

# Makrolon® OD2015

Polycarbonate

Covestro - Polycarbonates

## Message:

MVR (250 °C/2.16 kg) 17 cm<sup>3</sup>/10 min; optical storage media; suitable for all formats; high purity; injection molding - melt temperature 300 - 350 °C; available in color code 000000 only

| General Information                                      |                      |                        |              |
|----------------------------------------------------------|----------------------|------------------------|--------------|
| UL YellowCard                                            | E41613-233171        |                        |              |
| Features                                                 | High Purity          |                        |              |
| Uses                                                     | Optical Data Storage |                        |              |
| RoHS Compliance                                          | RoHS Compliant       |                        |              |
| Processing Method                                        | Injection Molding    |                        |              |
| Physical                                                 | Nominal Value        | Unit                   | Test Method  |
| Density (23°C)                                           | 1.19                 | g/cm <sup>3</sup>      | ISO 1183     |
| Apparent Density <sup>1</sup>                            | 0.66                 | g/cm <sup>3</sup>      | ISO 60       |
| Melt Volume-Flow Rate (MVR) (250°C/2.16 kg)              | 17.0                 | cm <sup>3</sup> /10min | ISO 1133     |
| Molding Shrinkage <sup>2</sup>                           |                      |                        | ISO 294-4    |
| Across Flow : 2.00 mm                                    | 0.60                 | %                      |              |
| Flow : 2.00 mm                                           | 0.60                 | %                      |              |
| Water Absorption                                         |                      |                        | ISO 62       |
| Saturation, 23°C                                         | 0.30                 | %                      |              |
| Equilibrium, 23°C, 50% RH                                | 0.12                 | %                      |              |
| Hardness                                                 | Nominal Value        | Unit                   | Test Method  |
| Ball Indentation Hardness                                | 115                  | MPa                    | ISO 2039-1   |
| Mechanical                                               | Nominal Value        | Unit                   | Test Method  |
| Tensile Modulus (23°C)                                   | 2350                 | MPa                    | ISO 527-2/1  |
| Tensile Stress                                           |                      |                        | ISO 527-2/50 |
| Yield, 23°C                                              | 63.0                 | MPa                    |              |
| Break, 23°C                                              | 55.0                 | MPa                    |              |
| Tensile Strain                                           |                      |                        | ISO 527-2/50 |
| Yield, 23°C                                              | 5.9                  | %                      |              |
| Break, 23°C                                              | 100                  | %                      |              |
| Nominal Tensile Strain at Break (23°C)                   | > 50                 | %                      | ISO 527-2/50 |
| Flexural Modulus <sup>3</sup> (23°C)                     | 2350                 | MPa                    | ISO 178      |
| Flexural Stress <sup>4</sup>                             |                      |                        | ISO 178      |
| 3.5% Strain, 23°C                                        | 72.0                 | MPa                    |              |
| 23°C                                                     | 97.0                 | MPa                    |              |
| Flexural Strain at Flexural Strength <sup>5</sup> (23°C) | 7.1                  | %                      | ISO 178      |
| Flash Ignition Temperature                               | 480                  | °C                     | ASTM D1929   |

| Self Ignition Temperature                   | 550                     | °C                | ASTM D1929     |
|---------------------------------------------|-------------------------|-------------------|----------------|
| ISO Shortname                               | ISO 7391-PC,D,(,,)-24-9 |                   |                |
| Impact                                      | Nominal Value           | Unit              | Test Method    |
| Charpy Notched Impact Strength <sup>6</sup> |                         |                   | ISO 7391       |
| -30°C, Complete Break                       | 12                      | kJ/m <sup>2</sup> |                |
| 23°C, Partial Break                         | 50                      | kJ/m <sup>2</sup> |                |
| Charpy Unnotched Impact Strength            |                         |                   | ISO 179/1eU    |
| -60°C                                       | No Break                |                   |                |
| -30°C                                       | No Break                |                   |                |
| 23°C                                        | No Break                |                   |                |
| Notched Izod Impact Strength <sup>7</sup>   |                         |                   | ISO 7391       |
| -30°C, Complete Break                       | 12                      | kJ/m <sup>2</sup> |                |
| 23°C, Partial Break                         | 50                      | kJ/m <sup>2</sup> |                |
| Multi-Axial Instrumented Impact Energy      |                         |                   | ISO 6603-2     |
| -30°C                                       | 55.0                    | J                 |                |
| 23°C                                        | 50.0                    | J                 |                |
| Multi-Axial Instrumented Impact Peak Force  |                         |                   | ISO 6603-2     |
| -30°C                                       | 5700                    | N                 |                |
| 23°C                                        | 4700                    | N                 |                |
| Thermal                                     | Nominal Value           | Unit              | Test Method    |
| Heat Deflection Temperature                 |                         |                   |                |
| 0.45 MPa, Unannealed                        | 138                     | °C                | ISO 75-2/B     |
| 1.8 MPa, Unannealed                         | 124                     | °C                | ISO 75-2/A     |
| Glass Transition Temperature <sup>8</sup>   | 145                     | °C                | ISO 11357-2    |
| Vicat Softening Temperature                 |                         |                   |                |
| --                                          | 145                     | °C                | ISO 306/B50    |
| --                                          | 146                     | °C                | ISO 306/B120   |
| Ball Pressure Test (136°C)                  | Pass                    |                   | IEC 60695-10-2 |
| CLTE                                        |                         |                   | ISO 11359-2    |
| Flow : 23 to 55°C                           | 6.5E-5                  | cm/cm/°C          |                |
| Transverse : 23 to 55°C                     | 6.5E-5                  | cm/cm/°C          |                |
| Thermal Conductivity <sup>9</sup> (23°C)    | 0.20                    | W/m/K             | ISO 8302       |
| RTI Elec (0.710 mm)                         | 125                     | °C                | UL 746         |
| RTI Imp (0.710 mm)                          | 115                     | °C                | UL 746         |
| RTI Str (0.710 mm)                          | 125                     | °C                | UL 746         |
| Electrical                                  | Nominal Value           | Unit              | Test Method    |
| Comparative Tracking Index                  |                         |                   | IEC 60112      |
| Solution A                                  | 225                     | V                 |                |
| Solution B                                  | 125                     | V                 |                |
| Flammability                                | Nominal Value           | Unit              | Test Method    |
| Flame Rating (0.710 mm, NC)                 | V-2                     |                   | UL 94          |

|                                |               |      |             |
|--------------------------------|---------------|------|-------------|
| Oxygen Index <sup>10</sup>     | 28            | %    | ISO 4589-2  |
| Optical                        | Nominal Value | Unit | Test Method |
| Refractive Index <sup>11</sup> | 1.584         |      | ISO 489     |
| Transmittance                  |               |      | ISO 13468-2 |
| 1000 μm, 550 nm                | > 89.0        | %    |             |
| 1000 μm, 800 nm                | > 90.0        | %    |             |
| Haze (3000 μm)                 | < 0.50        | %    | ISO 14782   |

#### NOTE

1. Pellets
2. 60x60x2 mm, 500 bar
3. 2.0 mm/min
4. 2.0 mm/min
5. 2 mm/min
6. Based on ISO 179-1eA, 3 mm
7. Based on ISO 180-A, 3 mm
8. 10°C/min
9. Cross-flow
10. Procedure A
11. Method A

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