

# EXTEM™ RESIN RH1016UCL

## DESCRIPTION

EXTEM RH1016UCL resin is an unreinforced amorphous thermoplastic polyimide (TPI) resin that may offer a high glass transition temperature (Tg) of 279°C. Features are excellent mechanical, electrical and dimensional properties up to high temperatures. The material has good near-IR transparency and a high refractive index making it an excellent candidate for SMT at JEDEC standard temperature of 260°C needing injection moldable optical lenses and connectors. The material is RoHS compliant and the natural, uncolored, material is halogen free according to standards IEC 61249-2-21, IPC 4101E and JEDEC JS709B. For colored variants compliance needs to be checked case by case.

GENERAL INFORMATION	
Features	Flame Retardant, Chemical Resistance, Good Processability, High Flow, Low Warpage, Low Smoke and Toxicity, Thin Wall, Dielectrics, Amorphous, Low Shrinkage, IR Transparent, Lead free reflow soldering capable, Low Moisture Absorption, Transparent/Translucent, Non Cl/Br flame retardant, Non halogenated flame retardant, Low ionics/Outgassing/Liquid particle count, Creep resistant, Dimensional stability, High stiffness/Strength, High temperature resistance, No PFAS intentionally added
Fillers	Unreinforced
Polymer Types	Thermoplastic Polyimide (TPI)
Processing Techniques	SMT, Micro molding, Lead free soldering, Injection Molding
Regional Availability	Europe, Asia, Americas

INDUSTRY	SUB INDUSTRY
Electrical and Electronics	Mobile Phone - Computer - Tablets
Industrial	Electrical, Material Handling

## TYPICAL PROPERTY VALUES

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>MECHANICAL <sup>(1)</sup></b>			
Flexural Stress, yld, 1.3 mm/min, 50 mm span	165	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3000	MPa	ASTM D790
Tensile Stress, break, 5 mm/min	75	MPa	ISO 527
Tensile Strain, break, 5 mm/min	4	%	ISO 527
Tensile Modulus, 1 mm/min	2870	MPa	ISO 527
<b>IMPACT <sup>(1)</sup></b>			
Izod Impact, unnotched, 23°C	900	J/m	ASTM D4812
Izod Impact, notched, 23°C	50	J/m	ASTM D256
Izod Impact, unnotched 80*10*4 +23°C	33	kJ/m <sup>2</sup>	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	2.5	kJ/m <sup>2</sup>	ISO 180/1A
<b>THERMAL <sup>(1)</sup></b>			
Vicat Softening Temp, Rate B/50	272	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	263	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	252	°C	ASTM D648
CTE, -20°C to 150°C, flow	4.9E-05	1/°C	ASTM E831
CTE, -20°C to 150°C, xflow	5.3E-05	1/°C	ASTM E831
<b>PHYSICAL <sup>(1)</sup></b>			
Specific Gravity	1.35	-	ASTM D792

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Water Absorption, (23°C/24hrs)	0.55	%	ASTM D570
Mold Shrinkage, flow, 3.2 mm <sup>(2)</sup>	1 – 1.2	%	SABIC method
Melt Flow Rate, 367°C/6.6 kgf	10	g/10 min	ASTM D1238
<b>OPTICAL <sup>(1)</sup></b>			
<b>Light Transmission</b>			
at 1.0 mm and 850 nm	82	%	ASTM D1003
<b>Refractive Index</b>			
at 850 nm	1.663	-	ISO 489
at 1350 nm	1.649	-	ISO 489
Abbe number	17.6	-	ISO 489
<b>INJECTION MOLDING <sup>(3)</sup></b>			
Drying Temperature	175	°C	
Drying Time	6 – 8	Hrs	
Drying Time (Cumulative)	24	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	385 – 415	°C	
Nozzle Temperature	385 – 410	°C	
Front - Zone 3 Temperature	390 – 410	°C	
Middle - Zone 2 Temperature	390 – 405	°C	
Rear - Zone 1 Temperature	380 – 400	°C	
Mold Temperature	175 – 220	°C	
Intake (throat) temperature	70 – 100	°C	
Back pressure (Plastic Pressure)	5 – 10	MPa	
Screw speed (Circumferential speed)	<0.2	m/s	
Shot to Cylinder Size	40 – 70	%	
Vent Depth	0.025 – 0.076	mm	

- (1) The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.
- (2) 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.
- (3) Injection Molding parameters are only mentioned as general guidelines. These may not apply or may need adjustment in specific situations such as low shot sizes, large part molding, thin wall molding and gas-assist molding.

## ADDITIONAL PRODUCT NOTES

No PFAS intentionally added: The grade listed in this document does not contain PFAS intentionally added during Seller's manufacturing process and is not expected to contain unintentional PFAS impurities. Each user is responsible for evaluating the presence of unintentional PFAS impurities.

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