# PLA

## ECONOMY THERMOPLASTIC FOR STRATASYS F123 SERIES PRINTERS

PLA is a renewable plastic material offered as a low-cost material option for fast-draft part iterations. Available on the office-friendly Stratasys F123™ Series 3D printers, PLA offers a higher stiffness than ABS and its low melting point and HDT mean less heat and power required to print parts.

PLA works well at high speeds, specifically fast-draft mode on the Stratasys F123 Series, for quick concept verification and design development. PLA offers good tensile strength and is available in a wide range of colors, including a variety of translucent colors. Ideal applications for PLA include fast, early concept modeling and low-cost prototyping.

stratasys PADT

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### At the core: Advanced FDM Technology

Stratasys' FDM® (fused deposition modeling) technology works with engineering-grade thermoplastics to build strong, long-lasting and dimensionally stable parts with the best accuracy and repeatability of any FDM technology. These parts are tough enough to be used as advanced conceptual models, functional prototypes, manufacturing tools and production parts.

### Meet production demands

FDM systems are as versatile and durable as the parts they produce. Advanced FDM 3D Printers boast the largest build envelopes and material capacities in their class, delivering longer, uninterrupted build times, bigger parts and higher quantities than other additive manufacturing systems, delivering high throughput, duty cycles and utilization rates.

### Opening the way for new possibilities

FDM 3D Printers streamline processes from design through manufacturing, reducing costs and eliminating traditional barriers along the way. Industries can cut lead times and costs, products turn out better and get to market faster.

### No special facilities needed

FDM 3D Printers are easy to operate and maintain compared to other additive fabrication systems because there are no messy powders or resins to handle and contain, and no special venting is required because FDM systems don't produce noxious fumes, chemicals or waste.

| MECHANICAL PROPERTIES[1] | TEST METHOD | ENGLISH | | METRIC | |
|---|---|---|---|---|---|
| | | *XZ AXIS* | *ZX AXIS* | *XZ axis* | *ZX axis* |
| **Tensile Strength, Yield** (Type 1, 0.125", 0.2"/min) | ASTM D638 | 6,580 psi | 3,790 psi | 45 MPa | 26 MPa |
| **Tensile Strength, Ultimate** (Type 1, 0.125", 0.2"/min) | ASTM D638 | 6,990 psi | 3,830 psi | 48 MPa | 26 MPa |
| **Tensile Modulus** (Type 1, 0.125", 0.2"/min) | ASTM D638 | 440,730 psi | 368,200 psi | 3,039 MPa | 2,539 MPa |
| **Elongation at Break** (Type 1, 0.125", 0.2"/min) | ASTM D638 | 2.5% | 1.0% | 2.5% | 1.0% |
| **Elongation at Yield** (Type 1, 0.125", 0.2"/min) | ASTM D638 | 1.5% | 1.0% | 1.5% | 1.0% |
| **Flexural Strength** (Method 1, 0.05"/min) | ASTM D790 | 12,190 psi | 6,570 psi | 84 MPa | 45 MPa |
| **Flexural Modulus** (Method 1, 0.05"/min) | ASTM D790 | 425,010 psi | 358,290 psi | 2,930 MPa | 2,470 MPa |
| **Flexural Strain at Break** | ASTM D790 | 4.1% | 1.9% | 4.1% | 1.9% |
| **IZOD impact - notched** (Method A, 23 °C) | ASTM D256 | 0.5 ft-lb/in | N/A | 27 J/m | N/A |
| **IZOD impact - unnotched** (Method A, 23 °C) | ASTM D256 | 3.6 ft-lb/in | N/A | 192 J/m | N/A |

| THERMAL PROPERTIES | TEST METHOD | ENGLISH | METRIC |
|---|---|---|---|
| **Heat Deflection (HDT) @ 66 psi** | ASTM D648 | 127 °F | 53 °C |
| **Heat Deflection (HDT) @ 264 psi** | ASTM D648 | 124 °F | 51 °C |
| **Vicat Softening Temperature (Rate B/50)** | ASTM D1525 | 129 °F | 54 °C |
| **Glass Transition Temperature (Tg)** | DMA (SSYS) | 145 °F | 63 °C |
| **Coefficient of Thermal Expansion (flow)** | ASTM E831 | 56x10$^{-06}$ µin/(in·°F) | 101x10$^{-06}$ µm/(m·°C) |
| **Coefficient of Thermal Expansion (xflow)** | ASTM E831 | 57x10$^{-06}$ µin/(in·°F) | 102x10$^{-06}$ µm/(m·°C) |

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## ECONOMY THERMOPLASTIC FOR STRATASYS F123 SERIES PRINTERS

| ELECTRICAL PROPERTIES | TEST METHOD | VALUE *XY* | VALUE *ZX* |
|---|---|---|---|
| **Volume Resistivity** | ASTM D257 | 2.9E+15 ohm-cm | 3.24E+15 ohm-cm |
| **Dielectric Constant** | ASTM D150-98 | 1.51 | 2.33 |
| **Dissipation Factor** | ASTM D150-98 | 0.003 | 0.005 |
| **Dielectric Strength** | ASTM D149-09, Method A | 154 V/mil | 293 V/mil |

| OTHER | TEST METHOD | VALUE |
|---|---|---|
| **Specific Gravity** | ASTM D792 | 1.264 g/cc |

| SYSTEM AVAILABILITY | LAYER THICKNESS CAPABILITY | SUPPORT STRUCTURE | AVAILABLE COLORS |
|---|---|---|---|
| **F123 Series** | 0.010 in. (0.254 mm) | Breakaway | Black<br>White<br>Light Gray<br>Medium Gray<br>Red<br>Blue<br>Natural Trans<br>Red Trans<br>Blue Trans<br>Yellow Trans<br>Green Trans |

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