Polycarbonate/Polyester Alloy
Glass Fiber Reinforced, Black

This product information data sheet describes a pellet blended utility grade PC/PBT alloy, reinforced at a nominal 30% with glass fiber and containing black color concentrate. This formulation will exhibit a viscosity suitable for general-purpose molding applications and contains an internal lubricant for ease of mold release.

TYPICAL PROPERTIES

PROPERTY	ASTM TEST METHOD	ENGLISH UNITS	ENGLISH VALUE	S.I. UNITS	S.I. VALUE
Specific Gravity	D792	-	1.48	-	1.48
Mold Shrinkage Guideline* (Flow Direction)	1/8" section	%	0.3	%	0.3
Tensile Strength at Break	D638	lbs/in^2	14-16,000	MPa	96 - 110
Elongation at Break	D638	%	2-3	%	2-3
Flexural Modulus	D790	lbs/in^2	800-900,000	MPa	5517 - 6207
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	1.4 – 2.0	J/m	79 - 106
Ash		30%			

*** Please review shrinkage projections for specific applications with an MDE Technical Representative.**

* All data generated using test specimens injection molded from natural color material. Inclusion of color pigments or other additives may change some or all of these test results. Tests are conducted at 23°C 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.

Polycarbonate/Polyester Alloy Processing Guidelines

Drying

Although polycarbonate/thermoplastic polyester alloys from MDE are shipped in moisture resistant packaging, in order to realize best mechanical performance and surface appearance it is critical that they should be further dried before processing. The use of dehumidifying dryers is strongly recommended. The dew point of the drying air stream should be no more than -20ºF, and preferably lower. The drying air temperature must be high enough to achieve a pellet temperature of at least 250ºF. If using a hopper dryer, depending on air hose length, and insulation of hoses and hopper, the drying air temperature may need to reach 260-280ºF to achieve the required material temperature. Insulation of hoses and especially the hopper is strongly recommended. If the material temperature reaches 250ºF, a residence time of 4 hours at this temperature is generally adequate to ensure that the material is ready to be processed. If residence times are shorter, material temperatures should be increased to 260^0F, which will normally ensure adequate drying within two hours.

Note that while high moisture levels will usually result in visual evidence in molded parts such as splay or silver streaking, it is possible to satisfactorily process material and make parts of acceptable appearance, even though its moisture content is high enough to seriously diminish mechanical performance..

If moisture analysis equipment is available, the acceptable maximum moisture content for polycarbonate/thermoplastic polyester alloys, immediately prior to processing, is 0.02%.

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	Melt Temperatures (ºF)			Typical Cylinder Temperatures (ºF)		
Temperature (ºF)	Max.	Preferred	Min.	Front	Center	Rear
170 - 190	550	500-550	500	540	520	510

- Melt temperatures over 550^0F have been used successfully to help flow in very thin sections, provided cylinder residence times are short.
- 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 helps realize best molded part performance.
- A medium to fast injection speed maximizes weld line strength and minimizes molded-in stress. Good venting of cavities is essential to allow fast fill without burning.

Screw Forward Time

Adequate screw forward time under follow-up pressure is especially 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 back pressure be applied to the screw to help development of a homogenous melt, and to ensure consistent shot volume. For this reinforced grade, limiting back pressure to about 50 - 100 psi gauge will minimize the risk of mechanical damage to the glass fibers with consequent loss of part performance. 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.**