ESSENTIUM

Essentium HTN-CF25
TECHNICAL DATA SHEET

ESSENTIUM HTN-CF25

Essentium HTN-CF25 (high-temperature nylon) is a polyamide based chemistry with a 25% carbon fiber reinforced core. HTN-CF25 is the highest strength and stiffness material in the Essentium portfolio. This material also boasts easy processing and excellent thermal resistance. This material is designed for tooling applications, high strength/stiffness jigs and fixtures, and as a replacement for light-duty aluminum parts.

MECHANICAL PROPERTIES

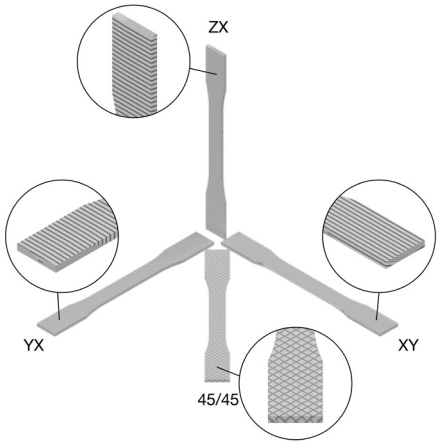
Metric	Test Method	Print Orientation			
		XY	45/45	YX	ZX
Ultimate Tensile Strength, MPa	ISO 527-2	148 (4)	74.5 (2.0)	40.6 (3.4)	24.0 (5.3)
Tensile Modulus, GPa	ISO 527-2	16.0 (0.35)	6.59 (0.13)	3.50 (0.34)	3.51 (0.48)
Strain at Break, %	ISO 527-2	1.4 (0.1)	2.0 (0.2)	1.9 (0.4)	0.8 (0.2)
Flexural Strength, MPa	ISO 178	184 (5)	124 (3)	79.8 (5.2)	40.3 (3.5)
Flexural Modulus, GPa	ISO 178	11.4 (0.5)	6.32 (0.08)	3.47 (0.06)	2.40 (0.10)
Notched Izod Impact Strength, kJ/m^2	ISO 180/A	9.2 (1.3)	5.6 (0.4)	3.3 (0.9)	1.4 (0.3)

Standard deviations listed in parentheses

MATERIAL PROPERTIES

Property	Method	Value
Specific Gravity[1], g/cm^3	ISO 1183	1.32
HDT B @ 0.45 MPa, ˚C	ISO 75	219
HDT A @ 1.8 MPa, ˚C	ISO 75	182
Continuous use temperature @20,000 hrs[1], ˚C	IEC 60216	150

1 Values taken from resin manufacturer TDS



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MATERIAL HANDLING AND DRYING

Essentium HTN-CF25 is a slightly hygroscopic thermoplastic and will absorb moisture from humid air. Keep the material in the vacuum sealed packaging until you are ready to print with it. HTN-CF25 filament should always be fed to the printer in a dry container and stored in a dry cabinet. If the material does absorb more than 400ppm moisture, it should be dried in a low dew point (< -40˚C) oven or vacuum oven at 130˚C for 6 – 8 hours.

RECOMMENDED HSE PRINT SETTINGS			
0.4mm Hozzle			
Extrusion Width, mm	0.4 – 0.5	Hozzle Temperature, ˚C	250 – 410
Layer Height, mm	0.2 – 0.25	Bed Temperature, ˚C	80 – 90
Print Speed, mm/s	50 – 500	IR Temperature, ˚C	20 – 40
Infill, %	15 – 75	Fan Speed, %	0 – 40
0.8mm Hozzle			
Extrusion Width, mm	0.8 – 0.9	Hozzle Temperature, ˚C	260 – 440
Layer Height, mm	0.3 – 0.35	Bed Temperature, ˚C	80 – 90
Print Speed, mm/s	40 – 220	IR Temperature, ˚C	20 – 40
Infill, %	15 – 75	Fan Speed, %	0 – 40

RECOMMENDED FDM PRINT SETTINGS			
Nozzle Temperature, ºC	270 – 290	Fan Speed, %	0 – 20
Bed Temperature, ºC	60 – 80	Bed Material	G-10/FR4 or Glass
Print Speed, mm/s	40 – 80	Bed Adhesion Method	Magigoo® PA or PVA glue
First Layer Speed, mm/s	15 – 30	Infill Density, %	<75

KEY FEATURES:

- High strength
- Solvent resistance
- Good temperature resistance
- Easy-to-print
- Solvent resistance

APPLICATIONS INCLUDE:

- Soft tooling (injection, blow, thermoforming, composite)
- High stiffness jigs and fixtures
- High strength end use parts
- Replacement for light duty aluminum parts

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