NYLON 6 VERSUS NYLON 6,6 – NOW WHAT?

As everyone should know by now, Invista has exited the nylon 6,6 carpet fiber market, and this has put some folks in a slight tizzy. The Invista (DuPont) brand was purchased by Koch Industries from DuPont in April of 2004. A chemist at DuPont, Wallace Carothers, invented nylon in 1934, it was patented in 1935 and marketed in 1939 first as hosiery. The terms, nylons or nylon hose, originate from this invention. Fast forward to nylons uses in carpet.
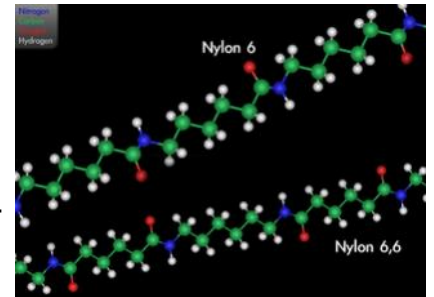
Is there really a difference in carpet performance between nylon 6 or nylon 6,6?

If both of the fibers are used in producing residential carpet, one with nylon 6 and one with nylon 6,6, and wet dyed, there is a difference. A saying I learned many years ago from nylon mentors about type 6 nylon was, "easy in, easy out." Nylon 6 was easier to wet dye than nylon 6,6 but the color was compromised easier as well. During the nylon wars which occurred around the time that Stainmaster was introduced, Allied Fibers, who made nylon 6, came out with a spots and stains guide, which I still have, talking about staining and what would stain nylon 6 fiber. Nylon 6,6 on the other hand was a bit harder to dye so it was more color fast than nylon 6. That was then.

Over the years I've been involved with a myriad of product development projects, shared with me by the people in the flooring industry, who made the products and took me under their wing to teach me. This is something I've never stopped doing to this day. One of those developments was making a commercial carpet out of nylon 6,6 and nylon 6 with the exact same construction and coloring characteristics to compare their performance. The nylon was solution dyed, which basically impregnates the fiber with color – think a carrot. The carpets were constructed exactly the same way. The pile height, stitch rate, gauge, yarn twist, weight, backing, and finishing were done the same. The result was and still is, that there was, and is, no difference in the performance of commercial carpet between nylon 6 and nylon 6,6. Even when the fiber shapes were different, it made no difference in performance.

The key to performance in a carpet is density. Density, in every aspect of a carpet's construction, is what makes a commercial carpet perform well. As long as the two carpets are constructed exactly the same, they will perform the same way, regardless of whether the carpet fiber is type 6 or 6,6, nylon. The only fly in the ointment would be if someone picks a color that gets dirty fast and the carpet uglies out, because it is not maintained properly. That changes the aesthetics, but it won't stop the carpet from performing.

We've been involved in the nylon 6 and 6,6 controversy for years when working with clients on projects. I'll give you an example of an Iconic carpet that even has its own website – the Portland, Oregon airport (PDX). https://pdxnext.com/Stories/Details/our-most-read-stories-in-2021

We were the consultants on that project, and we worked with the Port of Portland and Henneberry Eddy Architects, to design and build a broadloom carpet that would not only be beautiful but perform extraordinarily well. J&J carpets ultimately won the project by not only meeting the design requirements, but also the performance and construction requirements. Laura Holzer, Design Director at J&J, hit it out of the park with the design right out of the gate. Every carpet manufacturer in the industry wanted this project, but no one could come close to what J&J did. I even had one carpet industry exec visit my office touting carpet tile, which the Port had no interest at all in. He said they'd be selling the Port carpet tile after the broadloom failed. Ain't gonna happen. As for the fiber, that was a skirmish as well. The biggest nylon 6,6 fiber producer could not better the performance of the J&J in house extruded solution dyed nylon 6 that the carpet is made with.

THE PDX CARPET BEING TUFTED

The PDX carpet is the most highly engineered broadloom carpet ever constructed. We know because we wrote the specifications for it and the construction had to be super high performance. Modifications had to be made to the tufting and finishing process to achieve the physical properties of the specifications. The carpet was inspected by a group of us, twice. Samples of every run were taken and tested by us. It was critical the pattern be straight as it ran in the length, width and diagonal, so every run was reinspected at the mill before shipping to ensure any adjustments made fell within a very close match tolerance. The installation team with Rubenstein's Contract Carpet, was provided the straightest pattern possible. There is hardly a deviation in the installation of the original 13 acres of the carpet.

When we test a product one of our clients wants to use, we often take it beyond the test parameters to failure. We want to see how far it will go before it gives up the ghost. At PDX, we also installed mockups in the

THE COMMERCIAL FLOORING REPORT

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in the airport so they would be subjected to real life conditions. We paid attention to the colors being used and had the yellow/gold accent yarn toned down because it started too yellow and yellow is the worst color to keep clean. We worked with all the parties involved very closely and watched over the carpet and project like a mother hen. The original new carpet was installed in the airport beginning in 2015 with subsequent installations for new additions. I get to the PDX airport periodically and get to see how the carpet is performing. It still looks great with now 7 years of use, and the high performance of nylon 6. So, if you have any doubt about using nylon 6 on a project, just look at how it works on a project that gets millions of foot traffics a year. Further, most of the commercial carpet on the market is nylon 6 and it performs just fine. Again, the biggest performance factor is the density of the carpet construction and the color. There's no reason to freak out over the loss of nylon 6,6. And if you really want it for a carpet there are a couple of manufacturers you can get it from.

SECOND AND FINAL INSPECTION OF THE **PDX** CARPET BEFORE SHIPPING

We have not had to work on a project where there was a complaint for the carpet not performing that was produced with type 6 nylon. Using type 6 nylon versus type 6,6 nylon in a commercial carpet has essentially been a non – issue for a long time. Where the question may arise, or did, would be with a designer who was being called on by a rep from the fiber producer to tout the marketed attributes of type 6,6 nylon. And there is sure to be some who specify carpet who may yet be looking to use type 6,6 nylon. But the way commercial carpets are produced today the now overwhelming use of type 6 nylon should be a moot point. Every commercial carpet manufacturer who is extruding their own nylon fiber, which is type 6, can make a product that will deliver the type of performance expected from the end user, with a spec that is appropriate for the application. All you have to do is know what works best for the application.

Spend and hour with Lew on April 28th at 2:00pm eastern time, provided by the Floor Covering Institute. This is a free webinar see page 5 for more information.
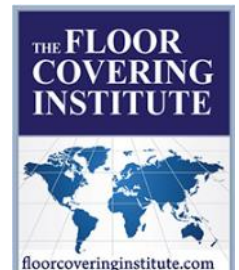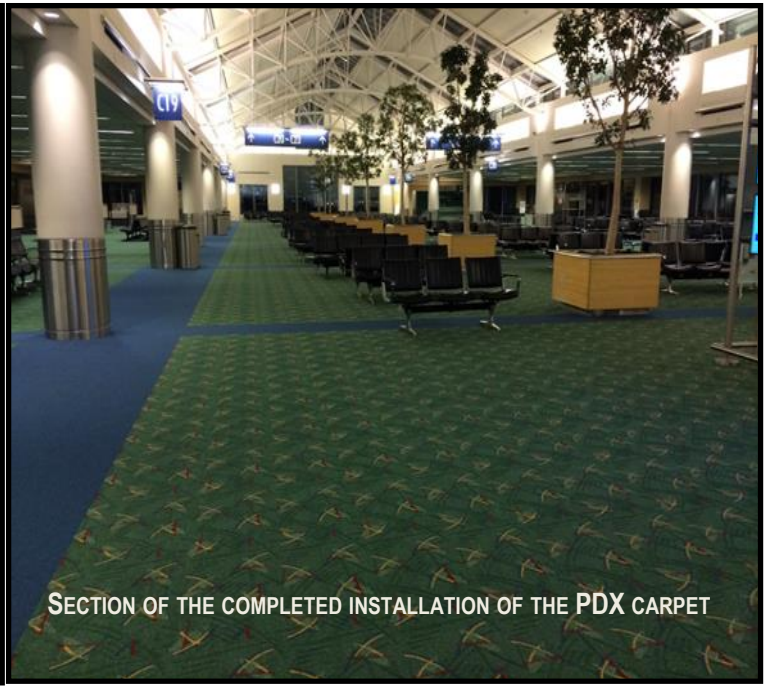
Beginning of the PDX carpet installation

Section of the completed installation of the PDX carpet

If you need help or guidance on a project that involves carpet, or any other flooring surface for that matter, or if you just have a question, call us. We can help. We are the flooring experts with the answers.

Spend and hour with Lew on April 28th at 2:00pm eastern time, provided by the Floor Covering Institute. This is a free webinar where we'll talk about flooring issues and failures and answer as many questions as time will allow. We look forward to having you participate!! Lew

To register for this Free Zoom webinar, go to: https://floorcoveringinstitute.com/

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