



Ultem™ 9085

MATERIAL DATA SHEET

Ultem™ 9085 is a flame retardant high performance thermoplastic for direct digital manufacturing and rapid prototyping. It is ideal for the transportation industry due to its high strength-to-weight ratio and its FST (flame, smoke, and toxicity) rating. This unique material's preexisting certifications make it an excellent choice for the commercial transportation industry – especially aerospace, marine, and ground vehicles. Ultem 9085 allows design and manufacturing engineers to produce fully functional parts that are ideal for advanced functional prototypes or end use without the cost or lead time of traditional tooling.

Quick Facts:

- High strength-to-weight ratio
- Flame retardant
- Excellent for aerospace, marine, and ground vehicles



Color options:

Black, Tan

MECHANICAL PROPERTIES	TEST METHOD	ENGLISH	METRIC
Tensile Strength (Type 1, 0.125", 0.2"/min)	ASTM D638	10,400 psi	71.6 MPa
Tensile Modulus (Type 1, 0.125", 0.2"/min)	ASTM D638	322 kpsi	2,200 MPa
Tensile Elongation (Type 1, 0.125", 0.2"/min)	ASTM D638	6%	6%
Flexural Strength (Method 1, 0.05"/min)	ASTM D790	16,700 psi	115.1 MPa
Flexural Modulus (Method 1, 0.05"/min)	ASTM D790	362.6 kpsi	2,500 MPa
IZOD Impact, notched (Method A, 23°C)	ASTM D256	2.0 ft-lb f/in	106 J/m
IZOD Impact, un-notched (Method A, 23°C)	ASTM D256	11.5 ft-lb f/in	613.8 J/m

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MECHANICAL PROPERTIES (con.)	TEST METHOD	ENGLISH	METRIC
Compression Strength	ASTM D695	15.2 ksi	104 MPa
Compression Modulus	ASTM D732	280 ksi	1930 MPa
Shear Strength (0.25" thick coupon)	ASTM D732	8.3	57 MPa

THERMAL PROPERTIES	TEST METHOD	ENGLISH	METRIC
Heat Deflection (HDT) @ 66 psi, 0.125" unannealed	-----	-----	-----
Heat Deflection (HDT) @264 psi, 0.125" unannealed	ASTM D648	307° F	153° C
Glass Transition Temperature (Tg)	DSC (SSYS)	367° F	186° C
Coefficient of Thermal Expansion	ASTM E228	3.67e-05in/(in·F°)	65.27 μm/(m·C°)
Melting Point	-----	Not Applicable	Not Applicable

ELECTRICAL PROPERTIES	TEST METHOD	VALUE RANGE
Volume Resistivity	ASTM D257	4.9e15 - 8.2e15 ohm-cm
Dielectric Constant	ASTM D150-98	3.2 - 3.0
Dissipation Factor	ASTM D150-98	.0027 - .0026
Dielectric Strength	ASTM D149-09, Method A	290 - 110 V/mil

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OUTGASSING	TEST METHOD	VALUE
Total Mass Loss (TML)	ASTM E595	0.41% (1.00% maximum)
Collected Volatile Condensable Material (CVCM)	ASTM E595	-0.1% (0.10% maximum)
Water Vapor Recovered (WVR)	ASTM E595	-0.37% (report)
Fungus Resistance (Method 508.6)	MIL-STD-810G	Passed

BURN TESTING	TEST METHOD	VALUE
Vertical Burn (60 sec)	FAR 25.853	Passed (0.040" – 0.250" thick)
Heat Release 65/65	FAR 25.853	Passed (<40HR Peak, 0.060" thick)
NBS Smoke Density (flaming)	ASTM F814/E662	Passed
NBS Smoke Density (non-flaming)	ASTM F814/E662	Passed

OTHER	TEST METHOD	VALUE
Specific Gravity	ASTM D792	1.34
Rockwell Hardness	ASTM D785	----
Flame Classification	UL94	V-0
Oxygen Index	ASTM D2863	0.49
Vertical Burn	FAR 25.853 (Test a,60s, passes at)	2 seconds
FAA Flammability	FAR 25.853 (Method A/B)	< 5
OSU Total Heat Release (5 min test)	FAR 25.853	36 kW/m-2
OSU Total Heat Release (2 min test)	FAR 25.853	16 kW min/m-2
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