



SLCOM1

Selective Lamination Composites Object Manufacturing

EnvisionTEC’s SLCOM1 is the first and only industrial thermoplastic reinforced woven composite 3D printer on the market today. With a build envelope of 30” x 24” x 24”, the new SLCOM1 employs a new patent pending process known as Selective Lamination Composite Object Manufacturing.

The SLCOM1 is available with a wide range of custom made thermoplastic reinforced unidirectional or multidirectional woven fibers tailored to the customer performance needs. These composite matrix materials deliver high quality 3D printed parts suitable for use in aerospace, automotive, consumer products, sporting goods, and potential applications in the medical space.

| Machine Properties* | SLCOM1 |
|-------------------------|---|
| Build Envelope | 30” x 24” x 24” |
| Accuracy | +/- 100 microns in X and Y One layer thickness in Z after lamination |
| Cutting Speed | Up to 20 inches per second linear speed |
| Min/Max Layer Thickness | 0.1 mm to 1.0 mm (prior to lamination) |
| Build Speed | Post lamination layer thickness dependent |
| Material | UNI and Bidirectional Thermoplastic Pre-pregs |
| Cutting Gantry | 4 Full AXIS cutting Gantry system (XYZR) |
| Footprint | 125”H x 156” W x 93” D |

*Specifications subject to change without notice.

System Properties

- Builds solid parts using layer-by-layer laminated thermoplastic composite fabric sheets from a roll
- Unique material storage feed concept
- 48” x 48” X/Y/Z cutter range with 30kHz ultrasonic blade cutter
- Automatic blade replacement with blade wearing auto detection
- Automatic anti-lamination fluid application
- Waste material not fully laminated to build, reducing post-processing
- Processes continuous fiber-reinforced thermoplastic pre-pregs for use in lightweight structural applications
- Composite materials can be tailored for:
 - Exceptional toughness
 - Environmental resistance
 - Vibration dampening
 - Low flammability characteristics
 - High wear resistance
 - Radiolucency/x-ray transparency

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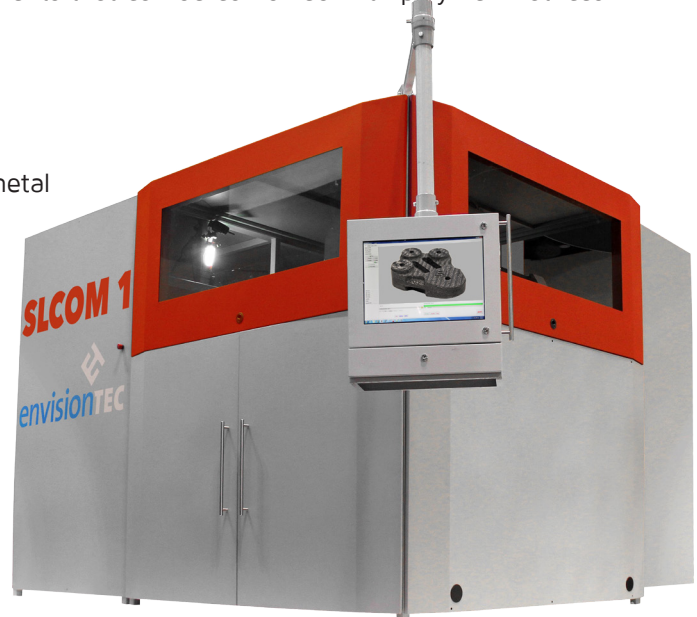
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The following is a list of common polymer matrices that can be combined with fiber reinforcements in multiple configurations to run on the SLCOM System.

| Matrix Polymer | Nominal Processing Temp °C/°F | Tg °C/°F | Polymer Structure | |
|--|-------------------------------|---------------|-------------------|---------|
| Polyetheretherketone (PEEK) | 385/725 | 143/290 | Semi-crystalline | 250/480 |
| Polyetherimide (PEI) | 320/610 | 215/420 | Amorphous | 200/390 |
| Polyphenylene Sulfide (PPS) | 330/625 | 90/195 | Semi-crystalline | 220/430 |
| Polypropylene (PP) | 190/375 | -10/-14 | Semi-crystalline | 90/194 |
| Polyethylene (PE) | 175/350 | -125/-195 | Semi-crystalline | 70/160 |
| Polycarbonate (PC) | 295/565 | 150/302 | Amorphous | 130/265 |
| Polyethylene terephthalate (PET) | 290/555 | 75/165 | Semi-crystalline | 130/265 |
| Polyether Sulfone (PES) | 290/555 | 225/435 | Amorphous | 180/355 |
| Polybutylene Terphthalate (PBT) | 265/510 | 56/135 | Semi-crystalline | 110/230 |
| Polyamides (Nylon) (PA 12, PA 11, PA 6.10, PA 6, PA 4.1) | 190-220/375-430 | 40-60/105-140 | Semi-crystalline | 120/250 |
| Polyetherketoneketone (PEKK) | 355/670 | 156/315 | Semi-crystalline | 230/445 |

Some examples of fiber reinforcements that can be combined with polymer matrices include, but are not limited to:

- Carbon Fiber
- Fiberglass
- Aramid Fiber (i.e. Kevlar)
- PBO (i.e. Zylon), along with metal fibers like steel, aluminum or titanium



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