

Makrolon® 2405 RP70 CQ

Designation according to ISO 1043: PC (REC)



Product description

Polycarbonate; MVR (300 °C/1.2 kg) 19 cm³/10 min; low viscosity; easy release; available in transparent, translucent and opaque colors

Applications

Injection molding; General purpose

Sustainability

Partially circular attributed product related to chemically recycled post-consumer material, allocated via mass balance in accordance with the ISCC PLUS standard. The certified material share is detailed in the sustainability declaration.

Typical Values

Rheological properties

Property	Test Condition	Value	Unit	Standard
Melt Volume-flow Rate (MVR)	300 °C/1.2 kg	19	cm³/10 min	ISO 1133-1
Melt Mass-flow Rate (MFR)	300 °C/1.2 kg	20	g/10 min	ISO 1133-1
Molding Shrinkage, parallel	60×60×2 mm; 500 bar	0.65	%	ISO 294-4
Molding Shrinkage, normal	60×60×2 mm; 500 bar	0.70	%	ISO 294-4

Mechanical properties (23 °C; 50 % r. h.)

Property	Test Condition	Value	Unit	Standard
Tensile Modulus	1 mm/min	2,400	MPa	ISO 527-1,-2
Yield Stress	50 mm/min	65	MPa	ISO 527-1,-2
Yield Strain	50 mm/min	6	%	ISO 527-1,-2
Stress at Break	50 mm/min	65	MPa	ISO 527-1,-2
Strain at Break	50 mm/min	125	%	ISO 527-1,-2
Nominal Strain at Break	50 mm/min	> 50	%	ISO 527-1,-2
Flexural Modulus	2 mm/min	2,350	MPa	ISO 178
Flexural Strength	2 mm/min	97	MPa	ISO 178
Flexural Stress at 3.5 % Flexural Strain	2 mm/min	73	MPa	ISO 178
Flexural Strain at Flexural Strength	2 mm/min	7.1	%	ISO 178
Izod Notched Impact Strength	23 °C; 3 mm	65P	kJ/m²	ISO 21305/b. o. ISO 180/A
Izod Notched Impact Strength	-30 °C; 3 mm	15C	kJ/m²	ISO 21305/b. o. ISO 180/A

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Property	Test Condition	Value	Unit	Standard
Charpy Impact Strength	23 °C	N	kJ/m ²	ISO 179-1/1eU
Charpy Impact Strength	-30 °C	N	kJ/m ²	ISO 179-1/1eU
Charpy Impact Strength	-60 °C	N	kJ/m ²	ISO 179-1/1eU
Charpy Notched Impact Strength	23 °C; 3 mm	65P	kJ/m ²	ISO 21305/b. o. ISO 179-1/1eA
Charpy Notched Impact Strength	-30 °C; 3 mm	14C	kJ/m ²	ISO 21305/b. o. ISO 179-1/1eA
Puncture Impact Behavior - Maximum Force	23 °C	5,100	N	ISO 6603-2
Puncture Impact Behavior - Maximum Force	-30 °C	6,000	N	ISO 6603-2
Puncture Impact Behavior - Puncture Energy	23 °C	55	J	ISO 6603-2
Puncture Impact Behavior - Puncture Energy	-30 °C	65	J	ISO 6603-2
Ball Indentation Hardness	358 N	115	N/mm ²	ISO 2039-1
Tensile Creep Modulus	1 h	2,200	MPa	ISO 899-1
Tensile Creep Modulus	1,000 h	1,900	MPa	ISO 899-1

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

Thermal properties

Property	Test Condition	Value	Unit	Standard
Temperature of Deflection under Load (HDT)	1.80 MPa	124	°C	ISO 75-1,-2
Temperature of Deflection under Load (HDT)	0.45 MPa	137	°C	ISO 75-1,-2
Vicat Softening Temperature	50 N; 50 °C/h	145	°C	ISO 306
Vicat Softening Temperature	50 N; 120 °C/h	146	°C	ISO 306
Glass Transition Temperature	10 °C/min	144	°C	ISO 11357-1,-2
Coefficient of Linear Thermal Expansion (CLTE), parallel	23 to 55 °C	0.65	10 ⁻⁴ /K	ISO 11359-1,-2
Coefficient of Linear Thermal Expansion (CLTE), normal	23 to 55 °C	0.65	10 ⁻⁴ /K	ISO 11359-1,-2
Burning Rate (FMVSS-302)	≥ 1.0 mm	PASSED		ISO 3795
Oxygen Index	Method A	27	%	ISO 4589-2
Thermal Conductivity, through-plane	23 °C; 50 % r. h.	0.2	W/(m·K)	ISO 8302
Resistance to Heat (Ball Pressure Test)		136	°C	IEC 60695-10-2
Relative Temperature Index (RTI, Tensile Impact Strength)	1.5 mm	115	°C	UL 746B

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Property	Test Condition	Value	Unit	Standard
Relative Temperature Index (RTI, Tensile Strength)	1.5 mm	125	°C	UL 746B
Relative Temperature Index (RTI, Electric Strength)	1.5 mm	125	°C	UL 746B
Glow Wire Test (GWFI)	0.75 mm	850	°C	IEC 60695-2-12
Glow Wire Test (GWFI)	1.5 mm	875	°C	IEC 60695-2-12
Glow Wire Test (GWFI)	3 mm	930	°C	IEC 60695-2-12
Glow Wire Test (GWIT)	0.75 mm	875	°C	IEC 60695-2-13
Glow Wire Test (GWIT)	1.0 mm	875	°C	IEC 60695-2-13
Glow Wire Test (GWIT)	1.5 mm	875	°C	IEC 60695-2-13
Glow Wire Test (GWIT)	3 mm	875	°C	IEC 60695-2-13
Application of Flame from Small Burner	Method K and F; 2 mm	K1, F1		DIN 53438-1,-3
Flash-ignition Temperature		480	°C	ASTM D1929
Spontaneous-Ignition Temperature		550	°C	ASTM D1929

Electrical properties (23 °C; 50 % r. h.)

Property	Test Condition	Value	Unit	Standard
Relative Permittivity	100 Hz	3.1		IEC 60250
Relative Permittivity	1 MHz	3.0		IEC 60250
Dielectric Dissipation Factor	100 Hz	5	10 ⁻⁴	IEC 60250
Dielectric Dissipation Factor	1 MHz	90	10 ⁻⁴	IEC 60250
Volume Resistivity		1E14	Ω·m	IEC 62631-3-1
Surface Resistivity		1E16	Ω	IEC 62631-3-2
Electric Strength	1 mm	34	kV/mm	IEC 60243-1
Comparative Tracking Index (CTI)	Solution A	250	V	IEC 60112
Electrolytic Corrosion		A1		IEC 60426

Other properties (23 °C)

Property	Test Condition	Value	Unit	Standard
Water Absorption (Saturation Value)	Water at 23 °C	0.3	%	ISO 62
Water Absorption (Equilibrium Value)	23 °C; 50 % r. h.	0.12	%	ISO 62
Water Vapour Transmission Rate	23 °C; 85 % ΔRH; 100 μm film	15	g/(m ² ·24 h)	ISO 15106-1
Density		1,200	kg/m ³	ISO 1183-1
Bulk Density	Pellets	660	kg/m ³	ISO 60
Gas Transmission Rate	Carbon dioxide; 25.4 μm (1 mil) film	18,900	cm ³ /(m ² ·24 h·bar)	b. o. ISO 2556

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Property	Test Condition	Value	Unit	Standard
Gas Transmission Rate	Carbon dioxide; 100 µm film	4,000	cm ³ /(m ² ·24 h·bar)	b. o. ISO 2556
Gas Transmission Rate	Nitrogen; 25.4 µm (1 mil) film	630	cm ³ /(m ² ·24 h·bar)	b. o. ISO 2556
Gas Transmission Rate	Nitrogen; 100 µm film	130	cm ³ /(m ² ·24 h·bar)	b. o. ISO 2556
Gas Transmission Rate	Oxygen; 25.4 µm (1 mil) film	3,150	cm ³ /(m ² ·24 h·bar)	b. o. ISO 2556
Gas Transmission Rate	Oxygen; 100 µm film	700	cm ³ /(m ² ·24 h·bar)	b. o. ISO 2556

Material specific properties

Property	Test Condition	Value	Unit	Standard
Luminous Transmittance (Clear Transparent Materials)	SCI; D65/10°; 1 mm	89	%	ISO/CIE 11664
Luminous Transmittance (Clear Transparent Materials)	SCI; D65/10°; 2 mm	89	%	ISO/CIE 11664
Luminous Transmittance (Clear Transparent Materials)	SCI; D65/10°; 3 mm	88	%	ISO/CIE 11664
Luminous Transmittance (Clear Transparent Materials)	SCI; D65/10°; 4 mm	87	%	ISO/CIE 11664
Haze (Clear Transparent Materials)	C/2°; 3 mm	< 0.8	%	ASTM D1003
Refractive Index	Procedure A	1.585		ISO 489

Processing conditions for test specimens

Property	Test Condition	Value	Unit	Standard
Injection Molding - Melt Temperature		280	°C	ISO 294-1
Injection Molding - Mold Temperature		80	°C	ISO 294-1
Injection Molding - Injection Velocity		200	mm/s	ISO 294-1

Recommended processing and drying conditions

Property	Test Condition	Value	Unit	Standard
Dry Air Drying Temperature		120	°C	
Dry Air Drying Time		2 - 3	h	
Moisture Content max. (%)		≤ 0.02	%	
Melt Temperatures		280 - 320	°C	
Standard Melt Temperature		300	°C	
Barrel Temperatures	Rear	250 - 260	°C	
Barrel Temperatures	Middle	270 - 280	°C	
Barrel Temperatures	Front	280 - 290	°C	
Barrel Temperatures	Nozzle	290 - 300	°C	

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Property	Test Condition	Value	Unit	Standard
Mold Temperatures		80 - 120	°C	
Hold Pressure (% of Injection Pressure)		50 - 75	%	
Plastic Back Pressure (specific)		50 - 150	bar	
Peripheral Screw Speed		0.05 - 0.2	m/s	
Shot-to-Cylinder Size		30 - 70	%	
Vent Depth		0.025 - 0.075	mm	

Health and Safety Information

Before working with this product, you must read and become familiar with the available information regarding its risks, proper use, and safe handling. This information is provided in various formats, including the current Safety Data Sheet (SDS) and product label. SDS can be accessed via the following link:

[Safety Data Sheets \(SDS\) for Covestro products | Covestro](#)

For further questions, please use the contact information provided on this technical data sheet.

Please note that for products manufactured in different colors, safety data may vary depending on the color variant.

Disclaimer

Responsibility and Liability

The use of Covestro products, technical assistance, and information (regardless of how provided) is outside Covestro's control and is solely the responsibility of the customer. The customer must conduct adequate testing to determine the suitability of products for its intended use, including but not limited to technical, health, safety, and environmental aspects. Unless otherwise agreed in writing, all products are sold exclusively under Covestro's standard conditions of sale, which prevail in case of conflict and are available upon request.

The terms and conditions of sale and delivery are available via the following link:

<https://order.covestro.com/covestrostorefront/saleConditions>

All information is provided "as is" without warranties, express or implied, including merchantability or fitness for a particular purpose, and is subject to change without notice. To the maximum extent permitted by law, Covestro disclaims, and the customer assumes all liability for losses, damages, or claims arising out of use of Covestro products, technical assistance, or information. Any statement or recommendation not expressly contained in Covestro documentation is unauthorized and shall not bind Covestro. Nothing herein shall be construed as encouraging or recommending the use of any product in conflict with any claim of any patent. No license is implied or in fact granted under the claims of any patent.

Restrictions on Regulated Applications

This product is not intended for use in regulated applications such as agriculture, cosmetics, drinking water contact, food contact, medical products (e.g., medical devices), toys, or similar uses subject to specific regulatory requirements. Prior written approval from Covestro is required before this product may be used in any regulated application. The customer is solely responsible for ensuring compliance with all applicable laws and determining product suitability. Covestro disclaims all liability and warranties for unauthorized regulated uses.

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Typical Value

These values are provided as typical data only and do not constitute binding specifications or warranted performance, unless explicitly agreed by Covestro in writing. Performance may vary depending on factors including, but not limited to, mold/die, processing conditions and coloring/pigmentation. Unless otherwise stated, values are based on standardized test specimens at room temperature.

Sample

Samples provided by Covestro are intended solely for evaluation and testing purposes by the customer and may not be used in commercial applications, resold, transferred to third parties (except qualified testing service providers acting on behalf of the customer), reverse engineered, modified, or used in any manner not explicitly authorized in writing by Covestro. Samples are provided 'as-is' without any warranties, express or implied, including fitness for a particular purpose. Customers are solely responsible for ensuring safe handling, regulatory compliance, and suitability of the material for their intended evaluations. Covestro disclaims all liability for damages or losses arising from the use of samples.

Shrinkage

Shrinkage data is provided for reference only and is based on plaques molded under specific, controlled processing conditions. Actual shrinkage values in production parts may vary due to numerous factors, including but not limited to part design (e.g., size, thickness, geometry), mold design (e.g., gate type and location, runner design, mold materials, cooling system), and molding conditions (e.g., processing temperature, mold temperature, packing time and pressure, injection speed).

The determination and application of shrinkage values are the sole responsibility of the customer and must be based on their own testing and experience under actual production conditions. To the maximum extent permitted by law, Covestro shall not be liable for any damages, losses, or claims arising from the use of, or reliance on, the shrinkage data provided.

Recommended Processing and Drying Conditions

The recommended processing and drying conditions are provided for reference only and do not constitute binding specifications or warranted values. Barrel temperatures are based on a standard 3-zone barrel; other configurations may require different settings. Values for hold pressure as a percentage of injection pressure may vary depending on part geometry, injection molding machine, and injection mold. Drying conditions are specified for dry air dryers only; drying times and temperatures may differ depending on the dryer type.

Processors are solely responsible for validating and optimizing processing parameters for their specific equipment and applications. To the maximum extent permitted by law, Covestro disclaims all liability for performance outcomes or damages resulting from reliance on these recommended conditions.

Contact Information

Please use our [contact form](#) or contact us directly by sending an e-mail to technical-datasheets@cx.covestro.com.
