EPLON+ HT03 GFR 50 NC Q1F001

Polyphthalamide

Technical Data Sheet

Material Information: Partially Aromatic copolyamide with a combination of high quality post industrial recycled polyamide reinforced with 50% Glass fiber, heat stabilized and lubricated for injection molding process.

Notes: EPLON+ HT03 grades offer the following unique properties with environmental friendly understanding in general conditions, and even after moisture absorption: Good Surface Finish, Good Dimensional Stability, Good High Temperature Properties, Good Chemical Resistance to Glycols and Oils and Excellent Creep Resistance. EPLON+ HT03 grades are used for molding technical parts where high operating temperatures and high stiffness in moist environments are required.
This material is available in natural and colours on request.

Properties	Test Method	Unit	Value	
Physical properties			**Dry**	**Cond**
Density (23°C)	ISO 1183	g/cm^3	1,57	
Humidity absorption (equilibrium)	ISO 62	%	1,4	
Water absorption(saturation)	ISO 62	%	4	
Mold shrinkage- parallel/normal (2mm)	ISO 294-4	%	0,1/0,4	
Mechanical properties				
Tensile modulus (1mm/min) (23°C)	ISO 527-2	MPa	16500	15300
Tensile stress at break (5mm/min) (23°C)	ISO 527-2	MPa	235	220
Tensile strain at break (5mm/min) (23°C)	ISO 527-2	%	2,5	2,5
Notched charpy impact (23°C)	ISO 179/1eA	kJ/m²	11	11
Unnotched charpy impact (23°C)	ISO 179/1eU	kJ/m²	75	75
Notched charpy impact (-30°C)	ISO 179/1eA	kJ/m²	10	10
Ball indentation hardness	ISO 2039-1	MPa	280	260
Thermal properties				
Melting point (10°K/min)	ISO 11357/1-/3	°C	260	
Temp. of deflection under load (1,80 MPa)	ISO 75-2/A	°C	225	
Temp. of deflection under load (8,00 MPa)	ISO 75-2/C	°C	160	
Maximum working temp. long term	ISO 2578	°C	105	
Maximum working temp. short term	ISO 2578	°C	210	
Flammability & electrical properties				
Flammability classification (0,8mm) - UL 94	EN 60695-11-10	-	HB	
Comparative tracking index - CTI (Solution A)	EN 60112	V	600	
Dielectric strength	IEC 60243-1	kV/mm	33	33

Test conditions

Laboratory conditions are 23 ±2°C and 45-55 % RH.

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EPLON+ HT GRADES PROCESSING CONDITIONS

Handling EPLON+ HT Polymer

For optimum properties the polymer must be kept below 0.1 % moisture level. Flow in thin sections will be reduced at high moisture levels. Dried resin, resin from opened bags, or regrind that is not going to be used immediately should be stored in a way that prevents moisture pickup.

Drying

For best properties EPLON+ HT polymer must be dried to less than 0.1% moisture. This low level of moisture must be maintained throughout the molding run by the use of dehumidified dryers.

Typical times to dry the EPLON+ HT polymer approximately 7 to 9 hours at 80°C to 100°C in a desiccant dryer with more than one desiccant element.It is normally recommended to dry the resin in a dehumidified hopper dryer that has air flow rates of 3.0 to 3.7 m^3 /hr per kg/hr of resin being processed. The air velocity should be

Regrind

For optimum physical properties, the amount of regrind must be kept below 25%. The use of up to 25% regrind reduces the elongation, tensile strength, and Izod impact properties of the EPLON+ HT polymer.

* Either feed the regrind straight back into the machine, or pre-dry the regrind before usage.

* Store regrind in a dry, clean place to avoid contamination and excess moisture.

* Ensure sharp cutting blades to keep dust generation to a minimum; cut glass fibre reinforced material when it is still hot.

* Clean the grinder regularly to avoid build up of dust.

* Do not use splayed, discoloured or degraded parts and runners.

Machine and Operating Conditions

The preferred shot size should be from 25% to 70% of the maximum stroke. Typical cylinder temperatures are as below.

Material	HT00	HT01	HT02	HT03
Pref. Melt Temp.	300-330°C	300-325°C	300-320°C	265-300°C
Rear	310-325°C	305-325°C	305-320°C	280-290°C
Center	305-325°C	315-325°C	310-320°C	280-290°C
Front	320-325°C	320-330°C	320-325°C	285-290°C
Nozzle	320-330°C	320-330°C	320-330°C	285-300°C

If the shot size is small compared to the machine rated shot size and/or if long cycles are used, then the rear zone temperatures should be reduced. The recommended melt temperatures are also given above. To limit the thermal degradation of the EPLON+ HT polymer, the residence time of the polymer in the cylinder should be less than 8 min. The preferred residence time is 4 to 6 min.

Nozzle Temperature

The nozzle temperature should be adjusted so that the resin does not drool or prematurely freeze off. Above table also gives more details on temperature profiles.

Mould Temperature

Below table lists the preferred mold surface temperatures for maximum polymer crystallinity as a function of part thickness. To mold the HT00 series resins, oil heaters with high temperature rated hoses or electric mold heating will be needed.

Polymers in the HT01, HT02 and HT03 series can be molded in waterheated molds. At the temperatures listed below, the mold shrinkage will be maximized and the post-mold shrinkage or annealing shrinkage will be minimized.

Tool Surface Temperatures	
HT00 series	≥ 140°C
HT01 and HT02 series	90 - 140°C
HT03 series	60 - 110°C

Screw Speed and Back Pressure

To minimize glass fiber breakage in the reinforced EPLON+ HT polymer, the screw speed should be selected so that the screw retraction time is at least 90% of the mold closed time. Maximum tangential screw speeds should be 9.0 m/min 8. The minimum amount of hydraulic back pressure should be used consistent with uniform screw recovery times, typically no higher than 3 bar.

Packaging

* EPLON+ HT grades are delivered in dry and ready to process 25Kg Aluminum bags.

* Pre-drying is not necessary in EPLON+ HT grades.

* Upon request, materials can be packed into 1.000 kg to 1.250 kg octabins and big bags with PE in-liner bags.

* For other packing options, please contact your sales representatives.