

Dyeing and Color Selection

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 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.)

The dyeabilities of nylon are most commonly referred to as acid dyeable (light, medium or deep) and cationic (basic) dyeable. Acid Dyeable Nylon is the most common and it contains positively charged sites that attract dye.

The end use of the product will determine the type of dye method. To specify dye method, performance requirements should be taken into consideration. Manufacturers can determine the most appropriate construction, dye method and backing to meet the performance requirements.

For example,

1. “A specifier may be concerned about fading in a setting with large windows”, so the manufacturer would recommend a **solution dyed** product with superior colorfastness.
2. “If the specifier wants a wide variety of bright colors”, the manufacturer might recommend **yarn dyeing or space dyeing.**