



## ULTEM™ Resin 2312

### Americas: COMMERCIAL

30% Milled glass filled, enhanced flow Polyetherimide (Tg 217°C). ECO Conforming, UL94 V0 and 5VA listing.

TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, brk, Type I, 5 mm/min	1050	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	3.5	%	ASTM D 638
Tensile Modulus, 5 mm/min	61100	kgf/cm <sup>2</sup>	ASTM D 638
Flexural Stress, brk, 2.6 mm/min, 100 mm span	1820	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	66700	kgf/cm <sup>2</sup>	ASTM D 790
<b>IMPACT</b>			
Izod Impact, notched, 23°C	3	cm-kgf/cm	ASTM D 256
Izod Impact, Reverse Notched, 3.2 mm	31	cm-kgf/cm	ASTM D 256
<b>THERMAL</b>			
HDT, 1.82 MPa, 6.4 mm, unannealed	207	°C	ASTM D 648
CTE, -20°C to 150°C, flow	2.34E-05	1/°C	ASTM E 831
CTE, -20°C to 150°C, xflow	2.7E-05	1/°C	ASTM E 831
Relative Temp Index, Elec	170	°C	UL 746B
Relative Temp Index, Mech w/impact	170	°C	UL 746B
Relative Temp Index, Mech w/o impact	170	°C	UL 746B
<b>PHYSICAL</b>			
Specific Gravity	1.51	-	ASTM D 792
Water Absorption, 24 hours	0.18	%	ASTM D 570
Water Absorption, equilibrium, 23C	0.98	%	ASTM D 570
Mold Shrinkage, flow, 3.2 mm (5)	0.3 - 0.4	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm (5)	0.45 - 0.55	%	SABIC Method
Melt Flow Rate, 337°C/6.6 kgf	10.1	g/10 min	ASTM D 1238
<b>ELECTRICAL</b>			
Relative Permittivity, 1 kHz	3.7	-	ASTM D 150
Relative Permittivity, 1 MHz	3.49	-	ASTM D 150

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(2) Only typical data for selection purposes. Not to be used for part or tool design.  
(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>ELECTRICAL</b>			
Arc Resistance, Tungsten {PLC}	7	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	1	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	0	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	3	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	4	PLC Code	UL 746A
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94V-0 Flame Class Rating (3)	0.81	mm	UL 94

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
<b>Injection Molding</b>		
Drying Temperature	150	°C
Drying Time	4 - 6	hrs
Drying Time (Cumulative)	24	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	350 - 400	°C
Nozzle Temperature	345 - 400	°C
Front - Zone 3 Temperature	345 - 400	°C
Middle - Zone 2 Temperature	340 - 400	°C
Rear - Zone 1 Temperature	330 - 400	°C
Mold Temperature	135 - 165	°C
Back Pressure	0.3 - 0.7	MPa
Screw Speed	40 - 70	rpm
Shot to Cylinder Size	40 - 60	%
Vent Depth	0.025 - 0.076	mm

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