EXTEM™ Resin XH1015UCL

DESCRIPTION

EXTEM XH1015UCL resin is an unreinforced thermoplastic amorphous Polyimide (PI) resin that may offer a high glass transition temperature (Tg) of 267°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 injection moldable optical lenses and connectors. EXTEM resin XH1015UCL can withstand SMT soldering temperatures up to 245˚C. For a near-IR transparent solution with SMT at JEDEC standard temperature of 260°C please consult our EXTEM™ resin RH1017UCL. The XH1015UCL 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. ISCC+ certified renewable bio-based solutions are available for this grade via differentiated color nomenclature.

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	Polyimide (PI)
Processing Techniques	SMT, Micro molding, Lead free soldering, Film Extrusion, Injection Molding, Extrusion compression molding
Regional Availability	Europe, Asia, Americas

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

TYPICAL PROPERTY VALUES

Revision 20261028

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 5 mm/min	103	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min	96	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	10	%	ASTM D638
Tensile Modulus, 5 mm/min	3420	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	168	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3130	MPa	ASTM D790
Tensile Stress, yield, 5 mm/min	101	MPa	ISO 527
Tensile Stress, break, 5 mm/min	74	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	6	%	ISO 527
Tensile Strain, break, 5 mm/min	7	%	ISO 527
Tensile Modulus, 1 mm/min	3100	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	120	MPa	ISO 178
Flexural Modulus, 2 mm/min	2870	MPa	ISO 178
IMPACT [1]			
Izod Impact, notched, 23°C	43	J/m	ASTM D256

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Izod Impact, notched 80*10*4 +23°C	4	kJ/m²	ISO 180/1A
THERMAL [1]			
Vicat Softening Temp, Rate B/50	260	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	250	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	235	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	237	°C	ASTM D648
CTE, 23°C to 150°C, flow	5.E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	5.1E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	250	°C	ISO 306
Vicat Softening Temp, Rate B/120	247	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	223	°C	ISO 75/Af
PHYSICAL [1]			
Specific Gravity	1.31	-	ASTM D792
Water Absorption, (23°C/48hrs)	0.6	%	ASTM D570
Mold Shrinkage, flow, 3.2 mm [2]	1 – 1.2	%	SABIC method
Melt Flow Rate, 367°C/6.6 kgf	10	g/10 min	ASTM D1238
Density	1.31	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	2.3	%	ISO 62-1
OPTICAL [1]			
Light Transmission			
at 1.0 mm and 850 nm	82	%	ASTM D1003
at 1.0 mm and 1350 nm	87	%	ASTM D1003
Refractive Index			
at 850 nm	1.633	-	ISO 489
at 1350 nm	1.622	-	ISO 489
Abbe number	18	-	ISO 489
ELECTRICAL [1]			
Comparative Tracking Index	125	V	IEC 60112
Dielectric Strength, in air, 1.6 mm	25	kV/mm	ASTM D149
Dielectric Constant			
@ 1 KHz	3.5	-	ASTM D150
@ 1MHz	3.4	-	ASTM D150
FLAME CHARACTERISTICS [3]			
UL Yellow Card Link	E121562-10231109	-	-
UL Recognized, 94V-0 Flame Class Rating	≥0.75	mm	UL 94
INJECTION MOLDING [4]			
Drying Temperature	175	°C	
Drying Time	4 – 6	Hrs	
Drying Time (Cumulative)	24	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	380 – 410	°C	
Nozzle Temperature	375 – 405	°C	
Front - Zone 3 Temperature	380 – 410	°C	
Middle - Zone 2 Temperature	370 – 400	°C	
Rear - Zone 1 Temperature	360 – 385	°C	

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Mold Temperature	160 – 200	°C	
Intake (throat) temperature	70 – 100	°C	
Back pressure (Plastic Pressure)	40 – 70	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) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.
(4) 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 unintentionally PFAS impurities. Each user is responsible for evaluating the presence of unintentional PFAS impurities.

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