

PET and PTT, the Newest Addition to the Family of Carpet Fibers

The face fiber of today's carpets can represent as much as 60% of a carpet's total content. And, because carpet fibers often have unique properties that are worthy of end-use considerations, it's important to have some basic understanding of the various fibers used in carpet constructions.

PET (polyethylene terephthalate) is now a generation old category of polyester fiber used in carpet manufacturing. Since it was initially introduced in the carpet industry in the mid 1960s, PET's image was revitalized in the 1990s when it was engineered to respond better to twist and heat setting, and because PET carpet fiber could be made from recycled content. Today, environmental concerns are in the minds of most individuals in our society, and significant focus has been placed on developing whatever means are available or can be obtained in order to reduce the negative impact we've placed on our environment. In response to this, responsible carpet manufacturers using recycled PET helped reduce solid landfill waste, energy consumption, and the use of dwindling petroleum raw materials.

By 1998, the costs and considerable difficulties encountered in manufacturing PTT (polyethylene trimethylene terephthalate) that had plagued this fiber during production had been overcome. This resulted in the commercial production of PTT fiber; and thus a new addition to the family of polyester carpets was introduced. PTT is more expensive to produce than PET. As a result, carpets made from PTT are more expensive than PET carpets made of similar and even much heavier face fiber weight.

Both PET and PTT have a number of similar traits that lend themselves to use as a carpet fiber. Perhaps the most advertised difference between these two fibers is that because of the difference in their molecular structure, PTT is more resilient than PET. However, based on the texture retention ratings obtained from our industries standard mechanical wear testing, PET filament is very capable of meeting the traffic demands of residential end-use applications. Otherwise, both fibers are soft, durable, and easy to dye, are capable of offering very vibrant colors, are resistant to abrasion, stretching, shrinkage, and mildew, have good dye intake and colorfastness characteristics, are inherently stain resistant to most chemicals and all acid dyes, and have low water permeation and static generating properties.

One important aspect of a carpet selection is the carpet's flame resistance properties, which is determined primarily by the melt point of a carpet fiber. The lower the melt point of a carpet fiber, the easier it can be to damage the fiber by exposure to a small incendiary source, such as a dropped match or cigarette, and the more readily available it is as a fuel source to an already existing fire. Studies indicate that PTT has a noticeably lower melt point than PET.

Another property of PET and PTT is their inherent stain resistance properties. Stain resistance testing has shown that PET has very similar stain resistance properties to PTT when exposed to strongly colored food and beverage substances. PTT is more resistant to color loss caused by exposure to chlorine bleach. However, the use of strong oxidizing agents such as bleach within the home is typically restricted to non-carpeted areas and in areas where chlorine bleach would not cause damage to other materials, such as in bathrooms and laundry rooms.

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