DuraForm® HST Composite

For use with all Sinterstation® Pro and Sinterstation HiQ™ series SLS Systems

General Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Specific Gravity	ASTM D792	1.20 g/cm^3	1.20 g/cm^3

Mechanical Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Tensile Strength Ultimate (MPa/PSI)	ASTM D 638	48–51	7050–7350
Tensile Modulus (MPa/KSI)	ASTM D 638	5475–5725	795–831
Elongation at Break (%)	ASTM D 638	4.5	4.5
Flexural Strength, Ultimate (MPa/PSI)	ASTM D 790	83–89	12000–12900
Flexural Modulus (MPa/KSI)	ASTM D 790	4400–4550	638–660
Hardness, Shore D	ASTM D2240	75	75
Impact Strength (notched Izod, 23°C)	ASTM D256	37.4 J/m	0.7 ft-lb/in
Impact Strength (unnotched Izod, 23°C)	ASTM D256	310 J/m	5.8 ft-lb/in
Gardner Impact	ASTM D5420	5 J	3.7 ft-lb

Data was generated by building parts using 100% virgin powder under typical default parameters. DuraForm® HST Composite was processed on a Sinterstation® HiQ™ + HS SLS System at 25 watts laser power, 10 m/sec [400 inches/sec] scan speed, and a powder layer thickness of 0.1 mm [0.004 inches].

Features

- High specific stiffness
- Elevated temperature resistance
- Anisotropic mechanical properties just like fiber-filled, injection molded materials
- Non-conductive and RF transparent
- Easy-to-finish surface

Benefits

- Functional prototypes can be tested in "real life" environments
- Complex end-use parts can be economically manufactured in low-to-medium volumes
- Excels in load-bearing applications at higher temperatures
- Attractive surface finish

Applications

- Complex, thin-wall ductwork
- Functional prototypes that approach end-use performance properties
- Appropriate for low- to mid-volume rapid manufacturing
- Medical applications requiring USP Class VI compliance, or biocompatibility
  - Motorsports
  - Aerospace
- Housing and enclosures
- Impellers and connectors
- Consumer sporting goods
- Vehicle dashboards and grilles
- Snap-fit designs
- Parts requiring machining or joining with adhesives

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Thermal Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Heat Deflection Temperature	ASTM D 648 @ 0.45 MPa @ 1.82 MPa	 184 °C 179 °C	 363 °F 355 °F
Coefficient of Thermal Expansion (µm/m-°C / µm/in-°F)	ASTM E 831 0-50 °C 85-145 °C	 138.3 267.2	 76.8 148.4
Specific Heat Capacity	ASTM E1269	1.64 J/g-°C	0.392 BTU/lb-°F
Thermal Conductivity	ASTM E1225	1.503 W/m-K	0.359 BTU-in/hr-ft2-°F
Flammability	UL 94	HB	HB

Electrical Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Volume Resistivity	ASTM D257	6.7 X 10^{15} ohm-cm	6.7 X 10^{15} ohm-cm
Surface Resistivity	ASTM D257	5.2 X 10^{15} ohm	5.2 X 10^{15} ohm
Dissipation Factor, 1 KHz	ASTM D150	0.028	0.028
Dielectric Constant, 1 KHz	ASTM D150	3.14	3.14
Dielectric Strength	ASTM D149	18.5 kV/mm	470 kV/in

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