

# ULTEM\* 9085

for FORTUS 3D Production Systems

**FORTUS**  
3D PRODUCTION SYSTEMS

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. Combined with a Fortus 3D Production System, 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.



Mechanical Properties <sup>1</sup>	Test Method	English	Metric
Tensile Strength (Type 1, 0.125", 0.2"/min)	ASTM D638	10,390 psi	71.64 MPa
Tensile Modulus (Type 1, 0.125", 0.2"/min)	ASTM D638	322 kpsi	2,220 MPa
Tensile Elongation (Type 1, 0.125", 0.2"/min)	ASTM D638	5.9%	5.9%
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	2,507 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

Thermal Properties <sup>3</sup>	Test Method	English	Metric
Heat Deflection (HDT) @ 66 psi, 0.125" unannealed	ASTM D648	-----	-----
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	-----	-----	-----
Melt Point	-----	Not Applicable <sup>2</sup>	Not Applicable <sup>2</sup>

Other <sup>3</sup>	Test Method	Value
Specific Gravity	ASTM D792	1.34
Rockwell Hardness	ASTM D785	-----
Flame Classification	UL 94	-----
Dielectric Strength	D149	-----
Dielectric Constant @ 60 MHz	D150	-----

Flame Characteristics	Test Method	Value
Oxygen Index	ASTM D2863	49%
Vertical Burn (Test a (60s), passes at)	FAR 25.853	2 seconds
FAA Flammability (Method A/B)	FAR 25.853	< 5
OSU Peak Heat Release (5 minute test)	FAR 25.853	36 kW/m <sup>2</sup>
OSU Total Heat Release (2 minute test)	FAR 25.853	16 kW·min/m <sup>2</sup>

► See reverse for color options and system availability.

The information presented are typical values intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. End-use material performance can be impacted (+/-) by, but not limited to, part design, end-use conditions, test conditions, etc. Actual values will vary with build conditions. Tested parts were built on Fortus 400mc @ 0.010" (0.254 mm) slice. Product specifications are subject to change without notice.

<sup>1</sup> Build orientation is on side long edge. <sup>2</sup> Due to amorphous nature, material does not display a melting point. <sup>3</sup> Literature value unless otherwise noted.



System Availability	Layer Thickness Capability	Support Structure	Available Colors
Fortus 400mc Fortus 900mc <sup>1</sup>	0.013 inch (0.330 mm) <sup>2</sup> 0.010 inch (0.254 mm)	BASS	■ Tan

<sup>1</sup>ULTEM\* 9085 will be available for Fortus 900mc Q2 2009.

<sup>2</sup>0.013 inch (0.300 mm) layer thickness not available for Fortus 900mc

## At the core: Advanced FDM technology

Fortus systems are based on patented Stratasys FDM — Fused Deposition Modeling — technology. FDM is the industry's leading additive fabrication technology, and the only one that uses production grade thermoplastics, enabling the most durable parts.

Fortus systems use a wide range of thermoplastics with advanced mechanical properties so your parts can endure high heat, caustic chemicals, sterilization, and high impact applications.

## No special facilities needed

You can install a Fortus 3D Production System just about anywhere. No special venting is required because Fortus systems don't produce noxious fumes, chemicals, or waste.

## No special skills needed

Fortus 3D Production Systems are easy to operate and maintain compared to other additive fabrication systems because there are no messy powders or resins to handle and contain. They're so simple, an operator can be trained to operate a Fortus system in less than 30 minutes.

## Get your benchmark on the future of manufacturing

Fine details. Smooth surface finishes. Accuracy. Strength. The best way to see the advantages of a Fortus 3D Production System is to have your own part built on a Fortus system. Get your free part at: [www.fortus.com/benchmark](http://www.fortus.com/benchmark).

For more information about Fortus systems, materials and applications, call 650-369-5335 x-11 or visit [www.protopulsion.com](http://www.protopulsion.com)

ProtoPulsion Inc.  
635 Bair Island Rd. Suite 106  
Redwood City, CA 94063  
650.369.5335

650-649-1898 (Fax)  
[www.protopulsion.com](http://www.protopulsion.com)  
[info@protopulsion.com](mailto:info@protopulsion.com)