

Makrolon® 6485

Flame retardant grades / Medium viscosity

MVR (300 °C/1.2 kg) 9.0 cm³/10 min; flame retardant; UL 94V-0/1.5 mm and 5VA/3.0 mm; medium viscosity; easy release; injection molding - melt temperature 280 - 320 °C; available in opaque colors only

ISO 7391-PC,MFR,(,)-09-9

Property	Test Condition	Unit	Standard	typical Value
Rheological properties				
CMelt volume-flow rate	300 °C/ 1.2 kg	cm³/10 min	ISO 1133	9
Melt mass-flow rate	300 °C/ 1.2 kg	g/10 min	ISO 1133	10
CMolding shrinkage, parallel	60x60x2 mm³/ 500 bar	%	ISO 294-4	0.65
CMolding shrinkage, normal	60x60x2 mm³/ 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.)				
CTensile modulus	1 mm/min	MPa	ISO 527-1,-2	2400
CYield stress	50 mm/min	MPa	ISO 527-1,-2	66
CYield strain	50 mm/min	%	ISO 527-1,-2	6.1
CNominal strain at break	50 mm/min	%	ISO 527-1,-2	> 50
Stress at break	50 mm/min	MPa	ISO 527-1,-2	65
Strain at break	50 mm/min	%	b.o. ISO 527-1,-2	120
CTensile creep modulus	1 h	MPa	ISO 899-1	2200
CTensile 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	98
Flexural strain at flexural strength	2 mm/min	%	ISO 178	7.1
Flexural stress at 3.5 % strain	2 mm/min	MPa	ISO 178	74
CCharpy impact strength	23 °C	kJ/m²	ISO179/1eU	N
CCharpy impact strength	-30 °C	kJ/m²	ISO179/1eU	N
Charpy impact strength	-60 °C	kJ/m²	ISO179/1eU	N
Charpy notched impact strength	23 °C/ 3 mm	kJ/m²	ISO 21305/based on ISO 179/1eA	70P(C)
Charpy notched impact strength	-30 °C/ 3 mm	kJ/m²	ISO 21305/based on ISO 179/1eA	14C
Izod notched impact strength	23 °C/ 3 mm	kJ/m²	ISO 21305/based on ISO 180/A	65P(C)
Izod notched impact strength	-30 °C/ 3 mm	kJ/m²	ISO 21305/based on ISO 180/A	12C
CPuncture impact properties - maximum force	23 °C	N	ISO 6603-2	5200
CPuncture impact properties - maximum force	-30 °C	N	ISO 6603-2	6000
CPuncture energy	23 °C	J	ISO 6603-2	50
CPuncture energy	-30 °C	J	ISO 6603-2	55
Ball indentation hardness		N/mm²	ISO 2039-1	115

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Property	Test Condition	Unit	Standard	typical Value
Thermal properties				
CGlass transition temperature	10 °C/min	°C	ISO 11357-1,-2	142
CTemperature of deflection under load	1.80 MPa	°C	ISO 75-1,-2	124
CTemperature of deflection under load	0.45 MPa	°C	ISO 75-1,-2	136
CVicat softening temperature	50 N; 50 °C/h	°C	ISO 306	144
Vicat softening temperature	50 N; 120 °C/h	°C	ISO 306	145
CCoefficient of linear thermal expansion, parallel	23 to 55 °C	10 ⁻⁴ /K	ISO 11359-1,-2	0.65
CCoefficient of linear thermal expansion, normal	23 to 55 °C	10 ⁻⁴ /K	ISO 11359-1,-2	0.65
CBurning behavior UL 94 (1.5 mm) [UL recognition]	1.5 mm	Class	UL 94	V-0
CBurning behavior UL 94 [UL recognition]	0.75 mm	Class	UL 94	V-1
CBurning behavior UL 94-5V [UL recognition]	3.0 mm	Class	UL 94 I	5VA
COxygen index	Method A	%	SO 4589-2	36
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	136
Relative temperature index (Tensile strength) [UL recognition]	1.5 mm	°C	UL 746B	125
Relative temperature index (Tensile impact strength) [UL recognition]	1.5 mm	°C	UL 746B	115
Relative temperature index (Electric strength) [UL recognition]	1.5 mm	°C	UL 746B	125
Glow wire test (GWFI) [UL recognition]	0.75 mm	°C	IEC 60695-2-12	960
Glow wire test (GWFI) [UL recognition]	1.5 mm	°C	IEC 60695-2-12	960
Glow wire test (GWFI) [UL recognition]	3.0 mm	°C	IEC 60695-2-12	960
Glow wire test (GWIT)	0.75 mm	°C	IEC 60695-2-13	875
Glow wire test (GWIT)	1.5 mm	°C	IEC 60695-2-13	875
Glow wire test (GWIT)	3.0 mm	°C	IEC 60695-2-13	875
Glow wire test	1.5 mm	°C	b.o. EDF HN60 E.02	750
Glow wire test	3.0 mm	°C	b.o. EDF HN60 E.02	750
Application of flame from small burner	Method K and F/ 2.0 mm	Class	DIN 53438-1,-3	K1, F1
Needle flame test	Method K/ 1.5 mm	s	IEC 60695-11-5	120
Needle flame test	Method K/ 2.0 mm	s	IEC 60695-11-5	120
Needle flame test	Method K/ 3.0 mm	s	IEC 60695-11-5	120
Needle flame test	Method F/ 1.5 mm	s	IEC 60695-11-5	120
Needle flame test	Method F/ 2.0 mm	s	IEC 60695-11-5	120
Needle flame test	Method F/ 3.0 mm	s	IEC 60695-11-5	120
Burning rate (US-FMVSS)	>=1.0 mm	mm/min	ISO 3795	passed
Flash ignition temperature		°C	ASTM D1929	460
Self ignition temperature		°C	ASTM D1929	540
Electrical properties (23 °C/50 % r. h.)				
CRelative permittivity	100 Hz	-	IEC 60250	3.1
CRelative permittivity	1 MHz	-	IEC 60250	3.0
CDissipation factor	100 Hz	10 ⁻⁴	IEC 60250	8
CDissipation factor	1 MHz	10 ⁻⁴	IEC 60250	90
CVolume resistivity		Ohm·m	IEC 62631-3-1	1E14
CSurface resistivity		Ohm	IEC 62631-3-2	1E16
CElectrical strength	1 mm	kV/mm	IEC 60243-1	34
CComparative tracking index CTI	Solution A	Rating	IEC 60112	225
Comparative tracking index CTI M	Solution B	Rating	IEC 60112	125M
Electrolytic corrosion		Rating	IEC 60426	A1
Other properties (23 °C)				
CWater absorption (saturation value)	Water at 23 °C	%	ISO 62	0.30
CWater absorption (equilibrium value)	23 °C; 50 % r. h.	%	ISO 62 ISO	0.12
CDensity		kg/m ³	1183-1	1200
Bulk density	Pellets	kg/m ³	ISO 60	640

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Property	Test Condition	Unit	Standard	typical Value
Processing conditions for test specimens				
Cnjection molding - Melt temperature		°C	ISO 294	300
Cnjection molding - Mold temperature		°C	ISO 294	80
Cnjection molding - Injection velocity		mm/s	ISO 294	200
Recommended processing and drying conditions				
Melt temperatures		°C	-	280 - 320
Standard Melt temperature		°C	-	300
Barrel Temperatures - Rear		°C	-	250 - 260
Barrel Temperatures - Middle		°C	-	270 - 280
Barrel Temperatures - Front		°C	-	280 - 290
Barrel Temperatures - Nozzle		°C	-	290 - 300
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	-	2-3
Moisture Content max. (%)		%	-	<= 0,02
Vent Depth		mm	-	0.025 - 0.075

CThese 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