



ULTEM® 1000 FILM

Product Data Sheet

DESCRIPTION

ULTEM® 1000 film is a high performance thermoplastic polyetherimide material. The combination of high temperature resistance, low moisture absorption and excellent dielectric properties makes ULTEM film a good choice for a broad range of E/E applications, including:

- high-voltage internal insulation
- speaker cones
- conductive ink substrate

ULTEM 1000 film is thermoformable and can be heat-sealed to a wide variety of metals and thermoplastics.

GAUGES

ULTEM 1000 film is currently available from 0.002" to 0.007".

TEXTURE

Smooth/Ultrafine Matte

TYPICAL PROPERTY VALUES*

Property	Test Method	Units	Value
PHYSICAL			
Specific Gravity	ASTMD1505	—	1.27
Area Factor	Calculation	ft ² /lb/mil	152.08
Water Absorption	ASTM D570	%	0.25
MECHANICAL			
Tensile Strength	ASTMD882	psi	
@ Yield			16,200
Ultimate			16,900
Tensile Modulus	ASTMD882	psi	360,700
Elongation	ASTMD882	%	50
Tear Strength			
Initiation	ASTMD1004	g/mil	953
Propagation	ASTMD1922	g/mil	20.7
THERMAL			
Thermal Expansion (z)	ASTMD696	ppm/°K	52
Shrinkage @ 200°C	ASTMD1204	%	0.135
Thermal Conductivity	ASTMC177	Watt/M-°C	0.22
Glass Transition	DSC	°C	217
Solder Float	IPC-TM-650	Pass/Fail	Pass
Heat Distortion Temperature	ASTMD1637-83	°C	210
ELECTRICAL			
Dielectric Strength @ 1 mil	ASTMD149	Volts/mil	6,500
Dielectric Constant	ASTMD150	—	3.15
@ 1kHz, 50% RH			
Dissipation Factor	ASTMD150	—	
@ 1kHz, 50% RH			0.00232
Volume Resistivity (dry)	ASTMD257	Ω-cm	5.3 x 10 ¹⁷
Volume Resistivity (wet)	IPC-TM-650, 2.5.17	meg Ω-cm	10 ⁶
Surface Resistivity (dry)	ASTMD257	Ω/	1.6 x 10 ¹⁶
Surface Resistivity (wet)	IPC-TM-650, 2.5.17	meg Ω	10 ⁶
Arc Resistance (1/8")	ASTMD-495	sec□	54

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ULTEM

CHEMICAL RESISTANCE

ULTEM 1000 film is resistant to a broad range of organic solvents and chemical detergents, including those found in printed circuit board processing operations as well as most common automotive and aircraft fluids. While resistant to a broad range of chemicals, ULTEM 1000 film is attacked by chlorinated solvents and ketones.

GE Plastics is proud to state that our facility has been registered by The British Standards Institute to the International Organization for Standardization, ISO 9002 Standards for Quality.

**FOR MORE INFORMATION
CALL: (800) 451-3147,
(413) 448-5400.**

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TYPICAL PROPERTY VALUES (continued)*

Property	Test Method	Units	Value
FLAMMABILITY Burn Testing @ 2 mil**	UL 94	—	VTM-0
FLEXURAL Flexural Modulus Flexural Strength Folding Endurance Low Temperature Flexibility	ASTM D790 ASTM D790 ASTM D2176 IPC TM-650,2.6.18	psi psi double folds Pass/Fail	480,000 22,000 2,035 Pass
COEFFICIENT OF FRICTION Static Kinetic	ASTM D1894 ASTM D1894	— —	0.72 0.65
BARRIER PROPERTIES Oxygen Water Vapor	ASTM D1434 ASTM E96	cc/mil/100in ² / day/atm g/mil/ 100in ² /day	41.9 9.67

*These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local GE Plastics Structured Products representative or the GE Plastics Structured Products Quality Services Department.

**This rating is not intended to reflect hazards by this or any other material under actual fire conditions.

CHEMICAL RESISTANCE (30 day immersion)

	Retained Tensile	Retained Elongation
Methylene Chloride	degrades	degrades
Acetone	84%	73%
Methanol	100%	100%
10% NaOH	100%	47%
Glacial Acetic Acid	88%	63%
Transformer Oil 10 C.A.	100%	82%
MEK	70%	25%
Concentrated HCl	81%	28%
Gasoline	100%	63%
Water – pH 4	100%	100%
Water – pH 7	100%	100%
Water – pH 10	100%	100%
Toluene	100%	22%
Skydrol Hydraulic Oil	100%	100%

UL LISTING SUMMARY

File #E61257(R)

Material	Color	Thickness		UL-94 Flame Rating*	Relative Thermal Index			Performance Level Categories (PLCs)				
		mils	mm		Elect.	Mechanical		H W I	H A I	H V T R	D 4 9 5	C T I
						With Elong. (or Impact ¹)	Without Elong. (Tensile)					
ULTEM 1000	nc	2	.025	VTM-0	50	50	50	—	—	—	—	—

*This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.



GE Structured Products

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