

# Nylon 12

FDM Nylon 12 is the 3D-printed equivalent of industrial PA12. It is tough without being brittle and has excellent fatigue life, which makes it our pick for snap-fits, living hinges, press-fit inserts, and any part that has to flex again and again.

**30%**

Elongation at break, XZ orientation

**1800 J/m**

Unnotched Izod impact, XZ orientation

**1.01**

Specific gravity at 23 °C

## About this material

FDM Nylon 12 is a polyamide (PA12), the printed equivalent of standard industrial nylon 12. Its standout trait is fatigue resistance: it flexes repeatedly without cracking, which suits snap-fits, closures, and press-fit inserts. It also has high impact strength and good chemical resistance, and stretches up to 30% before breaking in the strong orientation. Its glass transition is low, so it is chosen for toughness and flex rather than heat. Available in black.

## Typical applications

Snap-fit clips, closures, and living hinges; press-fit inserts; jigs and fixtures that take repeated handling; and low-volume nylon production parts, including accurate prototypes of injection-molded PA12.

## Physical properties

| PROPERTY              | TYPICAL VALUE              | TEST METHOD |
|-----------------------|----------------------------|-------------|
| Specific gravity      | 1.01 (at 23 °C)            | ASTM D257   |
| HDT at 66 psi         | 94.7 °C XY / 91.9 °C XZ/ZX | ASTM D648 B |
| HDT at 264 psi        | 84.3 °C XY / 75.3 °C XZ/ZX | ASTM D648 B |
| Glass transition (Tg) | 34.0 °C (92.3 °F)          | ASTM D7426  |
| Volume resistivity    | > 6.87e13 @m               | ASTM D257   |

## Tensile properties (ASTM D638), F900

| PROPERTY                | XZ ORIENTATION | ZX ORIENTATION |
|-------------------------|----------------|----------------|
| Yield strength [MPa]    | 49.3           | 41.8           |
| Elongation at yield [%] | 6.1            | 5.8            |
| Strength at break [MPa] | 33.4           | 41.2           |
| Elongation at break [%] | 30             | 6.5            |
| Tensile modulus [GPa]   | 1.51           | 1.25           |

Nylon 12 yields before it breaks in both orientations; the high XZ elongation (30%) gives its flex and toughness. Typical values at 0.25 mm (0.010 in.) layer height.

## Flexural, compression, and impact (F900)

| PROPERTY                             | XZ ORIENTATION | ZX ORIENTATION |
|--------------------------------------|----------------|----------------|
| Flexural strength at break [MPa]     | No break       | No break       |
| Flexural strength at 5% strain [MPa] | 56.5           | 54.5           |
| Flexural modulus [GPa]               | 1.26           | 1.20           |
| Compressive yield strength [MPa]     | 327            | 557            |
| Izod impact, notched [J/m]           | 138            | 71.0           |
| Izod impact, unnotched [J/m]         | 1800           | 322            |

Flexural per ASTM D790, compression per ASTM D695, Izod impact per ASTM D256. Like most nylons, Nylon 12 densifies under compression rather than fracturing, so the reported compressive values are high.

## Source and notes

Values are drawn from the Stratasys FDM Nylon 12 material data sheet, document MDS\_FDM\_Nylon 12\_0921a ([OEM source](#)). Stratasys lists these as typical values for reference and comparison, not for design specifications or quality control. Properties vary with orientation, layer height, moisture, and machine.

Full page: <https://www.evologymfg.com/manufacturing-capabilities/fdm-fused-deposition-modeling/nylon-12>