

## Technical Information



# CALIBRE™ 30x-10

## Polycarbonate Resin

### Overview

CALIBRE™ 30x-10 MFR are general purpose Polycarbonate resins that offer exceptional impact resistance, heat distortion resistance and optical clarity for use in injection moulding and extrusion processes. The CALIBRE 300-10 series products are available in 4 additive packages: CALIBRE 300: No mold release or UV Stabilizer. CALIBRE 301: Mold release. CALIBRE 302: UV stabilizer. CALIBRE 303: Mold release and UV stabilizer. Material is transparent but can be custom colored.

Govt. and Industry Standards:

- Underwriters Laboratory, Inc. (UL)

Applications:

- Appliances
- Business equipment
- Electrical & lighting components
- Transportation
- Automotive applications
- Houseware
- Recreation
- Packaging applications
- Power equipment

| Physical                                 | Nominal Value (English) | Nominal Value (SI)     | Test Method            |
|------------------------------------------|-------------------------|------------------------|------------------------|
| Density                                  | 1.20 g/cm <sup>3</sup>  | 1.20 g/cm <sup>3</sup> | ASTM D792<br>ISO 1183  |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg) | 10 g/10 min             | 10 g/10 min            | ASTM D1238<br>ISO 1133 |
| Molding Shrinkage - Flow                 | 5.0E-3 to 7.0E-3 in/in  | 0.50 to 0.70 %         | ISO 294-4              |
| Water Absorption                         |                         |                        | ISO 62                 |
| Saturation, 73°F (23°C)                  | 0.32 %                  | 0.32 %                 |                        |
| Equilibrium, 73°F (23°C), 50% RH         | 0.12 %                  | 0.12 %                 |                        |
| Mechanical                               | Nominal Value (English) | Nominal Value (SI)     | Test Method            |
| Tensile Modulus                          |                         |                        |                        |
| -- <sup>1</sup>                          | 334000 psi              | 2300 MPa               | ASTM D638              |
| --                                       | 334000 psi              | 2300 MPa               | ISO 527-1/1            |
| Tensile Strength                         |                         |                        |                        |
| Yield <sup>2</sup>                       | 8700 psi                | 60.0 MPa               | ASTM D638              |
| Yield                                    | 8700 psi                | 60.0 MPa               | ISO 527-2/50           |
| Break <sup>2</sup>                       | 10300 psi               | 71.0 MPa               | ASTM D638              |
| Break                                    | 10300 psi               | 71.0 MPa               | ISO 527-2/50           |
| Tensile Elongation                       |                         |                        |                        |
| Yield <sup>2</sup>                       | 6.0 %                   | 6.0 %                  | ASTM D638              |
| Yield                                    | 6.0 %                   | 6.0 %                  | ISO 527-2/50           |
| Break <sup>2</sup>                       | 130 %                   | 130 %                  | ASTM D638              |
| Break                                    | 140 %                   | 140 %                  | ISO 527-2/50           |
| Flexural Modulus                         |                         |                        |                        |
| --                                       | 350000 psi              | 2410 MPa               | ASTM D790              |
| -- <sup>3</sup>                          | 348000 psi              | 2400 MPa               | ISO 178                |

| Mechanical                               | Nominal Value (English)   | Nominal Value (SI)    | Test Method                            |
|------------------------------------------|---------------------------|-----------------------|----------------------------------------|
| Flexural Strength                        |                           |                       |                                        |
| --                                       | 14000 psi                 | 96.5 MPa              | ASTM D790                              |
| -- <sup>3</sup>                          | 14100 psi                 | 97.0 MPa              | ISO 178                                |
| Impact                                   | Nominal Value (English)   | Nominal Value (SI)    | Test Method                            |
| Charpy Notched Impact Strength           |                           |                       | ISO 179/1eA                            |
| -22°F (-30°C)                            | 6.2 ft·lb/in <sup>2</sup> | 13 kJ/m <sup>2</sup>  |                                        |
| 73°F (23°C)                              | 17 ft·lb/in <sup>2</sup>  | 35 kJ/m <sup>2</sup>  |                                        |
| Notched Izod Impact                      |                           |                       |                                        |
| 73°F (23°C)                              | 16 ft·lb/in               | 880 J/m               | ASTM D256                              |
| 73°F (23°C)                              | 43 ft·lb/in <sup>2</sup>  | 90 kJ/m <sup>2</sup>  | ISO 180/1A                             |
| Instrumented Dart Impact <sup>4</sup>    |                           |                       | ASTM D3763                             |
| 73°F (23°C), Total Energy                | 783 in·lb                 | 88.5 J                |                                        |
| Tensile Impact Strength                  | 248 ft·lb/in <sup>2</sup> | 522 kJ/m <sup>2</sup> | ASTM D1822                             |
| Hardness                                 | Nominal Value (English)   | Nominal Value (SI)    | Test Method                            |
| Rockwell Hardness                        |                           |                       | ASTM D785                              |
| M-Scale                                  | 73                        | 73                    |                                        |
| R-Scale                                  | 118                       | 118                   |                                        |
| Thermal                                  | Nominal Value (English)   | Nominal Value (SI)    | Test Method                            |
| Deflection Temperature Under Load        |                           |                       |                                        |
| 66 psi (0.45 MPa), Unannealed            | 289 °F                    | 143 °C                | ASTM D648                              |
| 66 psi (0.45 MPa), Annealed              | 291 °F                    | 144 °C                | ASTM D648<br>ISO 75-2/B                |
| 264 psi (1.8 MPa), Unannealed            | 262 °F                    | 128 °C                | ASTM D648                              |
| 264 psi (1.8 MPa), Unannealed            | 257 °F                    | 125 °C                | ISO 75-2/A                             |
| 264 psi (1.8 MPa), Annealed              | 286 °F                    | 141 °C                | ASTM D648<br>ISO 75-2/A                |
| Vicat Softening Temperature              | 300 °F                    | 149 °C                | ISO 306/B50<br>ASTM D1525 <sup>5</sup> |
| Ball Indentation Temperature             | > 257 °F                  | > 125 °C              | IEC 60335-1                            |
| CLTE - Flow (-40 to 176°F (-40 to 80°C)) | 3.8E-5 in/in/°F           | 6.8E-5 cm/cm/°C       | ISO 11359-2                            |
| Electrical                               | Nominal Value (English)   | Nominal Value (SI)    | Test Method                            |
| Volume Resistivity                       | > 1.0E+15 ohms·cm         | > 1.0E+15 ohms·cm     | IEC 60093                              |
| Dielectric Strength                      |                           |                       |                                        |
| --                                       | 420 V/mil                 | 17 kV/mm              | ASTM D149                              |
| --                                       | 430 V/mil                 | 17 kV/mm              | IEC 60243-1                            |
| Relative Permittivity                    |                           |                       | IEC 60250                              |
| 100 Hz                                   | 3.00                      | 3.00                  |                                        |
| 1 MHz                                    | 3.00                      | 3.00                  |                                        |
| Dissipation Factor                       |                           |                       | ASTM D150                              |
| 50 Hz                                    | 1.0E-3                    | 1.0E-3                |                                        |
| 1 MHz                                    | 2.0E-3                    | 2.0E-3                |                                        |
| Comparative Tracking Index               |                           |                       | IEC 60112                              |
| 0.0787 in (2.00 mm), Solution A          | 250 V                     | 250 V                 |                                        |
| Flammability                             | Nominal Value (English)   | Nominal Value (SI)    | Test Method                            |
| Flame Rating <sup>6</sup>                |                           |                       | UL 94                                  |
| 0.06 in (1.5 mm)                         | HB                        | HB                    |                                        |
| 0.12 in (3.0 mm)                         | HB                        | HB                    |                                        |
| 0.12 in (3.0 mm), Calibre 301            | HB                        | HB                    |                                        |
| 0.030 in (0.75 mm), Calibre 301          | V-2                       | V-2                   |                                        |
| 0.06 in (1.5 mm), Calibre 301            | V-2                       | V-2                   |                                        |

| Flammability                                | Nominal Value (English) | Nominal Value (SI) | Test Method    |
|---------------------------------------------|-------------------------|--------------------|----------------|
| Glow Wire Flammability Index <sup>6</sup>   |                         |                    | IEC 60695-2-12 |
| 0.04 in (1.0 mm)                            | 1650 °F                 | 900 °C             |                |
| 0.08 in (2.0 mm)                            | 1610 °F                 | 875 °C             |                |
| 0.12 in (3.0 mm)                            | 1610 °F                 | 875 °C             |                |
| Glow Wire Ignition Temperature <sup>6</sup> |                         |                    | IEC 60695-2-13 |
| 0.04 in (1.0 mm)                            | 1470 °F                 | 800 °C             |                |
| 0.08 in (2.0 mm)                            | 1430 °F                 | 775 °C             |                |
| 0.12 in (3.0 mm)                            | 1430 °F                 | 775 °C             |                |
| Oxygen Index <sup>6</sup>                   | 26 %                    | 26 %               | ISO 4589-2     |
| Optical                                     | Nominal Value (English) | Nominal Value (SI) | Test Method    |
| Refractive Index                            | 1.586                   | 1.586              | ISO 489        |
| Light Transmittance (118.1 mil (3000 µm))   | 87.0 to 91.0 %          | 87.0 to 91.0 %     | ASTM D1003     |
| Haze                                        | < 1.00 %                | < 1.00 %           | ASTM D1003     |
| Injection                                   | Nominal Value (English) | Nominal Value (SI) |                |
| Drying Temperature                          | 248 °F                  | 120 °C             |                |
| Drying Time                                 | 4.0 hr                  | 4.0 hr             |                |

#### Notes

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

<sup>1</sup> 0.039 in/min (1.0 mm/min)

<sup>2</sup> 2.0 in/min (50 mm/min)

<sup>3</sup> 0.079 in/min (2.0 mm/min)

<sup>4</sup> 10.9 ft/sec (3.33 m/sec)

<sup>5</sup> Rate A (50°C/h), Loading 2 (50 N)

<sup>6</sup> This rating not intended to reflect hazards presented by this or any other material under actual fire conditions.

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