



» 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



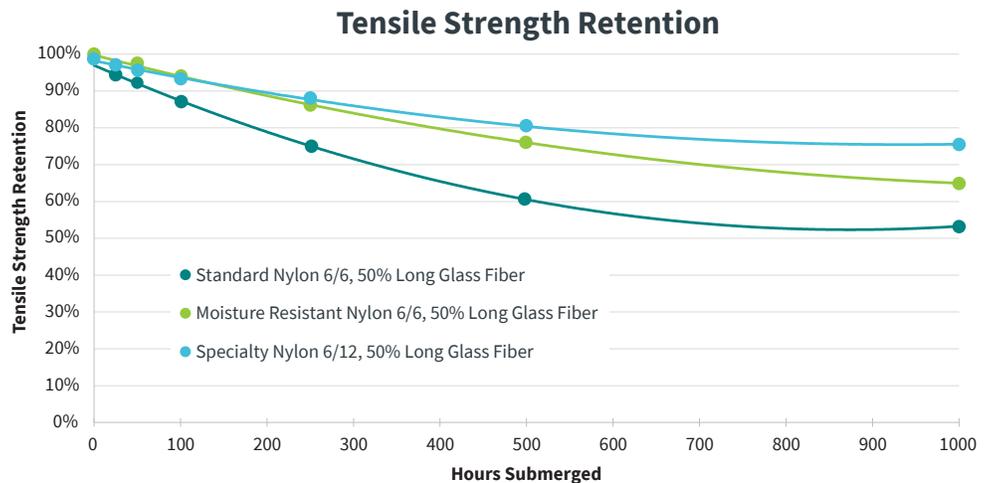
Lightweighting





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.

1.844.4AVIENT
www.avient.com



Copyright © 2021, Avient Corporation. Avient makes no representations, guarantees, or warranties of any kind with respect to the information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Some of the information arises from laboratory work with small-scale equipment which may not provide a reliable indication of performance or properties obtained or obtainable on larger-scale equipment. Values reported as “typical” or stated without a range do not state minimum or maximum properties; consult your sales representative for property ranges and min/max specifications. Processing conditions can cause material properties to shift from the values stated in the information. Avient makes no warranties or guarantees respecting suitability of either Avient’s products or the information for your process or end-use application. You have the responsibility to conduct full-scale end-product performance testing to determine suitability in your application, and you assume all risk and liability arising from your use of the information and/or use or handling of any product. AVIENT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, either with respect to the information or products reflected by the information. This literature shall NOT operate as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner.