

## ULTEM\* 1000 Resin

SABIC Innovative Plastics - *Polyether Imide*

### Actions

)

---

#### General Information

##### Product Description

Transparent, standard flow Polyetherimide (Tg 217C). ECO Conforming, UL94 V0 and 5VA listing. US FDA and EU Food Contact compliant, NSF 51 listing, compliant in natural color. Effective June, 2007 this grade will no longer be supported with biocompatibility information and should not be used for medical applications which require biocompatibility. Alternative grade HU1000.

##### General

Material Status	Commercial: Active	
Availability	North America	
Features	ECO Compliant	Food Contact Acceptable
Agency Ratings	EU Eco	FDA Food Contact, Unspecified Rating
	EU Food Contact, Unspecified Rating	NSF 51
Appearance	Clear/Transparent	
Forms	Pellets	

Processing Method

Extrusion Blow Molding

Injection Molding

Coefficient of Thermal Expansion vs. Temperature (ASTM E831)

Compressive Stress vs. Strain (ASTM D695)

Elastic Modulus vs Temperature (ASTM D4065)

Flexural DMA (ASTM D4065)

Instrumented Impact (Energy) (ASTM D3763)

Instrumented Impact (Load) (ASTM D3763)

Multi-Point Data

Pressure-Volume-Temperature (PVT - Zoller Method)

Shear DMA (ASTM D4065)

Specific Heat vs. Temperature (ASTM D3417)

Tensile Creep (ASTM D2990)

Tensile Fatigue

Tensile Stress vs. Strain (ASTM D638)

Thermal Conductivity vs. Temperature (ASTM E1530)

Viscosity vs. Shear Rate (ASTM D3835)

ASTM and ISO Properties <sup>1</sup>

**Physical**

[Specific Gravity](#)

[Melt Mass-Flow Rate \(MFR\)](#) (337°C/6.6 kg)

[Molding Shrinkage](#) - Flow (0.126 in)

[Water Absorption](#) (24 hr)

[Water Absorption](#) (Equilibrium, 73°F)

**Mechanical**

[Tensile Modulus](#) <sup>2</sup>

[Tensile Strength](#) <sup>3</sup> (Yield)

[Tensile Elongation](#) <sup>3</sup> (Yield)

[Tensile Elongation](#) <sup>3</sup> (Break)

[Flexural Modulus](#) <sup>4</sup> (3.94 in Span)

[Flexural Strength](#) <sup>4</sup> (Yield, 3.94 in Span)

[Poisson's Ratio](#)

[Taber Abrasion Resistance](#) (1000 Cycles, 1000 g, CS-17 Wheel)

**Impact**

[Notched Izod Impact](#) (73°F)

[Unnotched Izod Impact](#) (73°F)

[Reverse Notch Izod Impact](#) (0.126 in)

[Gardner Impact](#) (73°F)

**Hardness**

Nominal Value Unit	Test Method
1.27	ASTM D792
9.0 g/10 min	ASTM D1238
0.0050 to 0.0070 in/in	ASTM D955
0.25 %	ASTM D570
1.3 %	ASTM D570
Nominal Value Unit	Test Method
520000 psi	ASTM D638
16000 psi	ASTM D638
7.0 %	ASTM D638
60 %	ASTM D638
510000 psi	ASTM D790
24000 psi	ASTM D790
0.36	ASTM D638
10.0 mg	ASTM D1044
Nominal Value Unit	Test Method
1.00 ft-lb/in	ASTM D256
25.0 ft-lb/in	ASTM D4812
25 ft-lb/in	ASTM D256
324 in-lb	ASTM D3029
Nominal Value Unit	Test Method

[Rockwell Hardness](#) (M-Scale)

109

ASTM D785

**Thermal**

Nominal Value Unit

Test Method

[Deflection Temperature Under Load](#) (66 psi, Unannealed, 0.252 in)

410 °F

ASTM D648

[Deflection Temperature Under Load](#) (264 psi, Unannealed, 0.252 in)

394 °F

ASTM D648

[Vicat Softening Temperature](#)

426 °F

ASTM D1525<sup>5</sup>

[CLTE](#) - Flow (-4 to 302°F)

0.000031 in/in/°F

ASTM E831

[CLTE](#) - Transverse (-4 to 302°F)

0.000030 in/in/°F

ASTM E831

[Thermal Conductivity](#)

1.5 Btu-in/hr/ft<sup>2</sup>/°F

ASTM C177

**Electrical**

Nominal Value Unit

Test Method

[Volume Resistivity](#)

1.0E+17 ohm-cm

ASTM D257

[Dielectric Strength](#)

ASTM D149

0.0630 in, in Air

831 V/mil

0.0630 in, in Oil

710 V/mil

0.126 in, in Oil

500 V/mil

[Dielectric Constant](#)

ASTM D150

100 Hz

3.150

1000 Hz

3.150

[Dissipation Factor](#)

ASTM D150

100 Hz

0.0015

1000 Hz

0.0012

2E+9 Hz

0.0025

[Arc Resistance \(PLC\)](#)<sup>6</sup>

PLC 5

ASTM D495

**Flammability**

Nominal Value Unit

Test Method

[Oxygen Index](#)

47 %

ASTM D2863

**UL 746**[RTI Str](#)[RTI Imp](#)[RTI Elec](#)[Comparative Tracking Index \(CTI\) \(PLC\)](#)[High Voltage Arc Tracking Rate \(HVTR\) \(PLC\)](#)[Hot-wire Ignition \(HWI\) \(PLC\)](#)[High Amp Arc Ignition \(HAI\) \(PLC\)](#)**Additional Information**

CSA File No. (See file for complete listing)

NBS Smoke Density (Flaming, Ds, 4 min)

Processing Information

**Injection**

Drying Temperature

Drying Time

Drying Time, Maximum

Suggested Max Moisture

Suggested Shot Size

Rear Temperature

Middle Temperature

Front Temperature

Nozzle Temperature

Processing (Melt) Temp

Mold Temperature

Nominal Value Unit

338 °F

338 °F

338 °F

PLC 4

PLC 2

PLC 1

PLC 3

Nominal Value Unit

LS88480

0.700

Test Method

UL 746

UL 746

UL 746

UL 746

UL 746

UL 746

UL 746

Test Method

CSA

ASTM E662

Nominal Value Unit

300 °F

4.0 to 6.0 hr

24 hr

0.020 %

40 to 60 %

630 to 750 °F

640 to 750 °F

650 to 750 °F

650 to 750 °F

660 to 750 °F

275 to 325 °F

Back Pressure	50.0 to 100.0 psi
Screw Speed	40 to 70 rpm
Vent Depth	0.0010 to 0.0030 in
<b>Extrusion</b>	Nominal Value Unit
Drying Temperature	280 to 300 °F
Drying Time	4.0 to 6.0 hr
Suggested Max Moisture	0.0100 to 0.020 %
Cylinder Zone 1 Temp.	615 to 660 °F
Cylinder Zone 2 Temp.	625 to 675 °F
Cylinder Zone 3 Temp.	625 to 675 °F
Cylinder Zone 4 Temp.	625 to 675 °F
Adapter Temperature	625 to 675 °F
Die Temperature	620 to 675 °F

**Extrusion Notes**

Extrusion Blow Molding Parameters:

- Drying Time (Cumulative): 24 hrs
- Head - Zone 6 - Top Temperature: 329 to 357°C
- Head - Zone 7 - Bottom Temperature: 329 to 357°C
- Melt Temperature (Parison): 321 to 357°C
- Mold Temperature: 66 to 177°C
- Screw Speed: 10 to 70 rpm

Notes

<sup>1</sup>Typical properties: these are not to be construed as specifications.

<sup>2</sup>0.20 in/min

<sup>3</sup>Type I, 0.20 in/min

<sup>4</sup>0.10 in/min

<sup>5</sup>Rate B (120°C/h), Loading 2 (50 N)

<sup>6</sup>Tungsten Electrode

---

**Disclaimer :** THE MATERIALS, PRODUCTS AND SERVICES OF SABIC INNOVATIVE PLASTICS HOLDING BV, ITS SUBSIDIARIES AND AFFILIATES ("SELLER"), ARE SOLD SUBJECT TO SELLER'S STANDARD CONDITIONS OF SALE, WHICH CAN BE FOUND AT <http://www.sabic-ip.com>. AND ARE AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION OR RECOMMENDATION CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SELLER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING SELLER'S PRODUCTS, SERVICES OR RECOMMENDATIONS. EXCEPT AS PROVIDED IN SELLER'S STANDARD CONDITIONS OF SALE, SELLER SHALL NOT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS PRODUCTS OR SERVICES DESCRIBED HEREIN. Each user is responsible for making its own determination as to the suitability of Seller's products, services or recommendations for the user's particular use through appropriate end-use testing and analysis. Nothing in any document or oral statement shall be deemed to alter or waive any provision of Seller's Standard Conditions of Sale or this Disclaimer, unless it is specifically agreed to in a writing signed by Seller. No statement by Seller concerning a possible use of any product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Seller or as a recommendation for the use of such product, service or design in a manner that infringes any patent or other intellectual property right.

SABIC Innovative Plastics is a trademark of SABIC Holding Europe BV

\* ULTEM is a trademark of SABIC Innovative Plastics IP BV

© 1997-2008 SABIC Innovative Plastics Holding BV.All rights reserved