

# CALIBRE™ 2061-15

## Trinseo - Polycarbonate Resin

### General Information

#### Product Description

CALIBRE™ 2061-15 resin is suitable for steam and ethylene oxide sterilization required by the health care industry. CALIBRE 2061-15 provides exceptional clarity, heat resistance, impact strength, processability, and has low contamination levels. CALIBRE 2061-15 resin has been tested according to ISO 10993 (Biological Evaluation of Medical Devices) and is suitable for use in approved medical applications. This product contains mold release.

#### Main Characteristics:

- Tested under ISO 10993

#### Applications:

- Medical applications

#### General

|                   |                               |  |                          |
|-------------------|-------------------------------|--|--------------------------|
| Additive          | • Mold Release                |  |                          |
| Features          | • Biocompatible               | • High Clarity   | • Radiation Sterilizable |
|                   | • Ethylene Oxide Sterilizable | • High Heat Resistance                                   | • Steam Sterilizable     |
|                   | • Good Processability         | • High Impact Resistance                                 |                          |
| Uses              | • Medical Devices             | • Medical/Healthcare Applications • Surgical Instruments |                          |
| Agency Ratings    | • ISO 10993 <sup>1</sup>      |  |                          |
| Appearance        | • Clear/Transparent           | • Colors Available                                       |                          |
| Forms             | • Pellets                     |  |                          |
| Processing Method | • Injection Molding           |  |                          |

### Properties <sup>2</sup>

| Physical                                     | Nominal Value    | Unit              | Test Method  |
|--|------------------|-------------------|--------------|
| Density / Specific Gravity                   | 1.20             |                   | ASTM D792    |
| Density                                      | 1.20             | g/cm <sup>3</sup> | ISO 1183     |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)     | 15               | g/10 min          | ASTM D1238   |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)     | 15               | g/10 min          | ISO 1133     |
| Molding Shrinkage - Flow                     | 5.0E-3 to 7.0E-3 | in/in             | ASTM D955    |
| Molding Shrinkage - Flow                     | 0.50 to 0.70     | %                 | ISO 294-4    |
| Water Absorption (Saturation, 73°F)          | 0.32             | %                 | ISO 62       |
| Water Absorption (Equilibrium, 73°F, 50% RH) | 0.12             | %                 | ISO 62       |
| Mechanical                                   | Nominal Value    | Unit              | Test Method  |
| Tensile Modulus <sup>3</sup>                 | 320000           | psi               | ASTM D638    |
| Tensile Modulus                              | 334000           | psi               | ISO 527-1/1  |
| Tensile Strength <sup>4</sup> (Yield)        | 8700             | psi               | ASTM D638    |
| Tensile Stress (Yield)                       | 8990             | psi               | ISO 527-2/50 |
| Tensile Strength <sup>4</sup> (Break)        | 10300            | psi               | ASTM D638    |
| Tensile Stress (Break)                       | 10300            | psi               | ISO 527-2/50 |
| Tensile Elongation <sup>4</sup> (Yield)      | 6.0              | %                 | ASTM D638    |
| Tensile Strain (Yield)                       | 6.0              | %                 | ISO 527-2/50 |
| Tensile Elongation <sup>4</sup> (Break)      | 130              | %                 | ASTM D638    |
| Tensile Strain (Break)                       | 130              | %                 | ISO 527-2/50 |
| Flexural Modulus                             | 350000           | psi               | ASTM D790    |

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| Mechanical   | Nominal Value | Unit                  | Test Method             |
|--|---------------|-----------------------|-------------------------|
| Flexural Modulus <sup>5</sup>                              | 348000        | psi                   | ISO 178                 |
| Flexural Strength  | 14000         | psi                   | ASTM D790               |
| Flexural Stress <sup>5</sup>                               | 14100         | psi                   | ISO 178                 |
| Impact   | Nominal Value | Unit                  | Test Method             |
| Charpy Notched Impact Strength                             |               |                       | ISO 179/1eA             |
| -22°F  | 5.7           | ft·lb/in <sup>2</sup> |                         |
| 73°F   | 12            | ft·lb/in <sup>2</sup> |                         |
| Notched Izod Impact (73°F)                                 | 14            | ft·lb/in              | ASTM D256               |
| Notched Izod Impact Strength (73°F)                        | 39            | ft·lb/in <sup>2</sup> | ISO 180/1A              |
| Instrumented Dart Impact <sup>6</sup> (73°F, Total Energy) | 720           | in·lb                 | ASTM D3763              |
| Tensile Impact Strength                                    | 220           | ft·lb/in <sup>2</sup> | ASTM D1822              |
| Hardness   | Nominal Value | Unit                  | Test Method             |
| Rockwell Hardness  |               |                       | ASTM D785               |
| M-Scale  | 73            |                       |                         |
| R-Scale  | 118           |                       |                         |
| Thermal  | Nominal Value | Unit                  | Test Method             |
| Deflection Temperature Under Load (66 psi, Unannealed)     | 280           | °F                    | ASTM D648               |
| Deflection Temperature Under Load (66 psi, Annealed)       | 289           | °F                    | ASTM D648               |
| Deflection Temperature Under Load (66 psi, Annealed)       | 289           | °F                    | ISO 75-2/B              |
| Deflection Temperature Under Load                          |               |                       | ASTM D648               |
| 264 psi, Unannealed  | 261           | °F                    |                         |
| Deflection Temperature Under Load                          |               |                       | ISO 75-2/A              |
| 264 psi, Unannealed  | 255           | °F                    |                         |
| Deflection Temperature Under Load (264 psi, Annealed)      | 284           | °F                    | ASTM D648               |
| Deflection Temperature Under Load (264 psi, Annealed)      | 284           | °F                    | ISO 75-2/A              |
| Vicat Softening Temperature                                | 302           | °F                    | ASTM D1525 <sup>7</sup> |
| Vicat Softening Temperature                                | 289           | °F                    | ISO 306/B50             |
| CLTE - Flow (-40 to 176°F)                                 | 3.8E-5        | in/in/°F              | ASTM D696               |
| CLTE - Flow  | 3.9E-5        | in/in/°F              | ISO 11359-2             |
| Electrical   | Nominal Value | Unit                  | Test Method             |
| Volume Resistivity   | 2.0E+17       | ohms·cm               | ASTM D257               |
| Volume Resistivity   | 1.0E+15       | ohms·cm               | IEC 60093               |
| Dielectric Strength  | 420           | V/mil                 | ASTM D149               |
| Electric Strength  | 430           | V/mil                 | IEC 60243-1             |
| Dielectric Constant  |               |                       | ASTM D150               |
| 60 Hz  | 3.00          |                       |                         |
| 1 MHz  | 3.00          |                       |                         |
| Relative Permittivity                                      |               |                       | IEC 60250               |
| 100 Hz   | 3.00          |                       |                         |
| 1 MHz  | 3.00          |                       |                         |
| Dissipation Factor   |               |                       | ASTM D150               |
| 50 Hz  | 1.0E-3        |                       |                         |
| 1 MHz  | 2.0E-3        |                       |                         |
| Dissipation Factor   |               |                       | IEC 60250               |
| 100 Hz   | 1.0E-3        |                       |                         |
| 1 MHz  | 2.0E-3        |                       |                         |

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| <b>Flammability</b>       | <b>Nominal Value</b> | <b>Unit</b> | <b>Test Method</b> |
|---------------------------|----------------------|-------------|--------------------|
| Flame Rating <sup>8</sup> |                      |             | UL 94              |
| 0.12 in                   |                      | HB          |                    |
| 0.030 in                  |                      | V-2         |                    |
| 0.11 in                   |                      | V-2         |                    |

| <b>Optical</b>      | <b>Nominal Value</b> | <b>Unit</b> | <b>Test Method</b> |
|---------------------|----------------------|-------------|--------------------|
| Refractive Index    | 1.586                |             | ASTM D542          |
| Refractive Index    | 1.586                |             | ISO 489            |
| Light Transmittance | 87.0 to 91.0         | %           | ASTM D1003         |
| Haze                | < 1.00               | %           | ASTM D1003         |

**Processing Information**

| <b>Injection</b>       | <b>Nominal Value</b> | <b>Unit</b> |
|------------------------|----------------------|-------------|
| Drying Temperature     | 248                  | °F          |
| Drying Time            | 4.0                  | hr          |
| Processing (Melt) Temp | 527 to 563           | °F          |
| Mold Temperature       | 158 to 194           | °F          |

**Notes**

<sup>1</sup> Biocompatibility testing following ISO Guidelines 10993 has been completed on select classic resins in this series. Please consult Trinseo for details. ISO guidelines include a sensitization test.

<sup>2</sup> Typical properties: these are not to be construed as specifications.

<sup>3</sup> 0.039 in/min

<sup>4</sup> 2.0 in/min

<sup>5</sup> 0.079 in/min

<sup>6</sup> 11.1 ft/sec

<sup>7</sup> Rate B (120°C/h), Loading 1 (10 N)

<sup>8</sup> This rating not intended to reflect hazards presented by this or any other material under actual fire conditions.