

# Celanese Zytel® 101F

Categories: Polymer; Thermoplastic; Nylon (Polyamide PA); Nylon 66 (PA66)

Material Notes: Unreinforced Polyamide 66

Former DuPont product acquired by Celanese in 2022.

| Physical Properties               | Metric                                                       | English                                                    | Comments                              |
|-----------------------------------|--------------------------------------------------------------|------------------------------------------------------------|---------------------------------------|
| Density                           | 1.14 g/cc                                                    | 0.0412 lb/in <sup>3</sup>                                  | DAM; ISO 1183                         |
| Melt Density                      | 0.970 g/cc<br>@Temperature 290 °C                            | 0.0350 lb/in <sup>3</sup><br>@Temperature 554 °F           |                                       |
| Water Absorption                  | 8.5 %<br>@Thickness 2.00 mm                                  | 8.5 %<br>@Thickness 0.0787 in                              | DAM; Sim. to ISO 62                   |
| Moisture Absorption               | 2.60 %<br>@Thickness 2.00 mm                                 | 2.60 %<br>@Thickness 0.0787 in                             | DAM; Sim. to ISO 62                   |
| Viscosity Number                  | 150 cm <sup>3</sup> /g                                       | 1.50 dl/g                                                  | DAM; ISO 307, 1157, 1628              |
| Linear Mold Shrinkage, Flow       | 0.014 cm/cm                                                  | 0.014 in/in                                                | DAM; ISO 294-4, 2577                  |
| Linear Mold Shrinkage, Transverse | 0.0020 cm/cm<br>@Treatment Temp. 80.0 °C,<br>Time 173000 sec | 0.0020 in/in<br>@Treatment Temp. 176 °F,<br>Time 48.0 hour | Postmolding shrinkage; DAM; ISO 294-4 |
|                                   | 0.014 cm/cm                                                  | 0.014 in/in                                                | DAM; ISO 294-4, 2577                  |
|                                   | 0.0010 cm/cm<br>@Treatment Temp. 80.0 °C,<br>Time 173000 sec | 0.0010 in/in<br>@Treatment Temp. 176 °F,<br>Time 48.0 hour | Postmolding shrinkage; DAM; ISO 294-4 |

| Mechanical Properties   | Metric   | English   | Comments                      |
|-------------------------|----------|-----------|-------------------------------|
| Hardness, Rockwell R    | 108      | 108       | 50% RH; ISO 2039-2            |
| Tensile Strength, Yield | 121      | 121       | DAM; ISO 2039-2               |
|                         | 55.0 MPa | 7980 psi  | 50% RH; ISO 527-1/-2          |
|                         | 82.0 MPa | 11900 psi | DAM; ISO 527-1/-2             |
| Elongation at Break     | 4.5 %    | 4.5 %     | parallel; DAM; ISO 527-3      |
|                         | 20 %     | 20 %      | Nominal; DAM; ISO 527-1/-2    |
|                         | >= 50 %  | >= 50 %   | Nominal; 50% RH; ISO 527-1/-2 |
| Elongation at Yield     | 4.5 %    | 4.5 %     | DAM; ISO 527-1/-2             |
|                         | 25 %     | 25 %      | 50% RH; ISO 527-1/-2          |
| Tensile Modulus         | 1.40 GPa | 203 ksi   | 50% RH; ISO 527-1/-2          |
|                         | 3.10 GPa | 450 ksi   | DAM; ISO 527-1/-2             |
| Flexural Strength       | 75.0 MPa | 10900 psi | 50% RH; ISO 178               |
|                         | 115 MPa  | 16700 psi | DAM; ISO 178                  |
| Flexural Modulus        | 1.20 GPa | 174 ksi   | 50% RH; ISO 178               |
|                         | 2.80 GPa | 406 ksi   | DAM; ISO 178                  |
| Poissons Ratio          | 0.37     | 0.37      | DAM                           |
|                         | 0.43     | 0.43      | 50% RH                        |

|                                   |                                                  |                                                     |                          |
|-----------------------------------|--------------------------------------------------|-----------------------------------------------------|--------------------------|
| Izod Impact, Notched (ISO)        | 3.00 kJ/m <sup>2</sup><br>@Temperature -40.0 °C  | 1.43 ft-lb/in <sup>2</sup><br>@Temperature -40.0 °F | 50% RH; ISO 180/1A       |
|                                   | 4.00 kJ/m <sup>2</sup><br>@Temperature -30.0 °C  | 1.90 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F | 50% RH; ISO 180/1A       |
|                                   | 5.50 kJ/m <sup>2</sup><br>@Temperature 23.0 °C   | 2.62 ft-lb/in <sup>2</sup><br>@Temperature 73.4 °F  | DAM; ISO 180/1A          |
|                                   | 5.50 kJ/m <sup>2</sup><br>@Temperature -40.0 °C  | 2.62 ft-lb/in <sup>2</sup><br>@Temperature -40.0 °F | DAM; ISO 180/1A          |
|                                   | 6.00 kJ/m <sup>2</sup><br>@Temperature -30.0 °C  | 2.86 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F | DAM; ISO 180/1A          |
|                                   | 11.0 kJ/m <sup>2</sup><br>@Temperature 23.0 °C   | 5.23 ft-lb/in <sup>2</sup><br>@Temperature 73.4 °F  | 50% RH; ISO 180/1A       |
|                                   |                                                  |                                                     |                          |
| Izod Impact, Unnotched (ISO)      | 300 kJ/m <sup>2</sup><br>@Temperature -30.0 °C   | 143 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F  | DAM; ISO 180/1U          |
|                                   | 300 kJ/m <sup>2</sup><br>@Temperature 23.0 °C    | 143 ft-lb/in <sup>2</sup><br>@Temperature 73.4 °F   | DAM; ISO 180/1U          |
|                                   | NB<br>@Temperature 23.0 °C                       | NB<br>@Temperature 73.4 °F                          | 50% RH; ISO 180/1U       |
|                                   | NB<br>@Temperature -30.0 °C                      | NB<br>@Temperature -22.0 °F                         | 50% RH; ISO 180/1U       |
|                                   |                                                  |                                                     |                          |
| Charpy Impact Unnotched           | 40.0 J/cm <sup>2</sup><br>@Temperature -30.0 °C  | 190 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F  | DAM; ISO 179/1eU         |
|                                   | NB<br>@Temperature -30.0 °C                      | NB<br>@Temperature -22.0 °F                         | 50% RH; ISO 179/1eU      |
|                                   | NB<br>@Temperature 23.0 °C                       | NB<br>@Temperature 73.4 °F                          | 50% RH; ISO 179/1eU      |
|                                   | NB<br>@Temperature 23.0 °C                       | NB<br>@Temperature 73.4 °F                          | DAM; ISO 179/1eU         |
|                                   |                                                  |                                                     |                          |
| Charpy Impact, Notched            | 0.300 J/cm <sup>2</sup><br>@Temperature -30.0 °C | 1.43 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F | 50% RH; ISO 179/1eA      |
|                                   | 0.450 J/cm <sup>2</sup><br>@Temperature -30.0 °C | 2.14 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F | DAM; ISO 179/1eA         |
|                                   | 0.600 J/cm <sup>2</sup><br>@Temperature 23.0 °C  | 2.86 ft-lb/in <sup>2</sup><br>@Temperature 73.4 °F  | DAM; ISO 179/1eA         |
|                                   | 1.30 J/cm <sup>2</sup><br>@Temperature 23.0 °C   | 6.19 ft-lb/in <sup>2</sup><br>@Temperature 73.4 °F  | 50% RH; ISO 179/1eA      |
|                                   |                                                  |                                                     |                          |
| Tensile Creep Modulus, 1 hour     | 1400 MPa                                         | 203000 psi                                          | 1h; 50% RH; ISO 899-1    |
| Tensile Creep Modulus, 1000 hours | 930 MPa                                          | 135000 psi                                          | 1000h; 50% RH; ISO 899-1 |