

# Carpet And Rug Construction

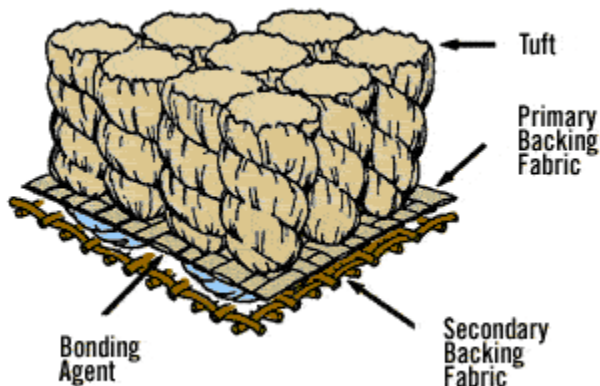
## Understanding carpet construction

The look and performance of a particular carpet is determined by its construction, which may be loop, cut or combinations of the two. In corridors, lobbies, offices, classrooms, hotel rooms, patient care facilities and other public areas, loop piles of low, dense construction tend to retain their appearance and resiliency and, generally, provide a better surface for the rolling traffic of wheel chairs or food carts. Cut pile or cut and loop pile carpet are very good choices for administration areas, libraries, individual offices and boardrooms.

Various types of high performance backing systems have additional advantages, including higher tuft binds, added stability, imperviousness to moisture, and resistance to edge raveling. Consideration should be given to the functional needs of a particular area.

Understanding carpet construction assists in specifying elements that will provide the best performance in a particular location. Commercial carpet is primarily manufactured by tufting or weaving. Each process will produce quality floor coverings, but tufted carpet accounts for 95 percent of all carpet construction. Both tufting and woven manufacturing are efficient and employ advanced technology to provide capability for a myriad of patterns and floor covering.

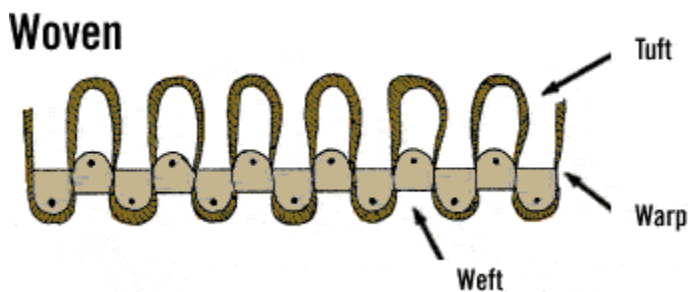
## Tufted



**Tufted:** Tufting is the process of creating textiles, especially carpet, on specialized multi-needle sewing machines. Several hundred needles stitch hundreds of rows of pile yarn tufts through a backing fabric called the primary backing. The needles push yarn through a primary backing fabric, where a loop holds the yarn in place to form a tuft as the needle is removed. The yarn is caught by loopers and held in place for loop-pile carpet or cut by blades for cut-pile carpet. Next, secondary backings of various types are applied to render a variety of performance properties.

Here are some key steps in the tufting process:

- Yarn comes from cones on creel racks (or from big spools called beams) into the machine.
- The primary backing feeds into the machine.
- Yarn and primary backing come together in the machine (full shot of machine)
- Yarn is fed through needles on a needlebar of a tufting machine. Needles repeatedly penetrate or tuft into the primary backing.
- The tufted carpet is mended and inspected.
- Carpet is rolled onto large rolls for the next step (whether it's to be dyed or to be backed.)



**Woven:** Woven carpet is created on looms by simultaneously interlacing face yarns and backing yarns into a complete product, thereby eliminating the need for a secondary backing. A small amount of latex-back coating is usually applied for bulk. Principal variations of woven carpet include velvet, Wilton and Axminster.

## Understanding dyeing

Dyeing is the process of coloring materials by impregnating fiber, yarn or fabric with dyestuff. Coloration in carpet can be achieved at two possible times in the manufacturing process – either by dyeing the fiber or yarn before the fabric is tufted or by dyeing the tufted fabric before the application of the secondary backing and the finishing process.

Pre-dyeing of yarn includes both solution dyeing and yarn dyeing.

- **Solution dyed:** Extruded synthetic yarn from a colored solution; the filament is impregnated with pigment. Known for its outstanding colorfastness.
- **Yarn dyed:** Yarn dyed before being manufactured into carpet. Yarn dyeing includes multicolor space dyeing and solid color yarn dyeing.
  - **Space dyeing:** Process whereby different colors are “printed” along the length of the yarn before it is manufactured into carpet.
  - **Solid color yarn dyeing:** Solid color yarn dyeing includes four different methods: skein dyeing, stock dyeing, pad dyeing and jet dyeing.

Post-dyeing of carpet methods include: beck dyeing, printing and continuous dyeing.

- **Beck dyeing or piece dyeing:** Carpet dyed “in a piece” in a large beck of dyestuffs and water after tufting but before other finishing processes.
- **Printing:** Printing involves the application of colored dyestuffs using screens, rollers or inkjets onto the face of the carpet.
- **Continuous dyeing:** Continuous dyeing involves the application of dyestuffs as the carpet moves in open width form under the applicator. The process is called “continuous” because it can be used to dye an almost unlimited quantity of 12-foot wide carpets, sewn end to end. (This is most often used in residential carpet.)