Makrolon® 3158

Grades / Medical devices	MVR (300 °C/1.2 kg) 6.0 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121 °C; biocompatible according to many ISO 10993-1 test requirements; high viscosity; easy release; injection molding - melt temperature 280 - 320 °C; available in transparent and opaque colors
ISO Shortname	ISO 7391-PC,MR,(,,)-09-9

	Property	Test Condition	Unit	Standard	typical Value
Rheological properties					
C	Melt volume-flow rate	300 °C; 1.2 kg	cm³/10 min	ISO 1133	6.0
C	Molding shrinkage, parallel	60x60x2 mm; 500 bar	%	ISO 294-4	0.7
C	Molding shrinkage, normal	60x60x2 mm; 500 bar	%	ISO 294-4	0.75
	Molding shrinkage, parallel/normal	Value range based on general practical experience	%	b.o. ISO 2577	0.6 - 0.8
	Melt mass-flow rate	300 °C; 1.2 kg	g/10 min	ISO 1133	6.5
Mechanical properties (23 °C/50 % r. h.)					
C	Tensile modulus	1 mm/min	MPa	ISO 527-1,-2	2400
C	Yield stress	50 mm/min	MPa	ISO 527-1,-2	66
C	Yield strain	50 mm/min	%	ISO 527-1,-2	6.2
C	Nominal strain at break	50 mm/min	%	ISO 527-1,-2	> 50
	Stress at break	50 mm/min	MPa	ISO 527-1,-2	70
	Strain at break	50 mm/min	%	b.o. ISO 527-1,-2	120
C	Tensile creep modulus	1 h	MPa	ISO 899-1	2200
C	Tensile creep modulus	1000 h	MPa	ISO 899-1	1900
	Flexural modulus	2 mm/min	MPa	ISO 178	2400
	Flexural strength	2 mm/min	MPa	ISO 178	97
	Flexural strain at flexural strength	2 mm/min	%	ISO 178	7.1
	Flexural stress at 3.5 % strain	2 mm/min	MPa	ISO 178	73
C	Charpy impact strength	23 °C	kJ/m²	ISO 179-1eU	N
C	Charpy impact strength	-30 °C	kJ/m²	ISO 179-1eU	N
	Charpy impact strength	-60 °C	kJ/m²	ISO 179-1eU	N
	Charpy notched impact strength	23 °C; 3 mm	kJ/m²	ISO 7391/b.o. ISO 179-1eA	80P
	Charpy notched impact strength	-30 °C; 3 mm	kJ/m²	ISO 7391/b.o. ISO 179-1eA	16C
	Izod notched impact strength	23 °C; 3 mm	kJ/m²	ISO 7391/b.o. ISO 180-A	70P
	Izod notched impact strength	-30 °C; 3 mm	kJ/m²	ISO 7391/b.o. ISO 180-A	15C
C	Puncture maximum force	23 °C	N	ISO 6603-2	5600
C	Puncture maximum force	-30 °C	N	ISO 6603-2	6500
C	Puncture energy	23 °C	J	ISO 6603-2	60
C	Puncture energy	-30 °C	J	ISO 6603-2	70
	Ball indentation hardness		N/mm²	ISO 2039-1	113
Thermal properties					
C	Glass transition temperature	10 °C/min	°C	ISO 11357-1,-2	146
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	138
C	Vicat softening temperature	50 N; 50 °C/h	°C	ISO 306	147
	Vicat softening temperature	50 N; 120 °C/h	°C	ISO 306	148
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, transverse	23 to 55 °C	10^{-4}/K	ISO 11359-1,-2	0.65
	Thermal conductivity, cross-flow	23 °C; 50 % r. h.	W/(m·K)	ISO 8302	0.20
	Resistance to heat (ball pressure test)		°C	IEC 60695-10-2	138
	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
Material specific properties					
	Refractive index	Procedure A	-	ISO 489	1.587
	Haze for transparent materials	3 mm	%	ISO 14782	< 0.8
	Luminous transmittance (clear transparent materials)	1 mm	%	ISO 13468-2	89
C	Luminous transmittance (clear transparent materials)	2 mm	%	ISO 13468-2	89
	Luminous transmittance (clear transparent materials)	3 mm	%	ISO 13468-2	88
	Luminous transmittance (clear transparent materials)	4 mm	%	ISO 13468-2	87
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

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

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Disclaimer

Information Impact properties

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Typical value

These values are typical values only. Unless explicitly agreed in written form, the do not constitute a binding material specification or warranted values. Values may be affected by the design of the mold/die, the processing conditions and coloring/pigmentation of the product. Unless specified to the contrary, the property values given have been established on standardized test specimens at room temperature.

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Covestro Medical Grades

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