

TECHNICAL BULLETIN

Complēt™ Moisture Resistant Nylons

Environmentally Stabilized Nylon 6 and 6/6 Long Fiber Composites

Standard nylon 6 and 6/6 materials are a widely deployed class of entry-level engineering polymers that readily accept fiber reinforcement to provide a good mix of mechanical properties at an economical price point.

Due to their hygroscopic nature, nylons experience a reduction in structural performance when conditioned with moisture that is absorbed from humid conditions or direct contact with water.

Our long fiber reinforced Complēt™ moisture resistant nylons, in PA 6 and 6/6 matrices, moderate performance degradation using environmental stabilization. This technology slows moisture uptake, which allows these composites to retain crucial structural properties longer than standard nylon materials.

If you require consistent performance in a range of climates, Complēt moisture resistant nylons are a cost-effective alternative to less hygroscopic specialty nylons for applications that intermittently experience moisture-rich environments.

Providing conditioned structural performance at levels between standard and specialty nylons, these composites are ideal for lightweighting initiatives in the automotive or powersports industries that rely on dependable materials with exceptional load carrying and fatigue resistant capabilities.

Also, it is common for nylons reinforced with glass fiber to have an inconsistent surface appearance that can be mistaken for poor product quality. Long glass fiber formulations using this environmental stabilization technology resolve such aesthetic concerns by providing a smooth, fiber-free finish that is perfect for bringing structural parts out of hiding.

These composites also deliver better flow characteristics at high fiber content levels, which eases filling thin wall sections or long flow lengths. And, up to 30% less cross-flow shrink minimizes warp distortion.

Formulations are available with varying percentages of long glass fiber, long carbon fiber, or hybrid combinations to meet your structural requirements.

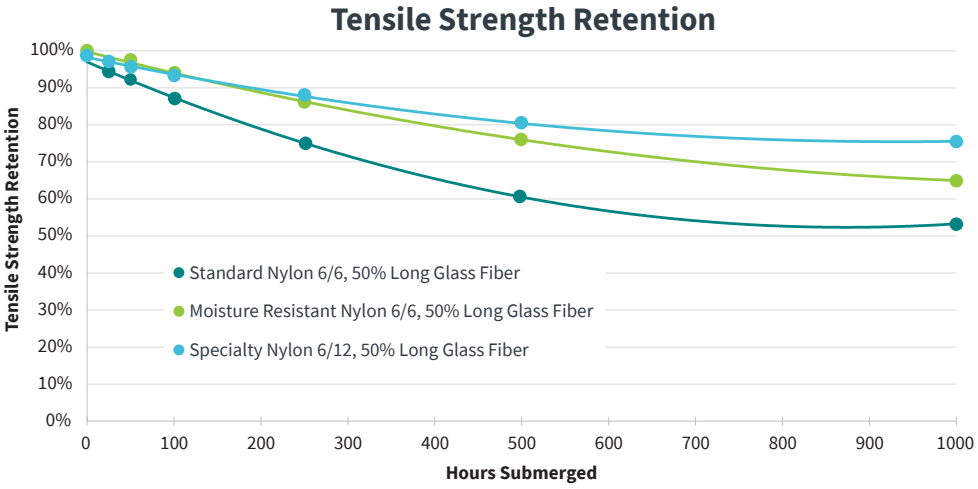
Sustainability Spotlight

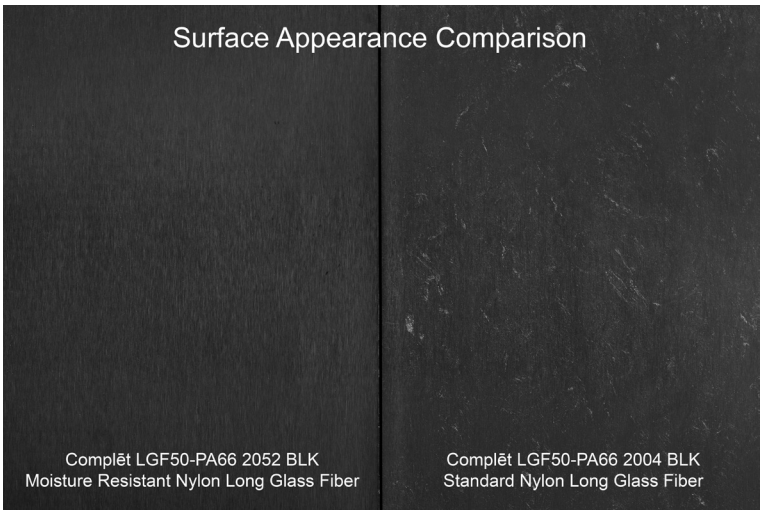
Lightweighting

AVIENT™

WATER SUBMERSION DEMONSTRATION

To model performance loss as moisture is absorbed over time, tensile bars were submersed in water. A Complēt moisture resistant nylon 6/6 long glass fiber composite performed similarly to a specialty PA 6/12 material at time intervals equivalent to short-term water exposure and noticeably better than a standard PA 6/6 formulation.





LONG GLASS FIBER SURFACE AESTHETICS

Good surface cosmetics with glass fiber reinforced nylons are difficult to obtain without high mold temperatures that lengthen cycle times. Complēt moisture resistant nylons reinforced with long glass fiber produce a smooth, fiber-free finish without special processing to give molded components a high-quality appearance. Surface gloss levels >70 can be obtained in polished molds with these environmentally stabilized formulations.

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