ULTEM™ 1010

HIGH-PERFORMANCE THERMOPLASTIC FOR DEMANDING FUNCTIONAL PARTS

ULTEM™ 1010 is a high-performance polyetherimide intended for functional components requiring elevated-temperature capability, dimensional stability, and flame performance. The published values below are representative printed-specimen data and should be verified for the intended geometry and service environment.

Design Advantages

- Published tensile strength of 56 MPa for functional components
- Published tensile modulus of 2,500 MPa and flexural modulus of 2,510 MPa
- Glass transition temperature of 217 C for elevated-temperature applications
- Base resin reported as UL 94 V-0 at 1.5 mm

Material Specifications

ITEM	PUBLISHED VALUE
Material family	Polyetherimide, ULTEM™ 1010
Published density	1.27 g/cm3
Glass transition temperature	217 C
Heat deflection temperature	208 C at 0.45 MPa
Flammability rating	UL 94 V-0 at 1.5 mm, base resin
Published tensile strength	56 MPa

Application Fit

- High-temperature fixtures, tooling, and functional prototypes
- Rigid structural brackets, housings, and load-bearing components
- Parts requiring a high-performance thermoplastic and documented flame rating
- Low-volume end-use components requiring application-specific qualification

Physical and Mechanical Properties

PROPERTY	TEST METHOD	PUBLISHED VALUE
Density	ISO 1183	1.27 g/cm3
Tensile strength	ISO 527	56 MPa
Tensile modulus	ISO 527	2,500 MPa
Tensile elongation	ISO 527	3%
Flexural strength	ISO 178	110 MPa
Flexural modulus	ISO 178	2,510 MPa

Thermal and Fire Properties

PROPERTY	TEST METHOD	PUBLISHED VALUE
Glass transition temperature	DSC	217 C
Heat deflection at 0.45 MPa	ISO 75	208 C
Flammability rating	UL 94	V-0 at 1.5 mm, base resin

Representative Printed-Specimen Conditions

PARAMETER	SOURCE CONDITION
Nozzle diameter	0.4 mm
Layer height	0.25 mm
Infill	100% with +/-45 degree raster
Extrusion temperature	380 to 400 C
Bed temperature	130 to 140 C
Specimen orientation	X/Y flat

These conditions describe the source specimens and are not a universal processing specification. Equipment capability, geometry, thermal management, and material condition can require a different validated process window.

Design and Validation Considerations

- Treat the published values as representative data rather than guaranteed minimum properties.
- The published mechanical values are associated with X/Y-flat specimens; properties in other orientations were not reported in the source sheet.
- Validate anisotropy, layer bonding, dimensional stability, porosity, and surface condition using the intended production process.
- Verify sustained-temperature behavior, creep, fatigue, impact, wear, and chemical compatibility under the actual service conditions.
- The UL 94 V-0 result applies to the base resin at 1.5 mm; do not assume a printed finished part has the same classification without appropriate testing.
- For regulated or safety-critical applications, establish material traceability, process controls, inspection criteria, and part-specific qualification requirements.

Data Not Reported in the Source Sheet

DESIGN INPUT	SOURCE STATUS
Directional Z properties	Not reported
Notched or unnotched impact strength	Not reported
Melting and crystallization temperatures	Not reported
Moisture absorption	Not reported
Chemical-resistance ratings	Not reported
Creep, fatigue, and wear data	Not reported

Published Data and Qualification

The values in this sheet are based on published printed-specimen data documented by the material source and are provided for design reference and material comparison. Lucent Additive has not independently generated every published value. Final-part performance can differ because of geometry, orientation, material condition, processing, and service environment. This document does not create a material warranty or replace qualification of the customer's finished component.

Start an Application Review

Send Lucent Additive your CAD model, quantity, load conditions, operating temperature, inspection needs, chemical exposure, and target schedule. Our team can review material fit, build orientation, production strategy, and validation needs before quoting.

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