

# NatureWorks® 3D700

Ingeo 3D700 has been specifically developed for use in large-format printers (e.g.- medium to big-area machines), to minimize the chance of failed prints due to part-warping and excessive material shrinkage. Ingeo 3D700 is supplied as pellets that can be directly printed using fused granulate fabrication (FGF) systems, or can also be first converted to filament, for use in fused filament fabrication (FFF) platforms. This grade is also amenable to formulating with additives (e.g.- process aids, reinforcing-agents, impact modifiers), to customize performance for specific end-use applications.

| Physical Properties | Metric    | English   | Comments  |
|---------------------|-----------|-----------|-----------|
| Specific Gravity    | 1.24 g/cc | 1.24 g/cc | ASTM D792 |

|           |                                                              |                                                              |            |
|-----------|--------------------------------------------------------------|--------------------------------------------------------------|------------|
| Melt Flow | 9.00 - 12.0 g/10 min<br>@Load 2.16 kg,<br>Temperature 210 °C | 9.00 - 12.0 g/10 min<br>@Load 4.76 lb,<br>Temperature 410 °F | ASTM D1238 |
|-----------|--------------------------------------------------------------|--------------------------------------------------------------|------------|

| Mechanical Properties | Metric    | English   | Comments  |
|-----------------------|-----------|-----------|-----------|
| Tensile Strength      | 47.6 MPa  | 6900 psi  | ASTM D638 |
| Tensile Modulus       | 3.27 GPa  | 474 ksi   | ASTM D638 |
| Flexural Strength     | 102 MPa   | 14800 psi | ASTM D790 |
| Flexural Modulus      | 3.665 GPa | 531.5 ksi | ASTM D790 |

| Thermal Properties        | Metric         | English      | Comments   |
|---------------------------|----------------|--------------|------------|
| Glass Transition Temp, Tg | 55.0 - 60.0 °C | 131 - 140 °F | ASTM D3418 |
| Shrinkage                 | 0.340 %        | 0.340 %      |            |

| Processing Properties  | Metric                                 | English                               | Comments            |
|------------------------|----------------------------------------|---------------------------------------|---------------------|
| Processing Temperature | 180 - 190 °C                           | 356 - 374 °F                          | Compression Section |
|                        | 180 - 190 °C                           | 356 - 374 °F                          | Metering Section    |
| Feed Temperature       | 25.0 - 30.0 °C                         | 77.0 - 86.0 °F                        | Throat              |
| Adapter Temperature    | 210 °C                                 | 410 °F                                |                     |
| Die Temperature        | 190 - 200 °C                           | 374 - 392 °F                          |                     |
| Drying Temperature     | 45.0 °C<br>@Temperature 6.00 - 8.00 °C | 113 °F<br>@Temperature 42.8 - 46.4 °F |                     |
| Moisture Content       | <= 0.0250 %                            | <= 0.0250 %                           |                     |
| Dew Point              | -35.0 °C                               | -31.0 °F                              |                     |
| Drying Air Flow Rate   | 14.2 l/min                             | 0.500 ft³/min (CFM)                   |                     |
| Screw Speed            | 20.0 - 150 rpm                         | 20.0 - 150 rpm                        |                     |

| Descriptive Properties |                     |  |  |
|------------------------|---------------------|--|--|
| Print Bed Temperature  | 40-50 °C, if needed |  |  |