# CALIBRE™ 2061-15

## Trinseo - Polycarbonate Resin

Tuesday, November 5, 2019

## 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 | | | |
|---|---|---|---|
| Material Status | • Commercial: Active | | |
| Availability | • Latin America | • North America | |
| Additive | • Mold Release | | |
| Features | • Ethylene Oxide Sterilizable<br>• Good Processability | • High Clarity<br>• High Heat Resistance | • High Impact Resistance<br>• Steam Sterilizable |
| Uses | • Medical/Healthcare Applications | | |
| Agency Ratings | • ISO 10993 [1] | | |
| Forms | • Pellets | | |
| Processing Method | • Injection Molding | | |

## ASTM & ISO Properties [2]

| Physical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Density / Specific Gravity | 1.20 | | ASTM D792 |
| Density | 1.20 | g/cm³ | ISO 1183/A |
| Density | 0.0434 | lb/in³ | ISO 1183 [3] |
| Melt Mass-Flow Rate (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 |
| Melt volume-flow rate (300°C/1.2 kg) | 12 | cm³/10min | ISO 1133 [3] |
| 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 (24 hr, 73°F) | 0.15 | % | ASTM D570 |
| Water Absorption (24 hr, 73°F) | 0.15 | % | ISO 62 |
| Water Absorption (Equilibrium, 73°F, 50% RH) | 0.32 | % | ASTM D570 |
| Water Absorption (Equilibrium, 73°F, 50% RH) | 0.32 | % | ISO 62 |
| **Mechanical** | **Nominal Value** | **Unit** | **Test Method** |
| Tensile Modulus [4] | 320000 | psi | ASTM D638 |
| Tensile Modulus | 334000 | psi | ISO 527-2/1 |
| Tensile modulus | 334000 | psi | ISO 527-2 [3] |
| Tensile Strength [5] (Yield) | 9000 | psi | ASTM D638 |
| Tensile Stress (Yield) | 8990 | psi | ISO 527-2/50 |
| Tensile Stress (Yield) | 8700 | psi | ISO 527-2 [3] |

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| Mechanical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Tensile Strength [5] (Break) | 9900 | psi | ASTM D638 |
| Tensile Stress (Break) | 9860 | psi | ISO 527-2/50 |
| Tensile Elongation [5] (Yield) | 6.0 | % | ASTM D638 |
| Tensile Strain (Yield) | 6.0 | % | ISO 527-2/50 |
| Tensile Strain (Yield) | 6.0 | % | ISO 527-2 [3] |
| Tensile Elongation [5] (Break) | 150 | % | ASTM D638 |
| Tensile Strain (Break) | 150 | % | ISO 527-2/50 |
| Nominal strain at break | > 50 | % | ISO 527-2 [3] |
| Flexural Modulus [6] | 350000 | psi | ASTM D790 |
| Flexural Modulus [7] | 348000 | psi | ISO 178 |
| Flexural Strength [6] | 14000 | psi | ASTM D790 |
| Flexural Stress [7] | 14200 | psi | ISO 178 |

| Impact | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Charpy Notched Impact Strength (73°F) | 12 | ft·lb/in² | ISO 179/1eA |
| Charpy notched impact strength (73°F) | 38.1 | ft·lb/in² | ISO 179/1eA [3] |
| Charpy notched impact strength (-22°F) | 5.71 | ft·lb/in² | ISO 179/1eA [3] |
| Charpy impact strength (73°F) | No Break | | ISO 179/1eU [3] |
| Charpy impact strength (-22°F) | No Break | | ISO 179/1eU [3] |
| Notched Izod Impact (73°F) | 14 | ft·lb/in | ASTM D256 |
| Notched Izod Impact Strength (73°F) | 35 | ft·lb/in² | ISO 180/A |
| Unnotched Izod Impact (73°F) | No Break | | ASTM D256 |
| Unnotched Izod Impact Strength (73°F) | No Break | | ISO 180 |
| Instrumented Dart Impact [8] (73°F, Total Energy) | 720 | in·lb | ASTM D3763 |
| Tensile Impact Strength | 180 | ft·lb/in² | 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, Annealed) | 282 | °F | ASTM D648 |
| Heat Deflection Temperature (66 psi, Annealed) | 282 | °F | ISO 75-2/B |
| Deflection Temperature Under Load (66 psi) | 291 | °F | ISO 75-2 [3] |
| Deflection Temperature Under Load | | | ASTM D648 |
| 264 psi, Unannealed | 252 | °F | |
| Heat Deflection Temperature (264 psi, Unannealed) | 248 | °F | ISO 75-2/A |
| Deflection Temperature Under Load (264 psi, Annealed) | 277 | °F | ASTM D648 |
| Heat Deflection Temperature (264 psi, Annealed) | 277 | °F | ISO 75-2/A |
| Deflection Temperature Under Load (264 psi) | 266 | °F | ISO 75-2 [3] |
| Vicat Softening Temperature | 298 | °F | ASTM D1525 [9] |
| Vicat Softening Temperature | 289 | °F | ISO 306/B50 |
| Vicat Softening Temperature (50°C/h, B (50N)) | 298 | °F | ISO 306 [3] |
| CLTE - Flow (-40 to 180°F) | 3.8E-5 | in/in/°F | ASTM D696 |
| CLTE - Flow | 3.9E-5 | in/in/°F | ISO 11359-2 [3] |

| Electrical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Volume Resistivity | 2.0E+17 | ohms·cm | ASTM D257 |
| Volume resistivity | > 3.9E+14 | ohms·in | IEC 60093 [3] |

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|---|---|---|---|
| Dielectric Strength | 420 | V/mil | ASTM D149 |
| Electric Strength | 430 | V/mil | IEC 60243-1 |
| Electric strength | 430 | V/mil | IEC 60243-1 [3] |
| Dielectric Constant | | | ASTM D150 |
| 60 Hz | 3.00 | | |
| 1 MHz | 3.00 | | |
| Relative Permittivity (100 Hz) | 3.00 | | IEC 60250 [3] |
| Relative Permittivity (1 MHz) | 3.00 | | IEC 60250 [3] |
| Dissipation Factor | | | ASTM D150 |
| 50 Hz | 1.0E-3 | | |
| 1 MHz | 2.0E-3 | | |
| Dissipation Factor (100 Hz) | 1.0E-3 | | IEC 60250 [3] |
| Dissipation Factor (1 MHz) | 2.0E-3 | | IEC 60250 [3] |

| Flammability | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Flame Rating | | | UL 94 |
| 0.06 in [10] | HB | | |
| 0.12 in | HB | | |
| 0.030 in | V-2 | | |
| 0.06 in | V-2 | | |
| Oxygen index | 26 | % | ISO 4589-2 [3] |

| Optical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Refractive Index | 1.586 | | ASTM D542 |
| Refractive Index | 1.586 | | ISO 489 |
| Transmittance [11] | 89.0 | % | ASTM D1003 |
| Haze [11] | 1.00 | % | ASTM D1003 |

### Notes

[1] Biocompatibility testing following ISO Guidelines 10993 has been completed on select classic resins in this series. Please consult Styron for details. ISO guidelines include a sensitization test.

[2] Typical properties: these are not to be construed as specifications.

[3] Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.

[4] 0.039 in/min

[5] 2.0 in/min

[6] Method I (3 point load), 0.079 in/min

[7] 0.079 in/min

[8] 11.1 ft/sec

[9] Rate A (50°C/h), Loading 2 (50 N)

[10] This rating not intended to reflect hazards presented by this or any other material under actual fire conditions.

[11] Measured at 3.2mm thickness on un-colored resin.