NYLON RN66G33L

RN66G33L is a nylon 6.6 compound, reinforced with 33% glass fiber; suitable for processing by injection molding, it is lubricated for ease of mold release.

Recognized by Underwriters' Laboratories under File No. E 148796, details of Relative Thermal Indices, and electrical index PLC values, are available from MDE, or on line at www.ul.com/plastics.

This compound has also been evaluated according to the requirements of U.L. 1446and IEC Standard 61857, and is Recognized under File No. E 164279 for use as the **Ground Insulation in both Class 130 and Class 155 Electrical Insulation Systems.** Full Details are available from Michael Day Enterprises or from U.L at data.ul.com/systems.

RN66G33L exhibits excellent strength, rigidity, and toughness, and outstanding resistance to a wide range of chemicals, solvents, oils and greases. These characteristics make **RN66G33L** an ideal candidate for end-use applications in such markets as electrical, electronics, communications or appliances where this performance combined with Underwriters' Laboratories Recognition is required.

TYPICAL PROPERTIES
DRY AS MOLDED

	ASTM	ENGLISH		S.I.	
PROPERTY	**TEST METHOD**	**UNITS**	**VALUE**	**UNITS**	**VALUE**
Melting Range	D789	°F	482-509	°C	250-265
Specific Gravity	D792	-	1.38	-	1.39
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	28,500	MPa	197
Elongation at Break	D638	%	2-4	%	2-4
Flexural Strength	D790	lbs/in^2	42,000	MPa	290
Flexural Modulus	D790	lbs/in^2	1,400,000	MPa	9,655
Izod Impact Strength (Notched, 1/8" specimen)	D256	ft. lbs/in of notch	2.5	J/m	133
Rockwell Hardness	D785	M scale	M99	-	-
			22	%	22
Flammability(all colors)** 0.75mm min. thickness	UL94	-	-	-	HB

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

**This laboratory rating of flammability characteristics is not intended either to predict behavior or to reflect hazards that may be presented by this or any other material under actual fire conditions.

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.

Nylon RN66G33L
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	Melt Temperatures (°F)			Typical Cylinder Temperatures(°F)		
Temperature (°F)	Max.	Preferred	Min.	Front	Center	Rear
160-180	590	550-575	540	540	550	560

- 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 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 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.**