

# Product Information

## Nylon NST6050HL.XN1237 and NST6050HSL.XN1237

**NST6050HSL.XN1237** is a thermally stabilized “super-tough” nylon 6 formulation impact modified to provide exceptional practical toughness and ductility, even when dry, and at low temperatures. This product has been specially formulated for extrusion applications to produce highly flexible tubing. Typical of nylon 6 materials, **NST6050HSL.XN1237** exhibits excellent resistance to the effects of a wide range of chemicals and solvents. **NST6050HSL.XN1237** contains an effective heat stabilizer package, which allows it to retain ductility and mechanical integrity when exposed to high temperatures for extended periods of time. For applications where retention of good color on exposure to elevated temperatures is important **NST6050HL.XN1237** is recommended, as it is formulated with a special organic heat stabilizer package.

### 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	-	1.08	-	1.08
Water Absorption (24 hours immersion)	D570	%	1.1	%	1.1
Heat Deflection Temperature at 264 lbs/in <sup>2</sup> (1.82 MPa)	D648	°F	126	°C	52
Mold Shrinkage Guideline (Flow Direction)	1/8" section	%	1.4	%	1.4
Tensile Strength at Yield	D638	lbs/in <sup>2</sup>	7,000	MPa	48
Elongation at Break	D638	%	200 min	%	200 min
Flexural Strength	D790	lbs/in <sup>2</sup>	9,500	MPa	66
Flexural Modulus	D790	lbs/in <sup>2</sup>	220,000	MPa	1,517
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	12 min	J/m	640 min

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.

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# EXTRUSION GUIDELINES

## Material Handling

XN 1048 is supplied in sealed containers, and drying prior to extrusion is not required. If drying becomes necessary, a dehumidifying or desiccant dryer operating at 150°F is recommended. Drying time is dependent upon moisture level, and resin should be dried to less than 0.15% moisture. Further information concerning safe handling procedures can be obtained from the Product Material Safety Data Sheet.

## Temperature Considerations

XN 1048 exhibits a crystalline melting point of 400°F, and a stock temperature range of 430-530°F is recommended for most tubing applications. A typical barrel profile is as follows (°F):

Rear:	430-460	Flange:	440-480
Middle:	430-460	Head:	440-480
Front:	440-480	Die:	440-480

## Screw Recommendations

Length to Diameter Ratio:	20:1 to 24:1
Compression Ratio:	3.5:1 to 4.0:1
Metering Section:	40% of Screw
Transition Section:	3-4 Flights
Feed Section:	Balance of Screw Flights

## Tooling/Sizing

Selection of pin and die size will be dependent on the material viscosity. In general, the ratio of die size to finished tube diameter is about 1.5-2.0:1. The mandrel (pin) size is determined the same way in relation to the inner tube diameter.

Free (open tank) extrusion is recommended when producing tube diameters 0.375" and below. For larger diameters, a differential pressure vacuum tank is recommended. Tooling draw ratio is generally higher with free extrusion versus vacuum sizing, but will depend on melt viscosity. The vacuum sizer entrance should be about 3-9% larger than the finished tube outer diameter. Again, selection will depend on melt viscosity and die swell of the extrudate.

## Quenching

For diameters of 3/8" O.D. and smaller, open tank quenching with normal tap water is suggested. Depending upon line speed, quenching distance can vary from 25 to 40 feet. A short air gap (die to quench water) is recommended for both tubing and cable jacketing for best flexibility.