Nylon N66G30F15M2HSL BK

N66G30F15M2HS is a nylon 6.6 compound reinforced with 30% glass fiber, containing both 15% PTFE and 2% molybdenum disulfide (MoS_2), each in a finely dispersed powder form.

The glass fiber reinforcement provides excellent strength and rigidity, combined with good practical toughness. The combined addition of PTFE and MoS_2 enhances bearing performance, including abrasion resistance, improves PV capabilities throughout a wide range of pressure/velocity combinations, and by bringing closer the values of static and dynamic coefficients of friction, reduces "stick/slip" characteristics.

This formulation is heat stabilized, and is suitable for use in applications where resistance to long term exposure at higher temperatures is required.

Due to the high temperature rigidity and exceptional lubricity of this material, fast cycle times can be expected.

PRELIMINARY PROPERTIES

DRY AS MOLDED

	ASTM	ENGLISH		S.I.	
PROPERTY	**TEST METHOD**	**UNITS**	**VALUE**	**UNITS**	**VALUE**
Melting Range	D789	ºF	482-509	ºC	250-265
Specific Gravity	D792	-	1.49	-	1.49
Water Absorption (24 hours immersion)	D570	%	0.4	%	0.4
Heat Deflection Temperature at 264 lbs/in^2 (1.82 MPa)	D648	ºF	480	ºC	249
Mold Shrinkage Guideline* (Flow Direction)	1/8" section	%	0.2-0.4	%	0.2-0.4
Tensile Strength at Break	D638	lbs/in^2	20,000	MPa	138
Elongation at Break	D638	%	3	%	3
Flexural Strength	D790	lbs/in^2	32,000	MPa	221
Flexural Modulus	D790	lbs/in^2	1,250,000	MPa	8,621
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	1.8	J/m	96

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

All data generated using test specimens injection molded from natural color material, which is a dark gray. Inclusion of color pigments or 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.

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Processing Guidelines

Drying

Nylon compounds from MDE are shipped in moisture-resistant packaging, dried and ready to be processed. If drying is required after, for example, exposure of virgin resin to humid air for more than one hour, or for reground material, the use of dehumidifying dryers is strongly preferred.

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 175-180ºF. If using a hopper dryer, depending on air hose length and insulation of hoses and hopper, the drying air temperature may need to reach 200-220ºF to achieve the required material temperature.

If the pellet temperature reaches 180ºF, 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 200ºF be considered; at 200ºF, there is a risk of material oxidation, with associated yellowing and loss of part performance.
Nylon compounds usually demonstrate visual evidence of unacceptably high moisture levels, such as uncontrollable nozzle drool, or splay or silver streaks on the molded part. Additional drying time is indicated if these characteristics are observed.

If moisture analysis equipment is available, an acceptable moisture content range for processing is 0.1% to 0.25% maximum.

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
160-200	590	560-570	540	540	550	560

- 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 generates molded in stresses.

Screw Recovery

It is recommended that back pressures of 50 p.s.i gauge to 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.**