

Product Information

Nylon NST60P65L and NST60P65HSL

NST60P65L is a plasticized nylon 6 formulation which has been impact modified by reactive alloying to provide unique characteristics of very high impact strength in combination with superior flexibility. These properties are retained even when dry, as molded, and at low temperatures. Typical of nylon 6 materials, **NST60P65L** exhibits excellent resistance to the effects of a wide range of chemicals and solvents. For molded parts which are to be exposed to high temperatures for extended periods of time, the use of **NST60P65HSL** which contains an effective heat stabilizer package, is recommended.

TYPICAL PROPERTIES DRY AS MOLDED

<u>PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>ENGLISH</u>		<u>S.I.</u>	
		<u>UNITS</u>	<u>VALUE</u>	<u>UNITS</u>	<u>VALUE</u>
Melting Range	D789	°F	420-428	°C	215-220
Specific Gravity	D792	-	1.06	-	1.07
Water Absorption (24 hours immersion)	D570	%	2.9	%	2.9
Heat Deflection Temperature at 264 lbs/in ² (1.82 MPa)	D648	°F	130	°C	54
Mold Shrinkage Guideline (Flow Direction)	1/8" section	%	1.6	%	1.6
Tensile Strength at Yield	D638	lbs/in ²	7,000	MPa	50
Elongation at Break	D638	%	150	%	150
Flexural Strength	D790	lbs/in ²	9,000	MPa	62
Flexural Modulus	D790	lbs/in ²	75,000	MPa	517
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	15 min	J/m	800
Rockwell Hardness	D785	R scale	R80	-	-

***Please review shrinkages 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. Test specimens are stored in a moisture proof container immediately after molding and contain less than 0.2% moisture; 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.

NST6050L

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 -20°F and preferably lower; the drying air temperature must be high enough to achieve a pellet temperature of 175°F - 180°F . If using a hopper dryer, depending on air hose length and insulation of hoses and hopper, the drying air temperature may need to reach 220 - 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 and loss of part performance.

If moisture analysis equipment is available, an acceptable range of moisture content 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. The viscosity of these "super-tough" modified grades is higher than that of general purpose nylons. However, melt stability is excellent, and the use of higher melt temperatures within the limits shown are suggested where part or tool design requires higher flow.

**Tool Surface
Temperature ($^{\circ}\text{F}$)**
140-180

Melt Temperatures ($^{\circ}\text{F}$)
Max. Preferred Min.
540 490-510 475

**Typical Cylinder
Temperatures ($^{\circ}\text{F}$)**
Front Center Rear
490 500 510

- A "reverse" temperature profile helps ensure a homogeneous melt, improves screw recovery and helps to optimize cycle times.
- 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 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 very 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 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.**