

Makrolon® GF9415 RE25 CQ

Designation according to ISO 1043: PC-GF10 FR



Product description

Polycarbonate; 10 % glass fiber filled; flame retardant; MVR (300 °C/1.2 kg) 6.0 cm³/10 min; V-0 at 1.5 mm (UL 94); 5VA at 3.0 mm (UL 94); high viscosity; easy release; available in opaque colors only

Applications

Injection molding

Sustainability

Partially bio-circular product attributed 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	6	cm³/10 min	ISO 1133-1
Melt Viscosity	300 °C; 1,000 s ⁻¹	330	Pa·s	b. o. ISO 11443-A
Molding Shrinkage, parallel	60×60×2 mm; 500 bar	0.65	%	ISO 294-4
Molding Shrinkage, normal	60×60×2 mm; 500 bar	0.45	%	ISO 294-4

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

Property	Test Condition	Value	Unit	Standard
Tensile Modulus	1 mm/min	3,800	MPa	ISO 527-1,-2
Yield Stress	5 mm/min	62	MPa	ISO 527-1,-2
Yield Strain	5 mm/min	4.8	%	ISO 527-1,-2
Stress at Break	5 mm/min	45	MPa	ISO 527-1,-2
Strain at Break	5 mm/min	15	%	ISO 527-1,-2
Nominal Strain at Break	5 mm/min	10	%	ISO 527-1,-2
Flexural Modulus	2 mm/min	3,600	MPa	ISO 178
Flexural Strength	2 mm/min	105	MPa	ISO 178
Flexural Stress at 3.5 % Flexural Strain	2 mm/min	95	MPa	ISO 178
Flexural Strain at Flexural Strength	2 mm/min	5.8	%	ISO 178
Izod Notched Impact Strength	23 °C; 3 mm	10C	kJ/m²	ISO 21305/b. o. ISO 180/A
Izod Notched Impact Strength	-30 °C; 3 mm	6C	kJ/m²	ISO 21305/b. o. ISO 180/A

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Property	Test Condition	Value	Unit	Standard
Charpy Impact Strength	23 °C	150C	kJ/m ²	ISO 179-1/1eU
Charpy Impact Strength	-20 °C	130C	kJ/m ²	ISO 179-1/1eU
Puncture Impact Behavior - Maximum Force	23 °C	3,900	N	ISO 6603-2
Puncture Impact Behavior - Maximum Force	-30 °C	3,700	N	ISO 6603-2
Puncture Impact Behavior - Puncture Energy	23 °C	25	J	ISO 6603-2
Puncture Impact Behavior - Puncture Energy	-30 °C	15	J	ISO 6603-2

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	137	°C	ISO 75-1,-2
Temperature of Deflection under Load (HDT)	0.45 MPa	145	°C	ISO 75-1,-2
Vicat Softening Temperature	50 N; 50 °C/h	145	°C	ISO 306
Coefficient of Linear Thermal Expansion (CLTE), parallel	23 to 55 °C	0.4	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 Behavior	0.75 mm	V-2		UL 94
Burning Behavior	1.5 mm	V-0		UL 94
Burning Behavior	3 mm	5VA		UL 94
Oxygen Index	Method A	35	%	ISO 4589-2
Resistance to Heat (Ball Pressure Test)		135	°C	IEC 60695-10-2
Relative Temperature Index (RTI, Tensile Impact Strength)	1.5 mm	125	°C	UL 746B
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	960	°C	IEC 60695-2-12
Glow Wire Test (GWFI)	1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Test (GWFI)	3 mm	960	°C	IEC 60695-2-12
Glow Wire Test (GWIT)	0.75 mm	825	°C	IEC 60695-2-13
Glow Wire Test (GWIT)	1.5 mm	850	°C	IEC 60695-2-13
Glow Wire Test (GWIT)	3 mm	850	°C	IEC 60695-2-13

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

Property	Test Condition	Value	Unit	Standard
Volume Resistivity		1E15	Ω·m	IEC 62631-3-1
Surface Resistivity		1E15	Ω	IEC 62631-3-2
Electric Strength	1 mm	37	kV/mm	IEC 60243-1
Comparative Tracking Index (CTI)	Solution A	175	V	IEC 60112

Other properties (23 °C)

Property	Test Condition	Value	Unit	Standard
Density		1,270	kg/m³	ISO 1183-1
Glass Fiber Content	Method A	10	%	b.o. ISO 3451-1

Processing conditions for test specimens

Property	Test Condition	Value	Unit	Standard
Injection Molding - Melt Temperature		300	°C	ISO 294-1
Injection Molding - Mold Temperature		110	°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	
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	

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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>

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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.

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.

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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.
