

## Carpet Construction Rules of Thumb to Consider when Selecting Carpet for Different End Uses

*The INVISTA technical team has conducted extensive carpet performance studies, and here is a summary of our recommendations:*

**When a carpet retains its appearance longer, it will stay newer looking longer and its usable life may be extended.** However, it is important to note that no one carpet component alone determines the ultimate performance capability of a carpet construction. Carpet starts with fiber, so it is a good place to begin when making a carpet style selection.

**Fiber Type** – We recommend that you choose carpet fiber made of type 6,6 nylon, which provides resistance to matting/crushing, resilience/recovery after compression and slower stain permeability.

**Fiber Shape** – We recommend that you look for fibers with hollow filament technology that help hide soiling and fibers with smaller surface areas that can minimize soil accumulation, making cleaning easier. Antron® type 6,6 nylon has these features.

**Let's focus on construction factors for heavy to extra-heavy traffic installations, because most carpet constructions will be suitable for moderate or low traffic installations.** Once you have the right fiber, several carpet construction factors can combine to make a particular style an excellent choice for heavy to extra-heavy traffic installations. These construction factors can include:

- **Carpet pile texture selection** – It is a commonly accepted industry practice to recommend using 100% loop pile styles for heavy traffic installations.
- **How the yarn is combined** – Typically, the more structure the yarn has, the higher likelihood of better floor performance. Twisted and heat set yarns have a very high level of structural integrity. Twisted and non-heat set yarns, whether air twisted or cabled twisted, can have good performance compared to air entangled yarns for loop pile carpets. A higher twist level in the yarn can impact performance and we recommend 4 twists per inch (TPI) or higher for cable twisted yarns for loop pile carpet.
- **Maximum Pile height differential** – The greater the difference in pile height for carpets with multiple pile levers, the greater the potential for pile layover with traffic. As a guide, look for a maximum carpet pile height differential of 1/32" for heavy to extra-heavy traffic or a maximum pile height differential of 1/16" for moderate to heavy traffic.
- **Weight of the carpet** – The weight minimum for a carpet to be branded as Antron® nylon is 14 oz./yd<sup>2</sup> but all carpets of Antron® nylon are tested for appearance retention through the Antron® Brand Performance Standards program. However, it is not likely that carpets made with

competitive fiber have been through rigorous pre-screening tests so based on years of texture retention testing results at the INVISTA Technical Center and in real-life floor tests, we recommend a minimum face weight of 17 oz./yd<sup>2</sup> in general for loop pile carpets styles for heavy traffic installations.

- **Density of the carpet** – Density is a mathematical calculation using a conversion factor and the ratio of face weight to pile thickness. Higher density may improve the likelihood of better floor performance.
- **Coloration and patterning** – Generally, carpets with colors in the medium to medium-dark range will hide soil more readily than lighter colors or very dark colors. We recommend that a carpet have five or more colors in the medium to medium dark range and random patterning, to maximize the soil hiding capability of a carpet.
- **Luster** – Fibers with bright lusters should be used cautiously in carpets designed for heavy traffic installations. Carpet constructions featuring yarns with bright lusters may show an appearance shift with wear over time in heavy traffic installations because of the optical sensitivity bright fibers have to change in fiber orientation with wear. As carpet fibers bend or compress with foot traffic, there may be an unintended increase in visual contrast within the carpet pile. This may not be a performance issue, but could impact the perception of the carpet's performance, depending upon the desired aesthetic. We recommend that bright luster fibers be used only as accent yarns in a carpet intended for high traffic installations.
- **Soil Resistance** – Look for carpet with long-lasting soil resistance technology in addition to hollow filament fiber shapes. Only carpet styles of Antron<sup>®</sup> nylon have patented DuraTech<sup>®</sup> soil resistance treatment, a durable soil release product that is an integral part of the Antron<sup>®</sup> nylon brand package and does not need to be specified separately. DuraTech<sup>®</sup> soil resistance treatment can remain on carpets of Antron<sup>®</sup> nylon for more than one million foot traffics.

**Putting it all together** - At INVISTA, we believe that combining these construction factor recommendations with a Performance Standards Program is a great start to getting the high performance you desire. All carpets of Antron<sup>®</sup> nylon are subjected to a rigorous certification screening process, Antron<sup>®</sup> Brand Performance Standards Program, which assesses construction, yarn denier, pile height and weight as well as testing for texture retention and levels of DuraTech<sup>®</sup> soil resistance treatment. There are also staining and colorfastness tests for carpets of Antron<sup>®</sup> Lumena<sup>™</sup> solution dyed nylon. The Antron<sup>®</sup> Brand Performance Standards Program gives you confidence that when you specify a carpet of Antron<sup>®</sup> fiber, you've specified a carpet that can last.

*As with any design decision, specific facility requirements, punishment factors and performance needs must be taken into consideration when selecting a carpet construction type.* Some carpet manufacturers can create high performance carpet styles without following one or more of these rules of thumb due to proprietary technology enhancements. So start your carpet selection or specification by keeping these recommendations and rules of thumb in mind, but also consult with a manufacturer representative or your INVISTA Fiber Consultant if you have questions about specific carpet styles.

All carpets of Antron<sup>®</sup> nylon are made of type 6,6 nylon with hollow filament fiber shapes, are protected by DuraTech<sup>®</sup> soil resistance treatment and are screened through the Antron<sup>®</sup> Brand Performance Standards Program. **Considering an Antron<sup>®</sup> brand certified style is a great first step in making the best carpet selection.**

**For more information, visit our web site at [antron.net](http://antron.net).**

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