60x60x2 mm/ 500 bar	%	ISO 294-4	0.7
Molding shrinkage, parallel/normal	Value range based on general practical experience	%	b.o. ISO 2577	0.6 - 0.8
Mechanical properties (23 °C/50 % r. h.)				
C Tensile modulus	1 mm/min	MPa	ISO 527-1,-2	2300
C Yield stress	50 mm/min	MPa	ISO 527-1,-2	65
C Yield strain	50 mm/min	%	ISO 527-1,-2	6.4
C Nominal strain at break	50 mm/min	%	ISO 527-1,-2	> 50
Stress at break	50 mm/min	MPa	ISO 527-1,-2	75
Strain at break	50 mm/min	%	b.o. ISO 527-1,-2	135
Flexural modulus	2 mm/min	MPa	ISO 178	2300
Flexural strength	2 mm/min	MPa	ISO 178	98
Flexural strain at flexural strength	2 mm/min	%	ISO 178	7.4
Flexural stress at 3.5 % strain	2 mm/min	MPa	ISO 178	73
C Charpy impact strength	23 °C	kJ/m ²	ISO 179/1eU	N
Charpy impact strength	-60 °C	kJ/m ²	ISO 179/1eU	N
Charpy notched impact strength	23 °C/ 3 mm	kJ/m ²	ISO 21305/based on ISO 179/1eA	90 P
Charpy notched impact strength	-30 °C/ 3 mm	kJ/m ²	ISO 21305/based on ISO 179/1eA	19 C
Izod notched impact strength	23 °C/ 3 mm	kJ/m ²	ISO 21305/based on ISO 180/A	80 P
Izod notched impact strength	-30 °C/ 3 mm	kJ/m ²	ISO 21305/based on ISO 180/A	14 C
C Puncture impact properties - maximum force	23 °C	N	ISO 6603-2	5700
C Puncture impact properties - maximum force	-30 °C	N	ISO 6603-2	6600
C Puncture energy	23 °C	J	ISO 6603-2	65
C Puncture energy	-30 °C	J	ISO 6603-2	70
Ball indentation hardness		N/mm ²	ISO 2039-1	114
Thermal properties				
C Glass transition temperature	10 °C/min	°C	ISO 11357-1,-2	145
C Temperature of deflection under load	1.80 MPa	°C	ISO 75-1,-2	126
C Temperature of deflection under load	0.45 MPa	°C	ISO 75-1,-2	139
C Vicat softening temperature	50 N; 50 °C/h	°C	ISO 306	144
Vicat softening temperature	50 N; 120 °C/h	°C	ISO 306	146
C Coefficient of linear thermal expansion, parallel	23 to 55 °C	10 ⁻⁴ /K	ISO 11359-1,-2	0.65
C Coefficient of linear thermal expansion, normal	23 to 55 °C	10 ⁻⁴ /K	ISO 11359-1,-2	0.65
C Oxygen index	Method A	%	ISO 4589-2	27
Thermal conductivity, through-plane	23 °C; 50 % r. h.	W/(m·K)	ISO 8302	0.20
Resistance to heat (ball pressure test)		°C	IEC 60695-10-2	135
Flash ignition temperature		°C	ASTM D1929	480
Self ignition temperature		°C	ASTM D1929	550





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Property	Test Condition	Unit	Standard	typical Value
Other properties (23 °C)				
C Water absorption (saturation value)	Water at 23 °C	%	ISO 62	0.30
C Water absorption (equilibrium value)	23 °C; 50 % r. h.	%	ISO 62	0.12
C Density		kg/m³	ISO 1183-1	1200
Bulk density	Pellets	kg/m³	ISO 60	660
Processing conditions for test specimens				
C Injection molding - Melt temperature		°C	ISO 294	300
C Injection molding - Mold temperature		°C	ISO 294	80
C Injection molding - Injection velocity		mm/s	ISO 294	200
Recommended processing and drying conditions				
Melt temperatures		°C	-	290-330
Standard Melt temperature		°C	-	310
Barrel Temperatures - Rear		°C	-	260-270
Barrel Temperatures - Middle		°C	-	280-290
Barrel Temperatures - Front		°C	-	290-300
Barrel Temperatures - Nozzle		°C	-	300-310
Mold Temperatures		°C	-	80-120
Hold Pressure (% of injection pressure)		%	-	50 - 75
Plastic Back Pressure (specific)		bar	-	50-150
Peripheral Screw Speed		m/s	-	0.05 - 0.2
Shot-to-Cylinder Size		%	-	30 - 70
Dry Air Drying Temperature		°C	-	120
Dry Air Drying Time		h	-	2.0-3.0
Moisture Content max. (%)		%	-	<= 0,02
Vent Depth		mm	-	0.025 - 0.075

C These property characteristics are taken from the CAMPUS plastics data bank and are based on the international catalogue of basic data for plastics according to ISO 10350.

Impact properties: N = non-break, P = partial break, C = complete break

