



SPECIFICATION OF CARPET  
FINDING BALANCE BETWEEN  
PERFORMANCE AND AESTHETICS

WHITE PAPER

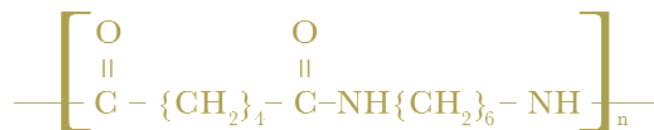
Proper specification of carpet can be challenging, given the array of choices available and the factors that must be taken into consideration. First, one must identify the criteria of the project to find the right product. The primary considerations are: amount and type of traffic, length and type of lease or ownership of the project space, the amount of open and closed offices in the plan, and shape of floor plate. And, of course, the budget and preferences of the end user are essential. Also, determine how the floor “plane” will anchor the space – will it be a backdrop or an important design element? Should the pattern reflect architectural components? Is it used to define specific areas or for way-finding? Answers to these and other questions will lead to correct pattern and texture choices that give a floor its identity.

Some knowledge of the criteria for carpet selection and an understanding of basic carpet manufacturing techniques can simplify the specification process. You’ll find it helpful to know the differences in fiber types, construction, and dye methods. Recognizing the types of patterns and pattern installation issues will also make specification easier.

## FIBER

Carpet selection criteria starts with the face fiber. There are four main fibers used in carpet. **NYLON** is the most prominent fiber in carpet today. It has continually been modified since its introduction in the 1940's to improve the look, feel, soil-hiding ability and flexible dyeing characteristics. Most premium branded nylon is considered optimum for commercial interiors. **WOOL** has been used since earliest times and is the point of reference for manmade fibers. All manmade fibers strive to achieve the natural luster and feel of wool. It ages gracefully under light traffic and is inherently fire resistant, so it is preferable for airplanes and cruise ships. But since wool is a natural fiber it does not have the performance characteristics of some synthetic fibers. **OLEFIN** and **POLYESTER** are not as resilient as nylon. Though they can offer some value, they generally are not considered appropriate for commercial use.

All types of fiber are processed into yarn through a series of mechanical procedures. Spinning, twisting, heat setting, air tacking and combinations of these processes are what give individual styles their distinctive looks.



NYLON 6,6 CHEMICAL COMPOUND

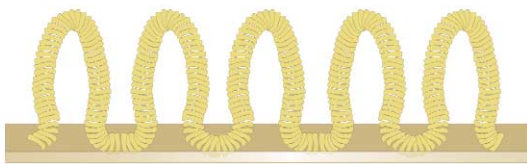


## TEXTURE

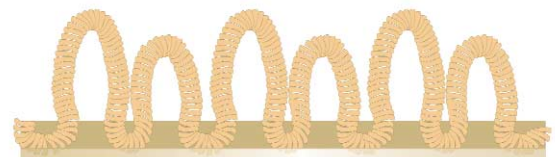
More than 90% of commercial carpet today is tufted, a manufacturing process, (essentially a giant sewing machine that puts “tufts” into a primary backing) that allows enormous flexibility in pattern and texture options. Tufting creates textures that can be **LEVEL LOOP**, **TEXTURED LOOP**, **CUT/UNCUT**, OR **CUT PILE**. The texture of carpet is directly affected by the amount and type of traffic. In general, loop textured carpet will withstand the most traffic and retain texture longer than other constructions. Keep in mind that there are inherent problems associated with rolling traffic as in mail or luggage carts, and correct installation procedures are more critical.

A good balance between aesthetics and durability can often be achieved with cut and loop textures. These give aesthetic softness and depth with nearly the durability of a loop construction. Cut pile carpets should not be considered for heavy traffic unless they are richly patterned and will mask traffic lanes. They are excellent for light use areas such as executive offices, and for defining or creating transitional areas or borders.

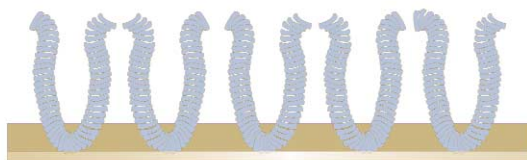
Woven carpet is also an alternative. Woven carpet has a reputation for beauty and precise patterns can be created in many textures. However, budget, lead times, and installation complications may eliminate woven options.



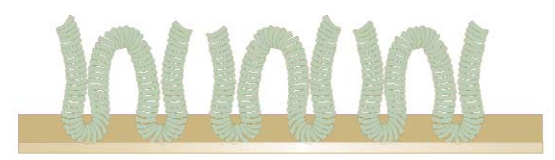
LEVEL LOOP



TEXTURED LOOP



CUT PILE



CUT/UNCUT LOOP



## DYEING AND COLOR

Tufted carpet can be colored by a number of different procedures. The yarn is either dyed before or after the tufting process. Of the two pre-dyeing methods, **SKEIN DYEING** is the most flexible for creating certain color effects. The yarn is wound onto skeins, or large bundles. It is dyed a particular color or colors in a water bath, then dried, and rewound onto cones for tufting. Though labor-intensive, this process allows for unlimited color variables, and clean, clear hues. Depending on face weights and amount of color used in a given product, dye lots can be large and very consistent. This is important in large open plan offices where seams are readily visible and color consistency is important.

The other pre-dyed method is **SOLUTION DYED** yarn. Pigments are added in the form of plastic pellets and the fiber is extruded in the desired color. This option offers excellent color and lightfastness, as well as resistance to harsh cleaning chemicals. Solution dyed yarns are particularly appropriate for healthcare applications, and are the fiber choice for most hospitality installations. This process also offers the benefit of unlimited dye lots. The downside is that color flexibility is limited to the selections provided by the yarn manufacturers and often subtle shades of difference in color are simply not available.

In post-dyeing methods, the carpet is tufted with white yarn, and dyed after construction. The undyed carpet is called greige. In **BECK DYEING**, a form of post-dyeing, the carpet fabric is loaded into a dye bath, with chemicals and dyestuff. It's agitated for a certain period of time where the dye attaches itself to the fiber; then it is moved to a dryer to extract excess water. This is an excellent method for relatively small dye lots and a very efficient way to produce carpet to ship quickly. **CONTINUOUS DYEING** is an economical method where carpet is spread out and passed under a dye applicator that distributes dye across the width of the greige. While continuous dyeing efficiently produces large dye lots, it can be difficult to create color consistency across the width of the carpet. This can raise some color matching issues at the seams.

The final post-dyeing method is **PRINTING**. Printing is a variation on the continuous dye method, where multiple applicators apply different colors.

Nylon producers have created yarns that take dye in different ways by building in different chemical properties. These developments, along with some styling yarns that resist dye completely, make the post-dyeing process more flexible than ever before. However, the post-dyeing method is still limiting in color, as it is only variations of one shade and accents in another. The process also contributes to a somewhat "muddy" looking appearance in multi-color products.

There are virtually thousands of **PATTERNS AND TEXTURES** available to the designer today, from the very intricate multi-color effects to simple and elegant solid textures. Again, traffic is a factor in selection. Mid-tone colors, moderate to heavy patterns, and barberpole or heather tweeds mask traffic lanes. The "shape" of the installation – both the floor plate and the condition of the walls – is also important. It can be problematic matching some patterns at corners in hallways or aligning a grid or stripe along a crooked wall. Choose patterns that minimize any imperfections, such as, non-directional patterns for irregular floor plates, or allow for these conditions by some form of transition, as in accent pieces or borders. In selecting patterns, a couple of guidelines are worthwhile to follow. Always review patterns horizontally and on the floor prior to selection. Large patterns can decrease the apparent size of a space, while smaller patterns tend to diminish in large expanses of space. The myriad of pattern constructions and colorations available, as well as custom capabilities, should allow many options to fulfill the vision of a given project.



## OTHER CONCERNS

**INSTALLATION** is a critical consideration in carpet selection. It must be properly planned, estimated and executed or even the most beautiful design can be ruined. Large pattern repeats require more carpet for adequate pattern match, so they create more waste, but are easier to match. Seams must be placed properly, and prepared correctly to avoid future problems with pulls and snags. The Carpet and Rug Institute provides guidelines for proper installation in the **CRI-104 STANDARD FOR INSTALLATION OF COMMERCIAL CARPET**. They also certify qualified installation contractors who have demonstrated that they follow proper procedures. It can be an important part of the specification to state these guidelines be followed, as well as those of the carpet manufacturer. A manufacturer's rep can be most helpful with many installation questions, including type of adhesives, proper seam placement, and suitable constructions.

**MAINTENANCE** is a contributing factor to the useful life of carpet. Most nylon carpet will get ugly before it will wear out. Proper maintenance, including regular vacuuming to remove abrasive particles, prompt attention to spot removal, and scheduled cleanings should be part of a plan to extend the useful life of the carpet.

Remember, carpet is a textile, and just like apparel or upholstery fabric, must be pieced together to become a finished product. The quality is in the material itself, as well as in the assembly. And, like other textiles, certain constructions are appropriate for different uses. Take into account the aspects of the specific job type and use the criteria to find appropriate pattern and color choices. Proper specification will assure the best of both performance and aesthetics.

## REFERENCES

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CRI: The Carpet Primer*

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