

ESSENTIUM 9085

Essentium 9085 is a high performance polyetherimide blend made with SABIC ULTEM™ 9085 resin. Essentium 9085 has excellent long term temperature performance and toughness. The base resin meets FAR 25.853 and OSU 65/65 for flammability, heat release, smoke density and toxicity. Parts printed from Essentium 9085 are ideal for aerospace, automotive, and industrial components that must meet strict requirements for strength, temperature performance, and flammability.

MECHANICAL PROPERTIES

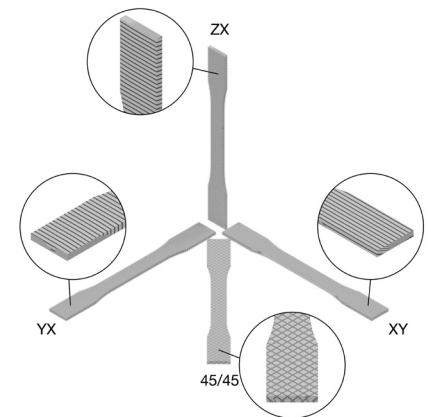
Metric	Test Method	Print Orientation			
		XY	45/45	YX	ZX
Ultimate Tensile Strength, MPa	ISO 527-2	79.5 (2.8)	70.0 (2.4)	45.8 (2.2)	62.9 (4.9)
Tensile Modulus, GPa	ISO 527-2	2.44 (0.05)	2.32 (0.06)	2.17 (0.04)	2.51 (0.06)
Strain at Break, %	ISO 527-2	6.9 (1.8)	5.8 (0.3)	3.2 (0.4)	3.5 (0.5)
Flexural Strength, MPa	ISO 178	125 (1)	88.5 (1.9)	75.1 (5.5)	112 (5)
Flexural Modulus, GPa	ISO 178	2.53 (0.04)	2.07 (0.04)	2.01 (0.01)	2.49 (0.05)
Notched Izod Impact Strength, kJ/m ²	ISO 180/A	8.4 (3.2)	9.9 (3.6)	4.6 (1.4)	3.7 (0.7)

Standard deviations listed in parentheses

MATERIAL PROPERTIES¹

Property	Method	Value
Density, g/cm ³	ISO 1183	1.34
HDT @ 1.8 MPa, °C	ISO 75	152
Moist. Absorption (23°C / 50% RH), %	ISO 62	0.17
FAA Flammability, FAR 25.853 A/B	FAR 25.853	<5
OSU Total Heat Release (2 min.), kW-min/m ²	FAR 25.853	16
OSU Peak Heat Release (5 min.), kW/m ²	FAR 25.853	36
Vertical Burn (60 sec.), sec	FAR 25.853	2
Oxygen Index (LOI), %	ASTM D 2863	49

¹ Values taken from raw material TDS



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MATERIAL HANDLING AND DRYING

Essentium 9085 is a 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. 9085 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 200 ppm moisture, it should be dried in a low dew point (< -40°C) oven or vacuum oven at 120 – 130°C for 4 – 6 hours. Avoid touching filament with bare fingers or introducing oils to the filament prior to printing.

RECOMMENDED HSE PRINT SETTINGS

0.4mm Hozzle

Extrusion Width, mm	0.4 – 0.5	Hozzle Temperature, °C	310 – 480
Layer Height, mm	0.2 – 0.25	Bed Temperature, °C	150 – 185
Print Speed, mm/s	50 – 250	IR Temperature, °C	140 – 200
Infill, %	15 – 75	Fan Speed, %	0 – 20

0.8mm Hozzle

Extrusion Width, mm	0.7 – 0.9	Hozzle Temperature, °C	310 – 480
Layer Height, mm	0.3 – 0.35	Bed Temperature, °C	150 – 185
Print Speed, mm/s	20 – 220	IR Temperature, °C	140 – 200
Infill, %	15 – 75	Fan Speed, %	0 – 20

RECOMMENDED FDM PRINT SETTINGS

Nozzle Temperature, °C	360 – 390	Fan Speed, %	0 – 15
Bed Temperature, °C	120 – 140	Bed Material	G-11 or MIC-6 Aluminum
Print Speed, mm/s	20 – 40	Bed Adhesion Method	Magigoo® HT or VM Nano
First Layer Speed, mm/s	20 – 25	Infill Density, %	<80

KEY FEATURES:

- Excellent temperature resistance
- Excellent toughness
- Great strength and stiffness
- Inherently flame retardant
- Environmental stress cracking resistance

APPLICATIONS INCLUDE:

- Aerospace
- Defense
- Composite layup tooling
- Functional prototypes

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