PC/PETG30L XN1050 Nat

PC/PET XN1050 Nat is a 30% glass reinforced polycarbonate/PET-based injection molding resin. This product has been formulated to provide high tensile strength and stiffness retained over a broad temperature range. This product has good impact resistance in combination with excellent dimensional stability even in high moisture environments, and chemical resistance. This blend provides very useful characteristics of rigidity and resilience. Superior flow and processability are added advantages, allowing it to be utilized for a wide range of applications such as automotive components, lawn mowers, furniture castors, conveyer components, etc.

PRELIMINARY PROPERTIES*
DRY AS MOLDED

PROPERTY	ASTM TEST METHOD	ENGLISH UNITS	ENGLISH VALUE	S.I. UNITS	S.I. VALUE
Specific Gravity	D792	-	1.465	-	1.465
Water Absorption					
Tensile Strength at Yield	D638	lbs/in^2	18,000	MPa	124
Elongation at Break	D638	%	2	%	2
Flexural Strength	D790	lbs/in^2	25,000	MPa	173
Flexural Modulus	D790	lbs/in^2	1,200,000	MPa	8,275
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	1.7	J/m	91
Heat Deflection Temperature at 264 (p.s.i.) (1.8 MPa)	D648	ºF	290	ºC	144

All data generated using test specimens injection molded from black pigmented material. Inclusion of other additives may change some or all of these test results. Test specimens are stored in a moisture proof container immediately after molding and contain less than 0.2% moisture; tests are conducted at 23ºC and 50% relative humidity unless otherwise stated.

These mechanical property test data have been developed using injection molded specimens tested under standardized conditions; furthermore, many of the mechanical properties of thermoplastic materials can be influenced by changes in processing conditions, environmental factors such as temperature and humidity, and rate of application of stress. Therefore, these test results, which characterize typical production material, should not be used either to establish specification limits or alone as the basis for engineering design.

* These properties are based on a limited number of developmental/scale-up lots and are therefore listed as preliminary data, and may be adjusted with additional production experience.

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Processing Guidelines

Drying

Although Polycarbonate/Polyester alloy compounds from MDE are shipped in moisture resistant packaging, drying before processing is critical to ensure full realization of part performance, especially toughness. These alloys absorb only low levels of moisture from the surrounding environment, but hydrolysis of the polymer when melted in the molding machine is rapid, causing breakdown of the polymer structure and loss of mechanical properties. Further, unlike other moisture sensitive engineering thermoplastics, such as nylon, there may be no visible evidence (such as splay marking) of unacceptably high moisture levels.

The use of dehumidifying hopper dryers is therefore essential to ensure that both virgin material and regrind are properly dried. The dew point of the drying air stream should be no more than –20ºF, and preferably lower. The drying air temperature required will depend on several factors, including the run length of hose from dryer to hopper and the residence time of material in the hopper. The dryer temperature should be adjusted to allow for heat losses through the hose, which can be as much as 10^{o}F per foot run, ensuring the recommended actual pellet temperature is achieved.

Residence time/pellet temperature combinations are as follows:

Residence Time	Actual Pellet Temperature
2-3 hours	250-260ºF(Max)
4-6 hours	235-245ºF
8 hours-overnight	225ºF

If equipment is available to analyze moisture content, the maximum recommended level is 0.02%. These alloys may be able to be processed at higher moisture levels, but some loss of mechanical properties and part performance will occur.

Temperature Guidelines

The following temperature guidelines are suggested for general use if a machine can be selected where shot size is 40-70% of nominal machine capacity.

Tool Surface Temperature (ºF)	Melt Temperatures (ºF) Max.	Preferred	Min.	Typical Cylinder Temperatures (ºF) Front	Center	Rear
180-240	590	520-560	500	550	540	500

- A mold surface temperature in the suggested range improves surface appearance, helps consistency of mold fill and therefore consistency of dimensions, minimizes the effect of weld lines and also helps realize best molded part performance.
- A fast injection speed maximizes weld line strength, minimizes molded in stress, and also assures achievement of best surface gloss. Good venting of cavities is essential to allow fast fill without burning.

Screw Forward Time

Adequate screw forward time under follow-up pressure is important to ensure proper packing before gate freeze, during which time it is essential to maintain a "cushion" of 1/8" - 1/4". Optimum screw forward time can be judged by a part weight vs. forward time plot. Avoid overpacking, which can generate molded in stresses.

Screw Recovery

It is recommended that low back pressures of 50 p.s.i. gauge be used to help development of an homogeneous melt, and ensure a consistent shot volume. Screw rotation should also be as slow as possible consistent with cycle time goals, usually 40-80 r.p.m.

Mold Shrinkage

Standard ASTM test specimens are used to develop shrinkage guidelines. Test specimens are end-gated, 1/8 inch thickness, and molded at conditions recommended for this formulation. **Actual shrinkage in molded parts will depend on several variables, including processing conditions, part configuration and gate location, both of which influence material flow direction, and wall section thickness.**