

Makrolon® 2865

Flame retardant grades / Medium viscosity

MVR (300 °C/1.2 kg) 10 cm³/10 min; flame retardant: UL 94V-2/1.5 mm and 3.0 mm; medium viscosity; easy release; injection molding - melt temperature 280 - 320 °C; available in transparent, translucent and opaque colors

ISO Shortname

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

| 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 | 10 |
| C Molding shrinkage, parallel | 60x60x2 mm; 500 bar | % | ISO 294-4 | 0.65 |
| 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 |
| 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 | 6.2 |
| 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 | 130 |
| 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/m ² | ISO 179-1eU | N |
| C Charpy impact strength | -30 °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 7391/b.o. ISO 179-1eA | 75P |
| Charpy notched impact strength | -30 °C; 3 mm | kJ/m ² | ISO 7391/b.o. ISO 179-1eA | 16C |
| Izod notched impact strength | 23 °C; 3 mm | kJ/m ² | ISO 7391/b.o. ISO 180-A | 65P |
| Izod notched impact strength | -30 °C; 3 mm | kJ/m ² | ISO 7391/b.o. 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/mm ² | ISO 2039-1 | 115 |

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|---|------------------------|---------------------|----------------|---------------|
| 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 | 137 |
| 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 [UL recognition] | 0.75 mm | Class | UL 94 | V-2 |
| Burning behavior UL 94 [UL recognition] | 6.0 mm | Class | UL 94 | V-0 |
| C Oxygen index | Method A | % | ISO 4589-2 | 32 |
| 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 | 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 | 850 |
| Glow wire test (GWFI) [UL recognition] | 1.5 mm | °C | IEC 60695-2-12 | 850 |
| 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 | 900 |
| Glow wire test (GWIT) | 3.0 mm | °C | IEC 60695-2-13 | 900 |
| 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 | 10 |
| Needle flame test | Method K; 2.0 mm | s | IEC 60695-11-5 | 20 |
| Needle flame test | Method K; 3.0 mm | s | IEC 60695-11-5 | 30 |
| Needle flame test | Method F; 1.5 mm | s | IEC 60695-11-5 | 60 |
| 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 | 480 |
| Self ignition temperature | | °C | ASTM D1929 | 550 |
| 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 Electrical strength | 1 mm | kV/mm | IEC 60243-1 | 34 |
| C Comparative 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 |

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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/m ³ | ISO 1183-1 | 1200 |
| Water vapor permeability | 23 °C; 85 % RH; 100 µm film | g/(m ² ·24 h) | ISO 15106-1 | 15 |
| Gas permeation | Oxygen; 100 µm film | cm ³ /(m ² ·24 h·bar) | b.o. ISO 2556 | 650 |
| Gas permeation | Oxygen; 25.4 µm (1 mil) film | cm ³ /(m ² ·24 h·bar) | b.o. ISO 2556 | 2760 |
| Gas permeation | Nitrogen; 100 µm film | cm ³ /(m ² ·24 h·bar) | b.o. ISO 2556 | 120 |
| Gas permeation | Nitrogen; 25.4 µm (1 mil) film | cm ³ /(m ² ·24 h·bar) | b.o. ISO 2556 | 510 |
| Gas permeation | Carbon dioxide; 100 µm film | cm ³ /(m ² ·24 h·bar) | b.o. ISO 2556 | 3800 |
| Gas permeation | Carbon dioxide; 25.4 µm (1 mil) film | cm ³ /(m ² ·24 h·bar) | b.o. ISO 2556 | 16900 |
| Bulk density | Pellets | kg/m ³ | ISO 60 | 640 |
| Material specific properties | | | | |
| 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 |

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

Typical value

These values are typical values only. Unless explicitly agreed in written form, they 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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