

# LEXAN™ CFR9712 resin

Polycarbonate

SABIC Innovative Plastics

## Message:

LEXAN CFR9712 Polycarbonate (PC) resin is a non-filled, injection moldable grade. This non-chlorinated, non-brominated flame retardant PC has an UL-94 V0 rating at 2.0 mm and high flow capability. LEXAN CFR9712 is available in clear transparent and tinted color options that is an excellent candidate for a wide variety of applications.

| General Information                        |                   |                        |                 |
|--------------------------------------------|-------------------|------------------------|-----------------|
| UL YellowCard                              | E121562-100919711 |                        |                 |
| Features                                   | Bromine Free      |                        |                 |
|                                            | Chlorine Free     |                        |                 |
|                                            | Flame Retardant   |                        |                 |
|                                            | High Flow         |                        |                 |
| Appearance                                 | Clear/Transparent |                        |                 |
|                                            | Colors Available  |                        |                 |
| Processing Method                          | Injection Molding |                        |                 |
| Physical                                   | Nominal Value     | Unit                   | Test Method     |
| Specific Gravity                           |                   |                        |                 |
| --                                         | 1.19              | g/cm <sup>3</sup>      | ASTM D792       |
| --                                         | 1.20              | g/cm <sup>3</sup>      | ISO 1183        |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)   | 30                | g/10 min               | ASTM D1238      |
| Melt Volume-Flow Rate (MVR) (300°C/1.2 kg) | 29.0              | cm <sup>3</sup> /10min | ISO 1133        |
| Molding Shrinkage                          |                   |                        | Internal Method |
| Flow : 3.20 mm                             | 0.55 to 0.75      | %                      |                 |
| Across Flow : 3.20 mm                      | 0.60 to 0.80      | %                      |                 |
| Water Absorption                           |                   |                        | ISO 62          |
| Saturation, 23°C                           | 0.14              | %                      |                 |
| Equilibrium, 23°C, 50% RH                  | 0.11              | %                      |                 |
| Mechanical                                 | Nominal Value     | Unit                   | Test Method     |
| Tensile Modulus                            |                   |                        |                 |
| -- <sup>1</sup>                            | 2450              | MPa                    | ASTM D638       |
| --                                         | 2200              | MPa                    | ISO 527-2/1     |
| Tensile Strength                           |                   |                        |                 |
| Yield <sup>2</sup>                         | 66.0              | MPa                    | ASTM D638       |
| Yield                                      | 63.0              | MPa                    | ISO 527-2/50    |
| Break <sup>3</sup>                         | 51.0              | MPa                    | ASTM D638       |
| Break                                      | 56.0              | MPa                    | ISO 527-2/50    |

|                                                 |               |                   |                          |
|-------------------------------------------------|---------------|-------------------|--------------------------|
| Tensile Elongation                              |               |                   |                          |
| Yield <sup>4</sup>                              | 6.0           | %                 | ASTM D638                |
| Yield                                           | 6.0           | %                 | ISO 527-2/50             |
| Break <sup>5</sup>                              | 55            | %                 | ASTM D638                |
| Break                                           | 78            | %                 | ISO 527-2/50             |
| Flexural Modulus                                |               |                   |                          |
| 50.0 mm Span <sup>6</sup>                       | 2370          | MPa               | ASTM D790                |
| -- <sup>7</sup>                                 | 2400          | MPa               | ISO 178                  |
| Flexural Stress                                 |               |                   |                          |
| --                                              | 97.0          | MPa               | ISO 178                  |
| Yield, 50.0 mm Span <sup>8</sup>                | 105           | MPa               | ASTM D790                |
| Impact                                          | Nominal Value | Unit              | Test Method              |
| Charpy Notched Impact Strength <sup>9</sup>     |               |                   | ISO 179/1eA              |
| -30°C                                           | 10            | kJ/m <sup>2</sup> |                          |
| 23°C                                            | 30            | kJ/m <sup>2</sup> |                          |
| Charpy Unnotched Impact Strength <sup>10</sup>  |               |                   | ISO 179/1eU              |
| -30°C                                           | No Break      |                   |                          |
| 23°C                                            | No Break      |                   |                          |
| Notched Izod Impact                             |               |                   |                          |
| -30°C                                           | 90            | J/m               | ASTM D256                |
| 23°C                                            | 100           | J/m               | ASTM D256                |
| -30°C <sup>11</sup>                             | 10            | kJ/m <sup>2</sup> | ISO 180/1A               |
| 23°C <sup>12</sup>                              | 10            | kJ/m <sup>2</sup> | ISO 180/1A               |
| Unnotched Izod Impact                           |               |                   | ASTM D4812, ISO 180/1U   |
| -30°C                                           | No Break      |                   |                          |
| 23°C                                            | No Break      |                   |                          |
| Instrumented Dart Impact (23°C, Total Energy)   | 60.0          | J                 | ASTM D3763               |
| Thermal                                         | Nominal Value | Unit              | Test Method              |
| Deflection Temperature Under Load               |               |                   |                          |
| 0.45 MPa, Unannealed, 3.20 mm                   | 130           | °C                | ASTM D648                |
| 0.45 MPa, Unannealed, 100 mm Span <sup>13</sup> | 130           | °C                | ISO 75-2/Be              |
| 1.8 MPa, Unannealed, 3.20 mm                    | 120           | °C                | ASTM D648                |
| 1.8 MPa, Unannealed, 100 mm Span <sup>14</sup>  | 120           | °C                | ISO 75-2/Ae              |
| Vicat Softening Temperature                     |               |                   |                          |
| --                                              | 136           | °C                | ASTM D1525 <sup>15</sup> |
| --                                              | 138           | °C                | ISO 306/B50              |
| --                                              | 140           | °C                | ISO 306/B120             |
| Ball Pressure Test (125°C)                      | Pass          |                   | IEC 60695-10-2           |
| CLTE                                            |               |                   |                          |
| Flow : -40 to 40°C                              | 6.8E-5        | cm/cm/°C          | ASTM E831                |
| Flow : 23 to 80°C                               | 7.8E-5        | cm/cm/°C          | ISO 11359-2              |

|                                          |                      |             |                    |
|------------------------------------------|----------------------|-------------|--------------------|
| Transverse : -40 to 40°C                 | 7.0E-5               | cm/cm/°C    | ASTM E831          |
| Transverse : 23 to 80°C                  | 7.6E-5               | cm/cm/°C    | ISO 11359-2        |
| RTI Elec                                 | 130                  | °C          | UL 746             |
| RTI Imp                                  | 120                  | °C          | UL 746             |
| RTI Str                                  | 130                  | °C          | UL 746             |
| <b>Electrical</b>                        | <b>Nominal Value</b> | <b>Unit</b> | <b>Test Method</b> |
| Dielectric Constant (1.10 GHz)           | 2.78                 |             | ASTM ES7-83        |
| Dissipation Factor (1.10 GHz)            | 5.6E-3               |             | ASTM ES7-83        |
| <b>Flammability</b>                      | <b>Nominal Value</b> | <b>Unit</b> | <b>Test Method</b> |
| Flame Rating                             |                      |             | UL 94              |
| 0.400 mm                                 | V-2                  |             |                    |
| 1.70 mm                                  | V-1                  |             |                    |
| 2.00 mm                                  | V-0                  |             |                    |
| Glow Wire Flammability Index (2.00 mm)   | 960                  | °C          | IEC 60695-2-12     |
| Glow Wire Ignition Temperature (2.00 mm) | 850                  | °C          | IEC 60695-2-13     |
| <b>Optical</b>                           | <b>Nominal Value</b> | <b>Unit</b> | <b>Test Method</b> |
| Transmittance                            |                      |             | Internal Method    |
| 1000 µm                                  | > 90.0               | %           |                    |
| 2000 µm                                  | > 89.0               | %           |                    |
| 3000 µm                                  | > 88.0               | %           |                    |
| <b>Injection</b>                         | <b>Nominal Value</b> | <b>Unit</b> |                    |
| Drying Temperature                       | 121                  | °C          |                    |
| Drying Time                              | 3.0 to 4.0           | hr          |                    |
| Drying Time, Maximum                     | 48                   | hr          |                    |
| Suggested Max Moisture                   | 0.020                | %           |                    |
| Suggested Shot Size                      | 40 to 60             | %           |                    |
| Rear Temperature                         | 260 to 282           | °C          |                    |
| Middle Temperature                       | 271 to 293           | °C          |                    |
| Front Temperature                        | 282 to 304           | °C          |                    |
| Nozzle Temperature                       | 277 to 299           | °C          |                    |
| Processing (Melt) Temp                   | 282 to 304           | °C          |                    |
| Mold Temperature                         | 71.1 to 93.3         | °C          |                    |
| Back Pressure                            | 0.345 to 0.689       | MPa         |                    |
| Screw Speed                              | 40 to 70             | rpm         |                    |
| Vent Depth                               | 0.025 to 0.076       | mm          |                    |
| <b>NOTE</b>                              |                      |             |                    |
| 1.                                       | 50 mm/min            |             |                    |
| 2.                                       | Type I, 50 mm/min    |             |                    |
| 3.                                       | Type I, 50 mm/min    |             |                    |
| 4.                                       | Type I, 50 mm/min    |             |                    |
| 5.                                       | Type I, 50 mm/min    |             |                    |
| 6.                                       | 1.3 mm/min           |             |                    |

|     |                                    |
|-----|------------------------------------|
| 7.  | 2.0 mm/min                         |
| 8.  | 1.3 mm/min                         |
| 9.  | 80*10*3 sp=62mm                    |
| 10. | 80*10*3 sp=62mm                    |
| 11. | 80*10*3                            |
| 12. | 80*10*3                            |
| 13. | 120*10*4 mm                        |
| 14. | 120*10*4 mm                        |
| 15. | Rate B (120°C/h), Loading 2 (50 N) |

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