Makrolon 2805

General purpose grades / Medium viscosity Global grade; MVR 9.5 cm³/10 min; General purpose; Medium viscosity; Easy release; Injection molding; Available in transparent, translucent and opaque colors

ISO Shortname ISO 7391-PC,MR,61-09-9

	Property	Test Condition	Unit	Standard	Value
Rheological properties					
C	Melt volume-flow rate	300 °C; 1.2 kg	cm³/(10 min)	ISO 1133	9.5
C	Molding shrinkage, parallel	60x60x2; 300 °C / MT 80 °C; 500 bar	%	ISO 294-4	0.65
C	Molding shrinkage, normal	60x60x2; 300 °C / MT 80 °C; 500 bar	%	ISO 294-4	0.7
	Molding shrinkage, parallel/normal	Value range based on general practical experience	%	acc. ISO 2577	0.6 - 0.8
	Melt mass-flow rate	300 °C; 1.2 kg	g/(10 min)	ISO 1133	10
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	6.1
C	Nominal 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	%	acc. ISO 527-1,-2	115
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	2350
	Flexural strength	2 mm/min	MPa	ISO 178	98
	Flexural strain at flexural strength	2 mm/min	%	ISO 178	7.0
	Flexural stress at 3.5 % strain	2 mm/min	MPa	ISO 178	74
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 notched impact strength	23 °C; 3 mm	kJ/m²	acc. ISO 179-1eA	70P
	Charpy notched impact strength	-30 °C; 3 mm	kJ/m²	acc. ISO 179-1eA	12C
	Izod notched impact strength	23 °C; 3.2 mm	kJ/m²	acc. ISO 180-A	85P
	Izod notched impact strength	-30 °C; 3.2 mm	kJ/m²	acc. ISO 180-A	12C
C	Puncture maximum force	23 °C	N	ISO 6603-2	5400
C	Puncture maximum force	-30 °C	N	ISO 6603-2	6300
C	Puncture energy	23 °C	J	ISO 6603-2	60
C	Puncture energy	-30 °C	J	ISO 6603-2	65
	Ball indentation hardness		N/mm²	ISO 2039-1	115
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	125
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	145
	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, transverse	23 to 55 °C	10-4/K	ISO 11359-1,-2	0.65
C	Burning behavior UL 94 (1.6 mm) [UL recognition]	1.5 mm	Class	UL 94	V-2
C	Burning behavior UL 94 [UL recognition]	2.4 mm	Class	UL 94	V-2
	Burning behavior UL 94 [UL recognition]	0.75 mm	Class	UL 94	V-2
	Burning behavior UL 94 [UL recognition]	2.5 mm	Class	UL 94	HB
	Burning behavior UL 94 [UL recognition]	3.0 mm	Class	UL 94	HB
	Burning behavior UL 94 [UL recognition]	6.0 mm	Class	UL 94	HB
C	Oxygen index	Method A	%	ISO 4589-2	27
	Thermal conductivity	23 °C	W/(m·K)	ISO 8302	0.20
	Resistance to heat (ball pressure test)		°C	IEC 60695-10-2	135
	Temperature index (Tensile strength)	20000 h; 1.5 mm	°C	IEC 60216-1	130
	Halving interval (Tensile strength)	1.5 mm	°C	IEC 60216-1	8.7
	Temperature index (Tensile impact strength)	20000 h; 1.5 mm	°C	IEC 60216-1	120
	Halving interval (Tensile impact strength)	1.5 mm	°C	IEC 60216-1	7.4

Makrolon 2805

	Property	Test Condition	Unit	Standard	Value
	Temperature index (Electric strength)	20000 h; 1.5 mm	°C	IEC 60216-1	135
	Halving interval (Electric strength)	1.5 mm	°C	IEC 60216-1	7.4
	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)	1.0 mm	°C	IEC 60695-2-12	850
	Glow wire test (GWFI)	1.5 mm	°C	IEC 60695-2-12	850
	Glow wire test (GWFI)	2.0 mm	°C	IEC 60695-2-12	850
	Glow wire test (GWFI)	3.0 mm	°C	IEC 60695-2-12	900
	Glow wire test	1.5 mm	°C	acc. EDF HN60 E.02	750
	Glow wire test	3.0 mm	°C	acc. 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 60695-2-2	5
	Needle flame test	Method K; 2.0 mm	s	IEC 60695-2-2	5
	Needle flame test	Method K; 3.0 mm	s	IEC 60695-2-2	10
	Needle flame test	Method F; 1.5 mm	s	IEC 60695-2-2	60
	Needle flame test	Method F; 2.0 mm	s	IEC 60695-2-2	60
	Needle flame test	Method F; 3.0 mm	s	IEC 60695-2-2	120
	Incandescent bar test		Rating	IEC 60707-BH	BH2/< 30 mm
	Burning rate (US-FMVSS)	>=1.0 mm	mm/min	ISO 3795	passed
	Flash ignition temperature	Procedure B	°C	ASTM D1929	470
	Self ignition temperature	Procedure B	°C	ASTM D1929	540
Electrical properties (23 °C/50 % r. h.)					
C	Relative permittivity	100 Hz	-	IEC 60250	3.1
C	Relative permittivity	1 MHz	-	IEC 60250	3.0
C	Dissipation factor	100 Hz	10^{-4}	IEC 60250	5
C	Dissipation factor	1 MHz	10^{-4}	IEC 60250	90
C	Volume resistivity		Ohm·m	IEC 60093	1E14
C	Surface resistivity		Ohm	IEC 60093	1E16
C	Electric strength	1 mm	kV/mm	IEC 60243-1	33
C	Comparative tracking index CTI	Solution A	Rating	IEC 60112	275
	Comparative tracking index CTI M	Solution B	Rating	IEC 60112	125
	Electrolytic corrosion		Rating	IEC 60426	A1
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 % RH	%	ISO 62	0.12
C	Density		kg/m³	ISO 1183	1200
	Water permeation	23 °C; 85 % RH; 100 µm film	g/(m²·24 h)	ISO 15106-1	15
	Gas permeation	Oxygen; 100 µm film	cm³/(m²·24 h*bar)	acc. ISO 2556	700
	Gas permeation	Oxygen; 25.4 µm (1 mil) film	cm³/(m²·24 h*bar)	acc. ISO 2556	2760
	Gas permeation	Nitrogen; 100 µm film	cm³/(m²·24 h*bar)	acc. ISO 2556	130
	Gas permeation	Nitrogen; 25.4 µm (1 mil) film	cm³/(m²·24 h*bar)	acc. ISO 2556	510
	Gas permeation	Carbon dioxide; 100 µm film	cm³/(m²·24 h*bar)	acc. ISO 2556	4300
	Gas permeation	Carbon dioxide; 25.4 µm (1 mil) film	cm³/(m²·24 h*bar)	acc. ISO 2556	16900
	Bulk density	Pellets	kg/m³	ISO 60	660
Material specific properties					
C	Viscosity number		cm³/g	ISO 1628-4	59
	Refractive index	Procedure A	-	ISO 489	1.586
	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

Makrolon 2805

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.

Makrolon 2805

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Test values

Unless specified to the contrary, the values given have been established on standardised test specimens at room temperature. The figures should be regarded as guide values only and not as binding minimum values. Kindly note that, under certain conditions, the properties can be affected to a considerable extent by the design of the mould/die, the processing conditions and the colouring.

Processing note

Under the recommended processing conditions small quantities of decomposition product may be given off during processing.To preclude any risk to the health and well-being of the machine operatives, tolerance limits for the work environment must be ensured by the provision of efficient exhaust ventilation and fresh air at the workplace in accordance with the Safety Data Sheet. In order to prevent the partial decomposition of the polymer and the generation of volatile decomposition products, the prescribed processing temperatures should not be substantially exceeded.Since excessively high temperatures are generally the result of operator error or defects in the heating system, special care and controls are essential in these areas.

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