Nylon N66G30HRL.BK

N66G30HRL BK is a 30% glass fiber reinforced pre-colored black nylon 66 compound, formulated specifically for applications, which require resistance to contact with automotive coolant, water/ethylene glycol or water/propylene glycol, at elevated temperatures. **N66G30HRL BK** has shown improved retention of properties exposure to conventional as well as long-life coolants. **N66G30HRL.BK** exhibits excellent strength and rigidity especially at high temperatures, while maintaining good toughness.

N66G30HRL.BK is internally lubricated for improved mold release, and offers the high flow typical of nylon 6.6, which combined with rapid crystallization and high temperature rigidity results in excellent processability and fast cycle times.

TYPICAL PROPERTIES
DRY AS MOLDED

PROPERTY	ASTM TEST METHOD	ENGLISH UNITS	ENGLISH VALUE	S.I. UNITS	S.I. VALUE
Melting Point	D789	°F	482-509	°C	250-265
Specific Gravity	D792	-	1.38	-	1.38
Water Absorption (24 hrs. immersion)	D570	%	0.7	%	0.7
Heat Deflection Temp. at 264 lbs/in^2(1.82MPa)	D648	°F	482	°C	250
Mold Shrinkage* (Flow Direction)	1/8" section	%	0.2-0.4	%	0.2-0.4
Tensile Strength at Break	D638	lbs/in^2	24,000	MPa	166
Elongation at Break	D638	%	2-4	%	2-4
Flexural Strength	D790	lbs/in^2	37,000	J/m	255
Flexural Modulus	D790	lbs/in^2	1,300,000	MPa	8,965
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	1.6	J/m	85

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

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.

N66G30HRL.BK
Processing Guidelines

Drying

Nylon compounds from MDE are shipped in moisture resistant packaging, dried to less than 0.25% moisture. Most processors will further dry nylon resins and compounds, especially after exposure of virgin resin to ambient air for more than an hour, or when a proportion of reground material is being used.

The use of dehumidifying dryers is strongly preferred. The dew point of the drying air stream should be no more than -20°F, and preferably lower. The drying air temperature must be high enough to achieve a pellet temperature of 175-180°F. If using a hopper drier, depending on air hose length and insulation of hoses and hopper, the drying air temperature may need to reach 200-220°F to achieve the required material temperature.

If the pellet temperature reaches 180°F, a residence time of 4 hours is generally adequate to ensure that the material is ready to be processed. Only if residence times are limited to 2 hours should a pellet temperature of 200°F be considered; at 200°F, there is a risk of material oxidation, with associated yellowing of natural color and loss of part performance.

Nylon compounds usually demonstrate visual evidence of unacceptably high moisture levels. This includes splay or silver streaking on the molded part surface, or an unstable melt or nozzle drool at the machine. Additional drying time is indicated if these characteristics are observed.

If moisture analysis equipment is available, an acceptable moisture content range for normal processing is 0.1% to 0.25% maximum. Mold-in-color parts with critical cosmetic requirements may require drying to < 0.1%.

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)			Typical Cylinder Temperatures (ºF)		
	Max.	Preferred	Min.	Front	Center	Rear
160-200	590	550-575	540	540	550	565

- A "reverse" temperature profile helps ensure a homogeneous melt, improves screw recovery and by accelerating the transition from solid pellets to a melt significantly reduces abrasive wear on screw and barrel surfaces.
- 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 and minimizes molded-in stress, and also contributes to 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 back pressure of 50 p.s.i gauge be used to help development of a homogeneous melt, and to ensure consistent shot volume, while minimizing 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.**