Celanese
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# RITEFLEX® 440 - TPC

## Description

Riteflex 440 is a nominal 40 Shore D thermoplastic polyester elastomer with medium modulus.

| Physical properties | Value | Unit | Test Standard |
|---|---|---|---|
| Density | **1110** | kg/m³ | ISO 1183 |
| Melt flow rate, MFR | **14** | g/10min | ISO 1133 |
| MFR temperature | **220** | °C | ISO 1133 |
| MFR load | **2.16** | kg | ISO 1133 |
| Molding shrinkage, parallel | **1.2 - 1.4** | % | ISO 294-4, 2577 |
| Water absorption, 23°C-sat | **0.6** | % | ISO 62 |

| Mechanical properties | Value | Unit | Test Standard |
|---|---|---|---|
| Tensile modulus | **50** | MPa | ISO 527-2/1A |
| Tensile stress at yield, 50mm/min | **6** | MPa | ISO 527-2/1A |
| Tensile strain at yield, 50mm/min | **28** | % | ISO 527-2/1A |
| Tensile stress at 50% strain, 50mm/min | **7** | MPa | ISO 527-2/1A |
| Tensile stress at break, 50mm/min | **18** | MPa | ISO 527-2/1A |
| Tensile strain at break, 50mm/min | **>500** | % | ISO 527-2/1A |
| Flexural modulus, 23°C | **45** | MPa | ISO 178 |
| Flexural modulus, -40°C | **270** | MPa | ISO 178 |
| Flexural modulus, 100°C | **26** | MPa | ISO 178 |
| Flexural strength, 23°C | **4** | MPa | ISO 178 |
| Flexural stress at 3.5% strain | **2** | MPa | ISO 178 |
| Charpy impact strength, 23°C | **NB** | kJ/m² | ISO 179/1eU |
| Charpy impact strength, -30°C | **NB** | kJ/m² | ISO 179/1eU |
| Charpy notched impact strength, 23°C | **NB** | kJ/m² | ISO 179/1eA |
| Charpy notched impact strength, -30°C | **NB** | kJ/m² | ISO 179/1eA |
| Izod impact notched, 23°C | **NB** | kJ/m² | ISO 180/1A |
| Izod impact notched, -30°C | **NB** | kJ/m² | ISO 180/1A |
| Izod impact notched, -40°C | **NB** | kJ/m² | ISO 180/1A |
| Izod impact unnotched, 23°C | **NB** | kJ/m² | ISO 180/1U |
| Izod impact unnotched, -30°C | **NB** | kJ/m² | ISO 180/1U |
| Bayshore resilience | **58** | % | ASTM D 2632 |
| Ross flex | **>1000000** | cycles | ASTM D 1052 |

| Mechanical properties (TPE) | Value | Unit | Test Standard |
|---|---|---|---|
| Tensile stress at 5% strain, 1BA | **2** | MPa | ISO 527-1, -2 |
| Tensile stress at 10% strain, 1BA | **4** | MPa | ISO 527-1, -2 |
| Tensile stress at 50% strain, 1BA | **7** | MPa | ISO 527-1, -2 |
| Tensile stress at 100% strain | **8** | MPa | ISO 37 |
| Tensile stress at 300% strain | **12.7** | MPa | ISO 37 |
| Tensile strain at break, 1BA | **650** | % | ISO 527-1, -2 |
| Tensile stress at break, 1BA | **21** | MPa | ISO 527-1, -2 |
| Shore A hardness, 15s | **90** | - | ISO 868 |
| Shore D hardness, 15s | **37** | - | ISO 868 |
| Tear strength, Die C/parallel | **96** | kN/m | ISO 34-1 |

| Thermal properties | Value | Unit | Test Standard |
|---|---|---|---|
| Melting temperature, 10°C/min | **195** | °C | ISO 11357-1/-3 |
| DTUL at 0.45 MPa | **47** | °C | ISO 75-1, -2 |
| Vicat softening temperature, 50°C/h 10N | **127** | °C | ISO 306 |
| Coeff. of linear therm expansion, parallel | **2.4** | E-4/°C | ISO 11359-2 |
| Flammability at thickness h | **HB** | class | UL 94 |
| thickness tested (h) | **1.50** | mm | UL 94 |

# RITEFLEX® 440 - TPC

| Electrical properties | Value | Unit | Test Standard |
|---|---|---|---|
| Relative permittivity, 1MHz | **4.9** | - | IEC 60250 |
| Dissipation factor, 1MHz | **200** | E-4 | IEC 60250 |
| Volume resistivity | **2E10** | Ohm*m | IEC 60093 |
| Surface resistivity | **2E15** | Ohm | IEC 60093 |
| Electric strength | **26** | kV/mm | IEC 60243-1 |
| Comparative tracking index | **PLC 0** | - | IEC 60112 |

## Typical injection moulding processing conditions

| Pre Drying | Value | Unit | Test Standard |
|---|---|---|---|
| Necessary low maximum residual moisture content | **0.05** | % | - |
| Drying time | **4** | h | - |
| Drying temperature | **100 - 110** | °C | - |
| **Temperature** | **Value** | **Unit** | **Test Standard** |
| Hopper temperature | **20 - 50** | °C | - |
| Feeding zone temperature | **185 - 200** | °C | - |
| Zone1 temperature | **185 - 200** | °C | - |
| Zone2 temperature | **185 - 210** | °C | - |
| Zone3 temperature | **185 - 210** | °C | - |
| Zone4 temperature | **185 - 215** | °C | - |
| Nozzle temperature | **190 - 215** | °C | - |
| Melt temperature | **190 - 215** | °C | - |
| Mold temperature | **20 - 55** | °C | - |
| Hot runner temperature | **190 - 215** | °C | - |
| **Speed** | **Value** | **Unit** | **Test Standard** |
| Injection speed | **medium-fast** | - | - |

## Other text information

### Pre-drying

To avoid hydrolytic degradation during processing, Riteflex resins have to be dried to a moisture level equal to or less than 0.05%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-40°F (-40°C) at 225°F (107°C) for 4 hours.

### Longer pre-drying times/storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

### Injection molding

Rear Temperature 370-390(185-200) deg F (deg C)
Center Temperature 390-410(200-210) deg F (deg C)
Front Temperature 390-420(200-215) deg F (deg C)
Nozzle Temperature 390-420(200-215) deg F (deg C)
Melt Temperature 390-420(200-215) deg F (deg C)
Mold Temperature 75-125(20-55) deg F (deg C)
Back Pressure 0-50 psi
Screw Speed Medium
Injection Speed Fast

Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided, in particular for flame retardant grades. Up to 25% clean and dry regrind may be used.

## Characteristics

| Product Categories | Processing |
|---|---|
| Unfilled | Film extrusion, Injection molding |