Introduction

As a skilled designer, architect, specifier, facility manager or end-user, it is important to make informed decisions when specifying carpets for a project in order to create a visually pleasing and long-lasting interior environment.

The purpose of this handbook is to provide you with the fundamentals of how carpets are made, specified, installed and maintained. In addition, aspects such as indoor climate benefits and issues related to environmental management are presented – all the basic information needed to make informed carpet decisions.

We wish you a pleasant read.
CARPET HANDBOOK
OUTLINE

Introduction

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1. What to know when specifying a carpet?

Today’s carpet offers you a wide variety of designs, fibres and colours, and whether you are specifying broadloom or tile for a corporate office environment, a hotel or public area or rug for a shop, the task of specifying a carpet automatically involves making a series of important decisions. These decisions influence both the final performance of the carpet and its appearance.

When specifying a carpet, the end purpose of the carpet should be considered. To best match the carpet to its purpose, you should consider:

- Carpet construction
- Design and colour
- Broadloom and modular carpet options
- Quality and performance requirements
- Indoor climate properties (insulation, acoustics, safety)
- Environmental properties

The interaction between each of these above-mentioned areas contributes to the final appearance and performance of the carpet. Thus, considering each area is of importance in order to make an informed decision. Therefore, do not focus solely on specification but also rely on classification. Why? Because, the carpet’s independently verified classification states the result of the interaction between the important elements affecting the carpet’s overall performance.
4. Tufted and woven carpets

Carpet performance is determined by a number of variables. For example, the construction method should be adjusted to fit the end use purpose and the backing should fit end use requirements. The most common mistake is to rely on only a single factor when determining whether a product meets the required specifications. Therefore, it is of great significance to have sufficient knowledge of carpet construction and carpet properties in order to select a carpet solution matching demands of the project in question.

With this chapter you gain insight into the various layers constituting a commercial carpet, thus, making you well-equipped to make an informed carpet decision.
4.1 Carpet fabric construction

The primary carpet fabric construction methods applied in today’s carpet industry include:

- Tufting
- Weaving
- Needle punching

Tufting

Tufting is a technique invented in America. The first tufting machines were introduced in 1946. Due to the tufting machines’ ability to offer fast production time and lower price levels, tufted carpets have conquered the main parts of the carpet market. Thus, the majority of all contract carpets produced today are tufted, making this construction method the most prevalent carpet construction method applied.

What is a tufting machine?

A tufting machine is not a loom. Instead it can be compared with a giant sewing machine using hundreds of threaded needles placed in a row across the width of the machine.

The tufting process

Below, the key steps in the tufting process are indicated:

- 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
- Yarn is fed through needles on a needle bar of a tufting machine
- Needles repeatedly penetrate or tuft into the primary backing
- Carpet is rolled onto large rolls for the next step (whether it’s to be dyed or to be backed)

Advantages achieved with tufting

Compared with weaving, tufting offers:

- Fast production time
- Short notice design flexibility

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8 The Carpet and Rug Institute, “The Carpet Primer”, page 1-9, 2003
In addition, the technique offers a wide range of pattern possibilities, using e.g. pre- or post-dyed yarns, varying loop height or using cut or uncut pile.

Common tufting terms:

**Density**

The density of the carpet is determined by the number of tufts per inch when counting across the width of the carpet. The density or positioning of yarn is defined as the distance between two adjacent needle points. For example, an 1/8 gauge carpet has eight tuft rows per inch of a width.

**Stitches per inch**

The carpet face weight and density are influenced by the number of stitches per inch. The number of yarn tufts per running inch of a single tuft rows in tufted carpet.

**Tuft height**

Tuft height is generally measured from surface of the primary backing to the top of tufted yarn. Adjustments in this property can affect the pile yarn weight.

**Weaving**

There are several methods of weaving and several types of looms. Weaving is a method in which two distinct sets of yarn or threads, called the warp and the filling or weft are interlaced with each other to form a fabric or cloth. The warp threads run lengthways of the piece of cloth and the weft run across from side to side.

Woven carpets are available in three different weaving techniques, Axminster, Velvet and Wilton. What distinguish these three types are essentially the ability to weave plain or patterned, and the

<table>
<thead>
<tr>
<th>Standard gauge</th>
<th>Coarse gauge</th>
<th>Fine gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>3/3</td>
<td>1/10</td>
<td></td>
</tr>
<tr>
<td>5/16</td>
<td>1/12</td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>5/64</td>
<td></td>
</tr>
<tr>
<td>3/16</td>
<td>1/16</td>
<td></td>
</tr>
<tr>
<td>5/32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Overview of gauge

**Blanket-like product**

Several layers of carded fibres are worked together with needles for a blanket-like product. Needle textile floor coverings are available with or without coated back. They have a smooth surface, and can be provided with printed patterns.
4.2 Carpet construction

Understanding how a carpet is constructed assists you in specifying elements which will provide the best carpet performance in a particular location.

Tufted carpets consist of:

- Face yarn (tuft)
- Primary backing fabric
- Bonding compound
- Secondary backing

The face yarn can be either cut pile, loop pile or a combination of both. In tufting, the primary backing is a woven or non-woven fabric in which the pile yarn is inserted by the needles in the tufting machine. The bonding compound is an adhesive which secures the yarn to the primary backing. The secondary backing, or cushion, is added to provide further stability to the carpet structure. Various types of high performance backing systems provide additional carpet properties such as imperviousness to moisture and resistance to edge fray.

These four components of tufted carpets are presented in the following sections.

Fibres

Selection of fibres and yarn affects the end use performance of the carpet. Almost all carpets produced today are produced from one of the following six pile fibres. These can be divided into natural fibres and synthetic fibres as shown below:

**Natural carpet fibres**
- Wool
- Cotton

**Synthetic carpet fibres**
- Nylon/Polyamide (PA6, PA66)
- Polypropylene (PP)
- Acrylic (AC)
- Polyester (PET)

Wool and cotton

Wool and cotton are the predominant natural carpet fibres used in today’s carpet production. Cotton is primarily used for rugs and mats whereas wool is used for both residential and commercial carpets.

<table>
<thead>
<tr>
<th>Natural fibres</th>
<th>Description</th>
<th>Advantages</th>
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</thead>
<tbody>
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<td>Wool</td>
<td>Animal fibre</td>
<td>Renewable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Durable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resilient</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heat insulating</td>
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<td></td>
<td>Elasticity/flexibility</td>
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<td></td>
<td></td>
<td>Anti-soiling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Luxurious feel</td>
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<td>Cotton</td>
<td>Vegetable fibre</td>
<td>Wear resistant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fastness to light</td>
</tr>
</tbody>
</table>

Figure 2: Natural carpet fibres

Man-made means

Synthetic fibres are produced by man-made means and are made on the basis of chemical connections. The most important raw materials used in the production of synthetic fibres come from the petrochemical industry which means that important components for the production of synthetic fibres are taken from oil, natural gas and other hydrocarbon connections.

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9 Teknologisk Institut, Træ og Textil, "Tekstil – Brugsegnerskaber og vedligeholdelse", page 9-14, 2008
## Yarn construction

Complex processes are required in order to produce a single strand of yarn. Yarn is characterised as a continuous string of textile fibre applicable for e.g. knitting or weaving. Yarns can be constructed in various ways and may contain different fibres to provide certain end use properties.

<table>
<thead>
<tr>
<th>Yarn construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile fibres can be divided into two main groups:</td>
</tr>
<tr>
<td>• BCF – Bulked continuous filament</td>
</tr>
<tr>
<td>• Staple yarn</td>
</tr>
</tbody>
</table>

### BCF

BCF is an abbreviated form for bulked continuous filament yarn referring to synthetic fibres in a continuous form. Filament can be used for either cut or loop pile carpet constructions.\(^\text{12}\)

---

**Synthetic fibres**

<table>
<thead>
<tr>
<th>Description</th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon or Polyamide (PA)</td>
<td>A petrochemical based fibre invented in 1938. There are two basic types of nylon used for carpet production. Type 6 nylon and Type 6.6 nylon.*</td>
</tr>
<tr>
<td>Polypropylene (PP)</td>
<td>Also known as “olefin fibre”. Made from a by-product of gasoline refining. Olefin has one ingredient: propylene. Since propylene is widely available at a comparatively lower cost than nylon base ingredients, olefin is less expensive than nylon. Olefin is a lightweight fibre and can have good bulk and cover. However, the polymer base creates a soft fibre which has lower resiliency, a lower melting point and lower texture retention as compared to nylon. The carpet fibre is available as bulked continuous filament yarn. Solution dyed.</td>
</tr>
<tr>
<td>Acrylic</td>
<td>Acrylic is a manmade substance, similar in appearance and feel to wool. Acrylic became a substitute for wool in a number of carpets after the 1950s. Acrylic has satisfactory wear resistance properties, however, far from the properties offered by nylon and polyester. Seldomly used in commercial carpets.</td>
</tr>
<tr>
<td>Polyester (PES)</td>
<td>A synthetic fibre usually produced with staple fibre and spun yarns which is used in some carpet fibre.</td>
</tr>
</tbody>
</table>

\(*\) Nylon Type 6 is developed by DuPont Inc. and is made from one base ingredient: caprolactam. Compared to Type 6.6 nylon, Type 6 nylon accepts dye at a faster rate. The more open molecular structure of Type 6 nylon allows dye stuffs (and stains) in more readily. Common spills and stains such as coffee, soda, foodstuffs and medicine will stain Type 6 nylon more readily than Type 6.6, whether solution dyed or conventionally dyed.\(^\text{11}\)


\(^{11}\) Antron Carpet Fibre : [http://antron.eu/en/content/resources/carpet_glossary/ant06_03_14.shtml](http://antron.eu/en/content/resources/carpet_glossary/ant06_03_14.shtml)

\(^{12}\) Antron Carpet Fibre : [http://antron.eu/en/content/resources/carpet_glossary/ant06_03_02.shtml](http://antron.eu/en/content/resources/carpet_glossary/ant06_03_02.shtml)

---

**Synthetic fibres**

<table>
<thead>
<tr>
<th>Description</th>
<th>Advantages</th>
</tr>
</thead>
</table>
| Nylon Type 6 is developed by DuPont Inc. and is made from one base ingredient: caprolactam. Compared to Type 6.6 nylon, Type 6 nylon accepts dye at a faster rate. The more open molecular structure of Type 6 nylon allows dye stuffs (and stains) in more readily. Common spills and stains such as coffee, soda, foodstuffs and medicine will stain Type 6 nylon more readily than Type 6.6, whether solution dyed or conventionally dyed.\(^\text{11}\)

[Synthetic carpet fibres](http://antron.eu/en/content/resources/carpet_glossary/ant06_03_14.shtml)\(^{10}\)

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**Figure 3: Synthetic carpet fibres**

* Nylon Type 6 is developed by DuPont Inc. and is made from one base ingredient: caprolactam. Compared to Type 6.6 nylon, Type 6 nylon accepts dye at a faster rate. The more open molecular structure of Type 6 nylon allows dye stuffs (and stains) in more readily. Common spills and stains such as coffee, soda, foodstuffs and medicine will stain Type 6 nylon more readily than Type 6.6, whether solution dyed or conventionally dyed.\(^\text{11}\)
Staple yarn
Staple yarn are short fibres comprising all natural carpet fibres with the exception of silk and all synthetic fibres cut into shorter fibres.\(^{13}\)

Solution dyed yarn
Solution dyeing is a yarn coloration process in which pigment is added to the polymer melt before the fibre is extruded into yarn. The colour, therefore, is an inherent part of the yarn itself. However, since colour pigments are added to the polymer before extrusion, colour choices are more limited than with post-dyed fibres.

Yarn spinning and twist
Yarn spinning is the conversion of staple fibres into spun yarn. The yarn is made up of short lengths of fibre, either synthetic staple or natural fibre.

Twist is a yarn term which describes the number of turns per inch (TPI) and direction of twist of either the singles or plies around their axes. Twist direction is either right or left handed, also called “Z” or “S” twist. Most carpet yarns have 3.5 to 6.0 TPI. The twist in the pile yarn combined with a number of additional factors set the overall performance of a cut pile carpet. Spun yarns need more twist than filament yarns for good performance. For moderate or heavy commercial use cut pile, it is suggested that continuous filament has a minimum of 4.50 TPI, while spun yarns have a minimum ply twist of 4.75 TPI\(^{14}\).

Carpet face styles
Various carpet face styles can be selected. Each style has its own characteristics adding a certain look to the final carpet solution. Below, some of the most commonly used carpet face styles are listed and described.

<table>
<thead>
<tr>
<th>Carpet face style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level loop pile</td>
<td>Loops are the same height.</td>
</tr>
<tr>
<td>Multi level loop pile</td>
<td>Different loop heights resulting in a sculptured appearance or pattern.</td>
</tr>
<tr>
<td>Multi level cut pile</td>
<td>The rich-looking cut pile is deep and luxurious with a smooth, level surface.</td>
</tr>
</tbody>
</table>

\(^{13}\) Teknologisk Institut, Træ og Textil, “Tekstil – Brugsegenskaber og vedligeholdelse”, page 38, 2008

\(^{14}\) Antron Carpet Fibre: http://antron.eu/en/content/resources/carpet_glossary/ant06_03_20.shtml

Table: Carpet face styles

<table>
<thead>
<tr>
<th>Face Style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plush (velour)</td>
<td>A plush is lower and denser than a saxony. In a plush, each individual yarn end is less distinguishable than in a saxony.</td>
</tr>
<tr>
<td>Saxony</td>
<td>Has a smooth and level finish. Pile yarns have more twist so that the yarn ends are visible. The yarns in saxony are thicker and have more tip definition.</td>
</tr>
<tr>
<td>Frieze</td>
<td>Yarns are extremely twisted forming a rough and “curly” textured surface.</td>
</tr>
<tr>
<td>Cut and loop pile</td>
<td>A combination of cut and looped yarns provides a variety of surface textures.</td>
</tr>
</tbody>
</table>

Figure 4: Carpet face styles\(^{15}\)

Loop and cut pile construction
On modern tufting machines, the yarn is sewn into the primary backing fabric by means of a long row of closely spaced needles. During tufting, a needle twinges through the primary backing fabric forming a loop at the bottom of the structure, which are held in place by small loppers. This is called loop pile structure. For a cut pile construction, the loop is cut using a knife combination.

The backing is subsequently provided applying a bonding compound which makes sure that the loops are fixed to the carpet.

\(^{15}\) The Carpet and Rug Institute, “The Carpet Primer”, page 1-10, 2003
As illustrated above, the carpet is produced with the primary backing facing upwards. The density of the carpet is determined by the density of the needles, also known as gauge.16

**Important decision**

**What to look for?**

Selecting which pile yarn to choose is an important decision. First, it is important to take into account the characteristics of the area in which the carpet is going to be installed. Then, the degree of traffic the carpet is going to be subjected to should be considered. For highly trafficked areas, a wear resistant carpet solution should be selected.

Whatever carpet type you end up buying, it can be advisable to look for a number of characteristics. Most importantly, emphasis should be placed on classification rather than on specification. The reason being that classification, and thus performance of the carpet, results from the interaction between carpet properties and not from single elements treated in the specification.

**The primary backing**

The primary backing is a woven or non-woven fabric or both (sandwich) in which the pile yarn is inserted by the needles in the tufting machine. The primary backing can be produced in either polypropylene or polyester. The primary backing ensures:

- Carpet strength
- Uniformity of the pile surface
- Retention of pile yarn during production
- Pattern stability

**Bonding compound**

Bonding compound is a mix of filler and latex used as a precoat that is applied to the back of the carpet to tie the yarn to the primary backing. Furthermore, the precoat adds stability to the carpet and makes it firm to cut. The mix of the precoat determines some of the carpet characteristics, e.g., how stable it is. If the ordinary filler is replaced with filler containing molecules of water to be released during fire, the carpet becomes fire-resistant with a low smoke formation. The flame retardent filler is called ATH (Aluminum TriHydrate). The precoat also controls the electrostatic conductivity characteristics of the carpet and whether it is to be impervious or not.


**Why is specifying carpet backing important?**

The carpet backing plays an important part in ensuring high quality carpet properties such as:

- Underfoot comfort
- Isolating properties
- Wear resistance
- Acoustics
- Footstep suppression
- Fire resistance

Specifying carpet backing should be ranked alongside specifying colour, fibre and pattern of a commercial carpet. Why? Just as steel girders are the foundation of a building, the carpet backing is the foundation of the carpet and thus, holds the ability to add long-term protection to both the carpet’s appearance and overall properties. The carpet backing adds structural stability, shape and protection.

The durability of the carpet is not only determined by the construction of the carpet, but also by the material, thickness and firmness of the backing.

**Integrated underlay**

In addition the carpet backing performs as an integrated underlay, meaning that additional underlay is not needed prior to installation of the carpet. The carpet can therefore be fixed directly to the subfloor.
Carpet backing options

Today's carpet market offers a wide range of carpet backing options, such as latex, PVC, polyurethane (PU), bitumen and textile backings such as woven or felt. ege offers a wide variety of high performance backing alternatives, specially developed to match high performance requirements of the demanding contract market. The variety of alternatives makes it possible for clients to find backing solutions matching demands of any project. ege's carpet backings hold different characteristics which are specified on the basis of end-use requirements such as:

- Performance standard
- Underfoot comfort
- Noise absorption
- Traffic suitability
- Low environmental impact

Carpet backings from ege can be divided into two backing types:

- Latex backings
- Textile backings

No softner or solvents

All ege latex backings consist of water-based Synthetic SBR-Latex (Styrene Butadiene Rubber). The backing contains neither softener nor solvents and the latex is protected with antioxidant to ensure long-lasting properties and is very resistant to break down of the latex during use.

<table>
<thead>
<tr>
<th>Backing type</th>
<th>Use areas</th>
<th>Installation method</th>
<th>Approx. thickness</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL – Contract</td>
<td>High traffic areas</td>
<td>Direct stick ege easy release system</td>
<td>1.5 mm</td>
<td>Dense</td>
</tr>
<tr>
<td>Latex</td>
<td>Contract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DL – Domestic</td>
<td>Low traffic areas</td>
<td>Loose lay below 25 m² Direct stick above 25 m²</td>
<td>3 mm</td>
<td>Soft</td>
</tr>
<tr>
<td>Latex</td>
<td>Domestic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HL – High</td>
<td>Low traffic areas</td>
<td>Loose lay below 25 m² Direct stick above 25 m²</td>
<td>4 mm</td>
<td>Soft</td>
</tr>
<tr>
<td>Latex</td>
<td>Domestic, Hotel rooms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XL – XTra High</td>
<td>Low traffic areas</td>
<td>Loose lay below 25 m² Direct stick above 25 m²</td>
<td>4.5 mm</td>
<td>Soft</td>
</tr>
<tr>
<td>Latex</td>
<td>Domestic, Hotel rooms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LL – Luxury</td>
<td>Low traffic areas</td>
<td>Loose lay below 25 m² Direct stick above 25 m²</td>
<td>6.5 mm</td>
<td>Soft</td>
</tr>
<tr>
<td>Latex</td>
<td>Domestic, Hotel rooms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5: List of latex backings

CL – Contract Latex
The CL backing is a dense latex backing suited for high traffic contract use. The backing offers performance benefits ensuring good underfoot comfort, improved acoustics and enhanced ergonomics. In addition, the CL backing offers castor chair suitability, making the backing highly suited for use in heavily trafficked areas.

The backing is created as an integrated underlay, meaning that no additional underlay is required. The carpet can therefore be fixed directly to the subfloor.

DL – Domestic Latex
The DL backing is developed for low traffic areas, such as residential areas, to increase underfoot comfort and sound absorption. The soft carpet backing in combination with the textile carpet surface allows for a reduction of room temperature of approximately 2-3° C without the room feeling colder. The reduction of temperature is made possible due to the carpet’s good insulating properties which, in comparison to other flooring solutions, keep heat in more effectively. The carpet fibres act as natural thermal insulators due to low heat conduction. This means that a carpeted floor does not draw warmth from the feet to the same extent as hard flooring solutions. Additionally, the surface pile of the carpet, containing millions of tiny fibres, traps air which further increases thermal insulation.

HL – High Latex
The HL backing is suited for low traffic areas such as guest bedrooms in hotels. The high latex backing provides high underfoot comfort. The soft and springy fibres add a cushion like effect to the floor surface. The soft construction makes it possible for the surface to adapt itself according to the movements of the foot and thus, divides the body weight evenly on the joints.

XL – Extra Latex
The XL backing is suited for low traffic areas, such as residential areas or guest bedrooms in hotels. The thickness of the backing provides underfoot comfort, acoustical absorption and thermal insulation.

LL – Luxury Latex
The LL backing is a latex backing, suited to low traffic areas, such as hotel bedrooms. The backing offers performance benefits ensuring luxurious underfoot comfort, improved acoustics and enhanced ergonomics. In comparison with CL, LL is less dense and is specially suited for use in guest rooms in hotels.
Textile backings
All textile backings consist of polypropylene (PP), polyamide (PA), polyester (PES), or blends. All are PVC free.

<table>
<thead>
<tr>
<th>Backing type</th>
<th>Use areas</th>
<th>Installation methods</th>
<th>Approx. thickness</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>WT – Woven Textile</td>
<td>Heavy traffic Contract</td>
<td>Direct stick, ege easy release system Double stick on underlay Stretched on grippers</td>
<td>1.5 mm</td>
<td>PP</td>
</tr>
<tr>
<td>IP – Impervious</td>
<td>Heavy traffic Contract</td>
<td>Direct stick, ege easy release system</td>
<td>1.5 mm</td>
<td>PP</td>
</tr>
<tr>
<td>AB – Acousti Back</td>
<td>Heavy traffic Contract</td>
<td>Direct stick, Wet Fixation</td>
<td>4 mm</td>
<td>PA+PES</td>
</tr>
<tr>
<td>MOD 750 – modular</td>
<td>Heavy traffic Contract</td>
<td>Tackifier</td>
<td>6.5 mm</td>
<td>PES</td>
</tr>
<tr>
<td>MOD 350 – modular</td>
<td>Heavy traffic Contract</td>
<td>Tackifier</td>
<td>2.6 mm</td>
<td>PES</td>
</tr>
<tr>
<td>CF300 – Comfort Back</td>
<td>Heavy traffic Contract</td>
<td>Direct stick &amp; seam sealing, ege easy release system &amp; seam sealing</td>
<td>7 mm</td>
<td>PES</td>
</tr>
</tbody>
</table>

Figure 6: List of textile backings

WT – Woven textile
Carpets with WT backing are suited for all living quarters, corridors and stairs. However, the WT backing is especially suitable for the contract market, e.g. in business premises where strict demands are imposed on the resistance of the carpet from loads such as chairs fitted with castors. This makes it perfect for conference rooms, offices, hotels, restaurants, bars and institutions.

The WT backing is woven in 100 % polypropylene and offers performance benefits, ensuring good underfoot comfort, improved acoustics and enhanced ergonomics. In addition, the WT backing offers castor chair suitability making the backing highly suited for use in heavily trafficked areas.

The WT backing can be fixed directly to the subfloor. When greater comfort is required, the carpet can be installed on additional underlay either as double stick or stretched on perimeter grippers. Installation on perimeter grippers is a craftsman’s installation technique, which provides a cushion like effect when walking over the carpet, increased footstep suppression, high strength and elasticity, resistance to heavy traffic and finally a simple and quick replacement of the carpet.

IP – Impervious
The IP backing possesses the same product characteristics as the WT backing. The IP backing is highly suited for installation in areas prone to dampness from spills. The backing fulfills industry requirements by the National Health Specification, NHS, in terms of resistance to spills. The unique impervious backing, thus, ensures that no water spillage gets through to the subfloor, preventing expensive floor damage. This makes the IP backing ideal for nursing homes, hospitals and health clubs.

AB – Acousti Back
Proper acoustic properties set the foundation of a good and healthy indoor climate. A carpeted floor is a great sound absorber and thus, acts as an acoustical aid in terms of footstep suppression and acoustical absorption. The AB backing is a specially developed felt backing consisting of polyester bringing special attention to the importance of good acoustic properties in the indoor climate.

Carpets with AB backing are suited for most living quarters, such as ships, halls, corridors, hotel rooms and conference rooms.

CF300 – Comfort back
The CF300 backing is specially developed for ege’s epoca flatrib concepts. The specially developed backing is produced in 100 % PVC free textile material. The backing offers good underfoot comfort and acoustical properties in terms of footstep suppression and acoustical absorption. Thus, CF300 is suited to places imposing high demands on the ability of the carpet to resist high use levels, and the special felt backing makes this carpet suited for places in which good acoustic properties are given high priority.

Flat-woven carpets with CF300 backing are ideal for non-residential areas such as offices, corridors, hotels, restaurants, shops and institutions.

MOD 350
MOD 350 is an alternative felt backing for carpet tiles, thinner than MOD 750. This means that MOD 350 is harder than MOD 750. Furthermore it is produced in 100 % textile material free of PVC and bitumen. MOD 350 is suited for heavy contract use.

MOD 750
All carpet tiles from ege can be produced with ege’s patented MOD 750 carpet tile backing, produced in a 100 % textile ma-
5. Product concepts

With an aim of being the trendsetting supplier to the most demanding parts of the market, ege is continuously on the lookout for new trends and developments within the business. A strategy which also highly influences the way new carpet concepts are developed.

Advanced dyeing plants

At ege, we have long-standing tradition of applying the latest technology available within carpet production, and we have one of the most advanced dyeing plants for textile floorings at our disposal. With great know-how, specially developed fabrics, innovative design possibilities and highly effective logistics, we are able to offer each client the possibility of creating individual and unique carpet solutions – even in very small quantities.

Total freedom of design

Anything is possible

ege has developed a wide range of carpet concepts bringing special attention to the importance of quality and design. Anything is possible. Even standard designs are unique and offered in a wide range of colour shades. When co-operating with ege, you are guaranteed total freedom of design. This means that any idea, no matter how creative and abstract, can become an aesthetically pleasing textile flooring solution, uniting unique individuality with high comfort.

The ege design team

Should advice or inspiration be needed for a project, the ege design team is always ready to assist in creating proposals for individual carpet designs.

Qualified designers

Together, the designers cover a broad spectrum of qualifications. Some of the designers are professionally trained textile designers while others are technical designers. Thanks to advanced technology, ege designers are capable of developing unique designs and colours which match both budget requirements and the style of the interior.

Advanced technology gives us total freedom of design and colours. Therefore, only the imagination limits what is possible. With ege you achieve:

- Design without limitations
- No pattern repeat restrictions
- All the colours of the rainbow
- The ability to create unique expressions
- Design solutions for spaces of any size

The MOD 750 and MOD 350 backings from ege offers:

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved installation</td>
<td>Lighter and easier to handle with no scuff marks to skirtings and door jambs</td>
</tr>
<tr>
<td>High flexibility</td>
<td>Easy to handle, install and replace</td>
</tr>
<tr>
<td>Low weight</td>
<td>Low transportation costs and easy to handle</td>
</tr>
<tr>
<td>Improved ergonomics</td>
<td>High comfort level due to absorption of foot impact</td>
</tr>
<tr>
<td>Improved indoor climate</td>
<td>Approved in accordance with the Danish Indoor Climate Labelling</td>
</tr>
<tr>
<td>Improved sound absorption</td>
<td>Improved working environment by reducing the impact of noise</td>
</tr>
<tr>
<td>Long-term appearance retention</td>
<td>Approved in accordance with EN 1307</td>
</tr>
<tr>
<td>Antisoil protection</td>
<td>Facilitating daily maintenance</td>
</tr>
<tr>
<td>High wear performance</td>
<td>Suitable for heavy use</td>
</tr>
<tr>
<td>Approved fire classification</td>
<td>Tested and classified in accordance with EN 13501-1 standard</td>
</tr>
<tr>
<td>Design flexibility</td>
<td>Unique carpet solutions by combining tiles in different colours</td>
</tr>
</tbody>
</table>

Figure 7: Carpet tile benefits
5.1. Contract collections

In a market, where style and expression are constantly changing, being able to offer design solutions matching different needs and purposes is of great significance. To ege, it is a matter of being able to offer unique carpet solutions fulfilling the individual needs of the client and to dare to break with conventions.

For the contract market, ege has developed a wide range of carpet concepts tailored to fit the requirements of a demanding market.

- Highline Express
- Designer collections
- Highline Specials
- Performance
- epoca
- Casa
- Modular

Most carpet concepts from ege can be produced in different qualities to match budget and demands in terms of wear-resistance, foot-step noise suppression, comfort, insulating properties, fire-resistance performance and anti-bacterial properties. These demands can all be met without limiting the client’s freedom in terms of colours and design.
<table>
<thead>
<tr>
<th></th>
<th>Highline 1400 g/m²</th>
<th>Highline 1100 g/m²</th>
<th>Highline 1100 g/m²</th>
<th>Highline 910 g/m²</th>
<th>Highline 750 g/m²</th>
<th>Highline 630 g/m²</th>
<th>Highline loop E16</th>
<th>Highline loop</th>
<th>Recolour options</th>
<th>No minimum order requirements</th>
<th>Sample service</th>
<th>Dispatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cosmopolitan</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>24 hours</td>
<td>1,5 week</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>24 hours</td>
<td>1,5 week</td>
</tr>
<tr>
<td>Nature/Super Nature</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>24 hours</td>
<td>1,5 week</td>
</tr>
<tr>
<td>FUNKYGRAPHIC</td>
<td>•</td>
<td>•</td>
<td>•</td>
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<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>24 hours</td>
<td>1,5 week</td>
</tr>
<tr>
<td>NONO – no noise runners</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
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<td>•</td>
<td>24 hours</td>
<td>1,5 week</td>
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<tr>
<td>Sense</td>
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<td>•</td>
<td>•</td>
<td>•</td>
<td>24 hours</td>
<td>1,5 week</td>
</tr>
</tbody>
</table>

Figure 1: Quality overview, features and benefits – Highline Express
The Cosmopolitan collection
With more than 253 designs available in 637 colour versions, the Cosmopolitan Collection is a perfect choice for creating variations on a theme. With floral decorations and embroideries, modern arabesque ornaments, majestic banqueting and multicultural designs, the classic patterns create historical ambiances and remarkable interiors. All with matching borders, runners and corridors, which can be combined in complex buildings without compromising on neither the colour theme nor on the style chosen for the space.

The Metropolitan collection
The Metropolitan Collection is a multi-functional collection offering a multitude of trendy design possibilities perfectly suitable for both hospitality and commercial projects. Organic circles, linear expressions, strict squares, tartan structures and modern abstracts together form this indispensable design source, which is the ideal choice for creating a supporting, subdued style or a space of vibrant and energetic colours. Metropolitan is available in 142 designs and 697 colour versions.

Nature/Super Nature
The Nature/Super Nature collection is inspired by the nature surrounding us, stretching from lifelike photographic images to graphic abstracts of nature. Nature/Super Nature is a unique concept, offering a multitude of design possibilities perfectly suited for a wide range of interior design projects. A contemporary collection composed of 37 designs and 127 colour versions reflecting current trends and making it easy to create innovative interiors.

FUNKYGRAPHIC
Reflecting current trends and high fashion impulses, the FUNKYGRAPHIC collection from ege makes it easy to create innovative interior design concepts.

The collection presents 27 different designs in 185 colour versions, which are created on the basis of a graphical retro style and spiced with oblique angles and new ways of seeing things. FUNKYGRAPHIC is a trendy, hip and all the way through unconventional design collection.

NONO noise runners
The NONO noise runners concept is an ideal solution for solving problems associated with poor acoustics in rooms with many hard surfaces and where an extensive renovation is either not feasible or wanted. The collection is available in both Highline Express and epoca. Highline Express runners are available in 24 designs, while epoca runners are available in 8 qualities.

Sense
Sense is a multifunctional collection offering a multitude of trendy design possibilities ranging from organic and wavy lines to stringent and linear designs. The collection offers 54 unique designs in 133 contemporary colour versions. Having used the five senses; hear, sight, taste, smell and touch as source of inspiration, the Sense collection succeeds in capturing the peaceful tranquillity of nature while adding style, comfort and expression to the interior.

DESIGN SPOT
DESIGN SPOT can be compared to the product development known from within the fashion industry. As opposed to our additional highline collections, the DESIGN SPOT concept is intended as a collection with a relatively short lifespan, meaning that once or twice a year, a new collection will be developed with the purpose of replacing the old. This is to ensure that the DESIGN SPOT concept always features the latest and most trendy design expressions. The concept is intended to showcase ege’s ongoing interpretation of the seasons’ hottest trends and tendencies and aims to highlight ege’s position as a trendsetting supplier of textile designer floor coverings.

The Metropolitan collection
The Metropolitan Collection is a multi-functional collection offering a multitude of trendy design possibilities perfectly suitable for both hospitality and commercial projects. Organic circles, linear expressions, strict squares, tartan structures and modern abstracts together form this indispensable design source, which is the ideal choice for creating a supporting, subdued style or a space of vibrant and energetic colours. Metropolitan is available in 142 designs and 697 colour versions.

Nature/Super Nature
The Nature/Super Nature collection is inspired by the nature surrounding us, stretching from lifelike photographic images to graphic abstracts of nature. Nature/Super Nature is a unique concept, offering a multitude of design possibilities perfectly suited for a wide range of interior design projects. A contemporary collection composed of 37 designs and 127 colour versions reflecting current trends and making it easy to create innovative interiors.

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Designer collections

Co-operating with creative souls such as artists and designers has been part of the corporate philosophy at ege for many years. These partnerships allow us to see and explore new possibilities in terms of carpet designs. Over the years, some of these many collaborations have resulted in unique designer collections:

- Erté
- Visual Texture by Conran & Partners
- Soft Landscapes by Marco Piva
- Marco Piva Rugs
- Monica Ritterband contract

Visual Texture by Conran & Partners – RF52851233

Designer collections
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<thead>
<tr>
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<tr>
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<tr>
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<td>•</td>
<td>24 hours</td>
<td>1.5 week</td>
</tr>
</tbody>
</table>

**Figure 2:** Quality overview, features and benefits – Designer collections

- Erté
- Visual Texture by Conran & Partners
- Soft Landscapes by Marco Piva
- Marco Piva Rugs
- Monica Ritterband contract
Impressions from Marco Piva’s many journeys were gathered in paintings and elaborated through computer processes. These have generated an original and artistic scenery, which through the use of unique and dynamic colour schemes represent the emotional route of his journeys. The collection consists of 23 different designs in an exciting selection of trendy colours.

Marco Piva Rugs are available in various sizes to match any interior design concept. Rectangular rugs: 250 x 300 cm, 200 x 300 cm, 165 x 235 cm, 140 x 200 cm
Square/circular rugs: 400 x 400 cm, 200 x 200 cm

Monica Ritterband contract
The Danish multi artist Monica Ritterband has designed the Dancers collection, available as broadloom, rugs and tiles. With tiles, the client is able to choose not only combination of designs and colours but also the size and shape of the rug or carpet.

Tiles can be used as a wall-to-wall solution or combined as a rug on a wood or stone floor. The carpet tile concept provides the opportunity of creating a work of art on the floor – a dynamic work of art which easily can be changed. Tiles can be placed in a rectangle or in an “L” shape and they can easily be removed to change either the shape or colour combination.

With “Dancers”, ege breaks with conventions and sets new standards for the design, size, colour and shape of carpets. The collection is an excellent example of ege’s tradition of breaking new ground by collaborating with artists to produce innovative and unconventional carpet designs.

Erté
The famous Russian couturier and artist Erte had major influence on the style and design of the 20th Century, and his achievements earned him the title “Father of Art Deco”. The influence of Erte’s style and the demand for his art live on. The designs in the Erte Collection are inspired by his work and are available with ege exclusively in 36 designs and 387 colour versions.

Visual Texture by Conran & Partners
The Visual Texture collection by Conran & Partners is a reflection of the classic Conran design ethos and a showcase of ege’s unique technology. The collaboration between the two companies has allowed for a rare freedom in design of floor covering.

Specially formulated dyes from ege allowed for total freedom to design a broad and eclectic range with a multitude of inspirations. The designs can be scaled and customised to suit the size, shape and style of any application. Highlight features, borders, corridor and runner solutions are included as standard for almost all designs. The collection consists of 27 design families in 440 colour versions.

Soft Landscapes by Marco Piva
Original, hand painted designs of the Italian architect Marco Piva have been restyled in the graphic filters of the computer, multiplied and changed into great and complex scenarios – soft landscapes. Here, original textures and colours have taken on new dimensions and intensity.

The 15 designs in the collection are available in 4 sizes; S, M, L and some in XL. The designs can easily be recoloured by using colours from one of the four ege standard colour palettes.

Marco Piva Rugs
Following the Soft Landscapes collection, it was a natural step for both Marco Piva and ege to continue a story already begun. This has resulted in a stunning collection of fitted rugs.

Designs and colours interact in a harmonious manner even within the most complex interior designs of areas destined for public use. A number of the designs in the collection evoke imaginary spaces. Others derive from the transformation of real images, objects, landscapes and textures.
Highline Specials

ege’s Highline Specials concept makes it easy to create individually designed carpet solutions and colours.

Total freedom of design – truly bespoke solutions
Literally everything is possible with the Highline Specials concept. The ege design team is always prepared to assist the client in finding the best carpet solution. This allows for total freedom to create flooring solutions matching any project, no matter the style.
Highline
1400 g/m²
80/20 wool rich

Highline
1100 g/m²
80/20 wool rich

Highline
1100 g/m²
100 % Polyamide

Highline
910 g/m²
100 % Polyamide

Highline
750 g/m²
100 % Polyamide

Highline
630 g/m²
100 % Polyamide

Highline loop
100 % Polyamide

Highline loop E16
100 % Polyamide

| Highline Specials | • | • | • | • | • | • | • |

Figure 3: Quality overview – Highline Specials
Scandinavian design is truly unique. It is visionary and built on the beauty of strong, progressive craftsmanship. Like Scandinavian quality design, ege’s epoca concept is well-established throughout the world.

Inspired by Scandinavian minimalism, the epoca concept is a perfect choice for modern and elegant office environments, which call for something ‘extra’. The epoca concept consists of 9 different textures, each available in many exhilarating colour shades. The epoca concept consists of:

- epoca classic
- epoca pro
- epoca compact
- epoca globe
- epoca accent
- epoca chess
- epoca checkers
- epoca ribs

Performance

Specifying carpet for healthcare facilities and areas exposed to disinfectants requires a carpet which complies with a set of specific requirements, including durability, appearance retention, maintenance and safety.

Performance is a unique carpet concept specially developed for areas imposed to high performance requirements. ege Performance twins high protection and great style with outstanding performance benefits, making the collection an ideal choice for hospitals, nursing homes, health clubs and hotel rooms, which all are subjected to high demands in terms of ensuring a visually pleasing, safe and long-lasting flooring solution. Performance is available in 18 designs and 492 colour versions.

Choosing ege Performance you are guaranteed a flooring solution offering:

- High wear resistance
- Easy maintenance
- High stain protection
- Bleach resistance (fulfilling test standard of ISO 105-NO1)
- Impervious
- Antimicrobial properties
- A wide range of design options

<table>
<thead>
<tr>
<th>No minimum order requirements</th>
<th>Heavy use</th>
<th>Extra heavy use</th>
<th>Sample service</th>
<th>Dispatch</th>
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<tr>
<td>Performance Loop</td>
<td>●</td>
<td>●</td>
<td>4 days</td>
<td>2,5 weeks</td>
</tr>
</tbody>
</table>

Figure 4: Quality overview, features and benefits – Performance
<table>
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<th>Colours</th>
<th>Recolour options from 200 m²</th>
<th>Stock qualities</th>
<th>CE marking</th>
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<th>Extra heavy use</th>
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<td>•</td>
<td>•</td>
<td>•</td>
<td>24 hours 2.5 weeks</td>
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<td>epoca pro</td>
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<td>•</td>
<td>24 hours 2.5 weeks</td>
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<td>epoca compact</td>
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<td>•</td>
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<td>•</td>
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<td>24 hours 2.5 weeks</td>
</tr>
</tbody>
</table>

Figure 5: Features and benefits of the different epoca collections
* Small orders from stock within 24 hours
epoca collections

Chapter 5-15

Scandinavian design is truly unique. It is visionary and built on the beauty of strong, progressive craftsmanship. Like Scandinavian quality design, ege’s epoca concept is well-established throughout the world. Inspired by Scandinavian minimalism, the epoca concept is the perfect choice for modern and elegant office environments, which call for something ‘extra’.

The epoca concept consists of 9 different textures, each available in many exhilarating colour shades. The epoca concept consists of:

- epoca classic
- epoca pro
- epoca compact
- epoca globe
- epoca accent
- epoca chess
- epoca checkers
- epoca ribs

Carpets with high quality carpet fibres

Offices, schools, hotels and public areas – all buildings have a set of unique flooring requirements. How the carpets perform in day-to-day use depends on the fibres used. A selected number of ege’s epoca collections contains Antron Legacy carpet fibres making them highly suited for use in highly trafficked commercial premises. The hollow filament of the carpet fibre ensures optimal light scatter, making dirt less visible, while the smooth structure prevents dirt from adhering to the carpet, thus providing a long lasting aesthetic appeal.

Antron Legacy carpet fibre offers:

- Effective noise reduction
- Low degree of soiling
- Easy cleaning
- Durability, wear resistance, resilience
- Appearance retention
- Antistatic properties
- Heat and safety benefits
Casa

Casa is a broadloom collection aimed at clients who need a carpet solution more affordable than ege’s regular design products. It is a flat woven broadloom carpet aimed at the contract market. Casa is a 100% solution dyed product made of 100% solution dyed Polyamide.

Casa distinguishes itself by being cheaper than ege’s other products and by being less flexible. The reduced flexibility is primarily seen in terms of requirements for special colours where the minimum order requirement is 20,000 m².

Casa withstands soiling, frequent spills and stains, exposure to intense sunlight, and harsh chemicals. It is available in 5 colours aimed at the commercial market.

<table>
<thead>
<tr>
<th>Casa 0653</th>
<th>Colours</th>
<th>Recolour options</th>
<th>No minimum order requirements</th>
<th>Extra heavy use</th>
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<td>5</td>
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<td>24 hours</td>
<td>24 hours*</td>
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</table>

* New production takes 8 weeks

Figure 6: Quality overview, features and benefits – Casa

Modular Carpet Tiles

Modular by ege is a concept of 48 x 48 cm modules offering high flexibility and numerous design options. All concepts, except CITYSCAPES, can also be delivered in 96 x 96 cm modules. The concept offers a wide range of modular stock designs in various textures and colours. The ege modular concept consists of both ground colours and strong effect colours matched to complement each other. In this way, colours can easily be combined to create unique and stunning flooring solutions.

Modular by ege contributes to a healthy indoor climate due to the patented 100% textile modular backing material without PVC, bitumen or glass fibre scrim.

The modular collections:

- epoca classic modular
- epoca profile modular
- epoca nordic modular
- Barcode Econyl 70 modular
- Contra modular
- Contra stripe modular
- Highline twist modular
- Tempo modular
- Modular express
- CITYSCAPES
- Highline modular definitions
- Carré modular

Modular carpet tiles can be produced in a variety of contract qualities which are compliant to the very latest and most stringent standards for wear life classification and long term appearance retention – EN 1307.

The tiles can be moved or removed when required. The tiles allow easy, flexible access to the floor underneath at any time. In this way, the carpets provide access to the cables and leads located in the floor underneath. This makes it easy to undertake repairs or new installations without having to shut down an entire area.
<table>
<thead>
<tr>
<th></th>
<th>Highline 1400 g/m²</th>
<th>Highline 1100 g/m²</th>
<th>Highline 630 g/m²</th>
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<th>MOD 350 backing</th>
<th>Colours</th>
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<td>48 hours 3.5 weeks</td>
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Figure 7: Quality overview, features and benefits – Modular collections
* = from 200 m² it also comes in broadloom with WT backing
** = new production takes 8 weeks
x = not at standard, but it is an option
epoca modular collections

epoca classic modular
This collection is a classic from ege, available in 30 colours and well suited for all areas. epoca classic modular is a collection of exclusive modules in size 48 x 48 cm, aimed at the minimalist part of the market.

epoca classic satisfies some of the strictest requirements on the market in relation to durability, comfort and acoustics, making the collection an ideal choice for, e.g. open-plan offices and shop interiors.

epoca classic modular is based on 100 % Polyamide Antron Legacy fibres, guaranteeing high-quality carpeting, highly suited for heavy traffic areas. For orders above 200 m², epoca classic is also available in broadloom.

epoca profile modular
epoca profile is a collection of exclusive modules in size 48 x 48 cm aimed at the minimalist part of the market. epoca profile is a flat woven construction in 12 modern colours adapted to present office environments.

epoca profile is based on 100 % Polyamide Antron Legacy fibres, guaranteeing high-quality carpeting, highly suited for heavy traffic areas. For orders above 200 m², epoca profile is also available in broadloom.

epoca nordic modular
The epoca nordic collection is a discrete, striped collection inspired by Scandinavian style. The collection is well suited for offices, public areas and shop interiors due to high durability and good comfort. Furthermore, epoca nordic modules satisfy some of the strictest requirements on the market in relation to acoustics. epoca nordic is available in 48 x 48 cm modules in 18 colours.

Barcode Econyl 70 modular
With a guaranteed minimum of 70 % recycled fibre content, Barcode Econyl 70 modular from ege presents a viable option for implementing green design in commercial interiors. Barcode Econyl 70 modular offers a unique range of carpet tiles tailored to meet high environmental performance demands while ensuring an aesthetically pleasing and long-lasting flooring solution.
Bar code Econyl 70 modular is approved in accordance with the Danish Indoor Climate Labelling and meets demands of the LEED Green Building Rating System. The collection is available in 12 contemporary colour combinations.

Contra modular
Contra modular satisfies some of the strictest requirements on the market in relation to durability, comfort and acoustics, making the collection an ideal choice for, e.g. open-plan offices and shop interiors. The collection consists of 9 matching colour shades.

Contra stripe modular
Contra stripe modular is similar to Contra modular, except from a hint of a stripe in the texture. Contra stripe modular satisfies some of the strictest requirements on the market in relation to durability, comfort and acoustics, making the collection an ideal choice for, e.g. open-plan offices and shop interiors. The collection consists of 9 matching colour shades.

Highline twist modular
The Highline twist modular collection is well suited for all areas, and widely used in shops due to the high durability and good comfort. Highline twist modular is available in 24 colours. For orders above 200 m², Highline twist is also available in broadloom.

Tempo modular
Tempo is a tile collection aimed at clients who need a carpet solution more affordable than ege’s regular design products. Tempo is ege’s first 100 % solution dyed modular product for the contract market, made of 100 % solution dyed Polyamide.

Tempo distinguishes itself by being cheaper than ege’s other products and by being less flexible. The reduced flexibility is primarily seen in terms of requirement for special colours where the minimum order requirement is 20.000 m².

Tempo modular withstands soiling, frequent spills and stains, exposure to intense sunlight, and harsh chemicals. It comes in 5 colours aimed at the commercial market. For orders above 200 m², Tempo modular is also available in broadloom.

Modular express
Modular express is a flexible concept consisting of 48 x 48 cm modules which offers infinite possibilities in terms of creating individual and impressive modular flooring solutions.

The concept allows the client to create unique flooring solutions by combining different patterns in matching or contrasting colours, or recolour with the Highline Express palettes or even special colours to fit the solution to style and budget requirements.

Modular express makes it possible to adapt each room to the continuous changes a building goes through over time.

Cityscapes
Randomly zooming in and out on everyday life in the city, from close-ups on surfaces and graphics to aerial views on architecture and street plans, ege has created a unique modular collection: CITYSCAPES. CITYSCAPES is a collection of unique and expressive designs and is the first collection within the modular concept MODULAR SHUFFLE by ege.

CITYSCAPE distinguishes itself from other modular collections by having no recurrence in the pattern. Each tile is unique and when mixed together and randomly installed, unprecedented and varying floor designs are created.

CITYSCAPES is available in 11 unique designs and 130 colour versions, of which 27 are special neon colours.

Highline modular definitions
The Highline modular definitions concept enables the client to choose patterns with clear definition and pattern repeat, such as geometrical designs.

Highline modular definitions is offered for individual patterns according to the client’s wish. The pattern must never be closer to the edge than 5 cm. This means that the distance between the geometrical elements has to be at least 10 cm. We recommend always using a mottled design in the background.

A trial run of approximately 4 m², which the client has to approve prior to putting the order into production, should always be produced. Highline modular definitions is available in all standard colour keys as well as special colours.
6. Product specification – test and classifications

Being able to select the right carpet, it is important for the carpet specifier to understand the various elements associated with carpet performance. For example, the construction of the carpet should match requirements of the use and traffic of the area.

It is important not to rely on one single construction factor when determining whether a carpet fulfils the requirements of the project. Instead, interaction between specification elements should be considered.

In each life cycle stage of a carpet it is possible to reduce environmental impact and to improve the performance of the product. The longer a carpet maintains its appearance, the less need there is for replacement and disposal. Thus, specifying high quality carpets plays an important role in reducing environmental impact.

With this chapter you gain insight into the different tests and classifications the carpets from ege are certified in accordance with.

Carré modular

The Carré modular collection is a collection of exclusive modules in size 48 x 48 cm offering modern modular designs in 7 colour combinations.

Functionality, durability and expression were key thoughts in creating Carré modular. The diversity of pattern, scale and colour of the collection makes it possible to create expressive flooring solutions that leave lasting impressions. Strong colours with high contrast can be used to make an expressive statement. Shades of greys, neutrals and blues can be used to create a classical and subdued expression.
The Danish Indoor Climate Labelling is a voluntary labelling scheme for identification of the impact on the indoor climate of building materials and products. The purpose of the scheme is to improve the indoor climate in buildings by:

- Giving the manufacturers a tool to develop more indoor friendly products
- Giving the users a tool to select more indoor friendly products
- Giving everybody a tool for better understanding of the impact of products on the indoor climate

The Danish Indoor Climate Labelling gives builders, architects, designers and specifiers the opportunity to specify indoor climate labelled products and to choose the best among the labelled products.

All carpets from ege are approved in accordance with the Danish Indoor Climate Labelling, serving as a guarantee that each carpet meets the standards of the voluntary labelling scheme laid down by the Danish Technological Institute to ensure indoor climates which provide optimal conditions for comfort and well-being.

INSTA 800

We spend many hours indoors everyday, whether it be in our homes or at work. To ensure well-being in these indoors environments, it is worthwhile to carefully consider the interior design and to set a number of performance demands in terms of the choice of flooring solution. These demands should comprise easy cleaning, comfort and low emission of vapour and dust.

Assessing cleaning quality

INSTA 800 is a Scandinavian measuring system for assessing the quality of cleaning in a room. The cleaning quality is measured both before and after finished cleaning. INSTA 800 measures among others dust deposits on carpets, before and after vacuum-cleaning. The measurements are converted into a dust index from 1 to 5, where 5 is considered to be the best result possible. The Swedish “Provnings- och Forskningsinstitut” (The Swedish National Testing- and Research Institute) has tested a number of ege contract qualities, vacuumed with equipment from Nilfisk, including epoca, epoca chess, epoca pro, Highline 1100 and Highline loop. All tested carpet qualities received 5. These results guarantee that a daily, dry and chemical free cleaning provides the required cleaning level.

9. General technical conditions

When either specifying or installing carpets, it is important to be aware of a number of technical issues which are crucial in the efforts to ensuring a satisfactory, visually pleasing and long-lasting carpet solution. These issues include:

- Construction data
- Measurements
- Patterns
- Colours
- Shading
- Pile reversal

This chapter elaborates the above standing factors.

Construction data

In regard to specified construction data, both test methods and margins are in accordance with the valid European EN 1307 standard for textile floorings. This includes:

- The total weight indicates the total weight of the carpet in g/m². The margin is +/- 15 %.
- The pile weight indicates the yarn weight over the primary backing and is indicated in g/m². The margin is +15/-10 %.
- The pile height indicates the pile’s height from the primary backing. The margin is: +/- 1 mm.

Measurements

In terms of carpet measurements, the following standards apply:

Length

Standard lengths are delivered with a margin of +/- 0.5 %. Special lengths are delivered with a margin of +1/-0 %. In case of total orders there may, in some cases, occur further surplus in a few rolls. Here, we also refer to sales conditions specials.

Width

Standard widths are delivered with a margin of +/- 3 cm for 400 cm and 500 cm roll width.

Cuts

The margin for cuts (cut service) is +1/-0 %. If a whole roll length has to be divided into more pieces, the tolerance for the whole roll...
width will be +/- 3 cm (e.g. a roll width of 397 cm (400 cm – 3 cm) divided into 4 even pieces to 4 lengths of 99 cm).

**Area rug**
The length is delivered with a margin of +/-2 % and the width with a margin of +/-1.25 %.

**Modular**
Lengths and widths are delivered with a margin of +/-0.2 % within the same batch.

**Patterns**

Textile floorings are flexible floorings and like all other production processes, certain margins have to be taken into consideration during installation. The following criteria describe the maximum margins within which it should be possible for a professional fitter to complete a satisfactory installation (for more information, check our ege’s installation guide. The guide can be found on our website www.egecarpet.com).

The tolerances are valid trade standards in accordance with CEN/TS 14159 which is a Technical Specification Document prepared by the European Committee for Standardization and thus valid for all members of the EU.

**Pattern repeats**
The given repeat sizes indicate the measures of the dominating pattern both in the length and width direction. These are used when calculating additional material in case of possible joins of two or more lengths.

**Pattern displaced – Image 1**
Pattern fitting over full width is not guaranteed. When joining repeats in the length direction the margin is: +/- 0.5 %.

**Pattern curves – Image 2**
Pattern curves appear where the repeat is on level in both sides but where the pattern is curving across the width of the carpet. The margin is +/-1 %.

**Diagonal slanting – Image 3**
Diagonal slanting appears where the repeat is out of level but staggered from one side to another. The margin is +/-1 %.

**Pattern swings – Image 4**
Pattern swings appear if the distance from the pattern to the carpet edge swings in the length direction. The margin is +/- 1 %.

However, max. 3 cm for 4 and 5 m width. Applies for standard roll length.

**Colours**

Due to production conditions, certain colour variations are inevitable. It is, therefore, possible that a shown sample may show minor difference of colour to the actual material delivered. It is important that rolls which are to be fitted together must be from the same dye batch. It is the responsibility of the carpet fitter to examine the rolls prior to installation. In certain cases there may be minor colour differences from roll to roll. This can be due to minor colour differences in production, different pile direction together with local conditions on the premises.

**Shading**

Shading can be defined as water spot like formations on the pile caused by changes in the original pile direction in velour qualities. In areas where the pile of the carpet is moved in different directions, the light reflection of the material is altered. When the pile is moved one way it will appear darker and when moved in the opposite direction it will appear lighter. This is not a defect in manufacture. In consequence, shading is not acceptable as a valid claim.

**Pile direction**

**Changes in limited areas**

This appears when changes in the pile direction occur within a limited area compared to the original pile direction. The change of direction is very different to that of shading. The cause of pile reversal is unknown but it is generally considered not to be caused by any defect in manufacture. In consequence, pile reversal is not acceptable as a valid claim.
10.3 Cutting

To achieve the correct quality when cutting a carpet, knowledge of carpet backing characteristics and available carpet tools is important. Below, cutting instructions are provided for the following carpet qualities:

- Tufted loop pile
- Tufted cut pile
- Flat woven

Tufted loop pile

Woven textile backing

Woven textile backing is a thin, woven and synthetic material available in 2 varieties:

a) Standard Woven Textile named WT backing.

b) Impervious named IP backing which, as standard, has blue threads woven in to the backing to indicate that the carpet fulfills the health sector’s demands in terms of water-resistant properties.

Both types of backing should be cut according to the instructions provided below.

- Cut the carpet with a black carpet cutter from the pile side - notice the position of the blade.
- With light pressure, push the cutter between the rows of pile thus allowing the cutter to run along the production lines between the rows without cutting these.
- It is important not to force the blade.
- All lengths should be cut.
- The lengths are now ready for installation.

Latex/foam backing

Latex backing is a rubber backing available in various thicknesses with varying firmness.

- Standard residential latex named DL backing
- Luxury latex named LL backing
- Extra Luxury latex backing named XL backing
- Contract Latex named CL backing

All latex backings should be cut according to the instructions provided above for woven textile backing on tufted loop pile.

Special instructions for epoca chess:
When dealing with epoca chess, special instructions apply in terms of cutting joins.

- The joins should be cut with the illustrated carpet cutter to ensure that the dark threads are cut through properly. It is important not to cut too close to the dark threads. The cut should leave behind two light threads at the edge of one of the carpet pieces and only one light thread on the other carpet piece. (NB! There are three light yarn rows between each dark yarn row).
- With light pressure, push the cutter between the rows without forcing the blade.

Tufted cut pile

Woven textile backing:

The woven textile backing is a thin, woven and synthetic material available in 2 varieties:

a) Standard Woven Textile named WT backing.

b) Impervious named IP backing which, as standard, has blue threads woven in to the backing to indicate that the carpet fulfills the health sector’s demands in terms of water-resistant properties.

Both types of backing should be cut according to the instructions provided below.
Procedure tufted cut pile

- When joining uni-coloured (plain) lengths, the cutting line should be pre-marked on all lengths with a screwdriver approximately 2-3 cm from the edge.
- When joining patterned lengths, the cutting line should be marked on all lengths with a screwdriver in a distance from the edge which takes into consideration the pattern repeat width of the carpet.
- When the pile has been separated with the screwdriver, the cut can be made between the two pile lines.
- Cut the carpet with a carpet cutter from the pile side – notice the position of the blade.
- With light pressure, push the cutter between the rows of pile allowing the cutter to run along the production lines between the rows without cutting these. It is important not to force the blade.
- The lengths are now ready for installation.

Latex backing:
The latex backing is a rubber backing available in various thicknesses and in varying firmness.

a) Standard residential latex named DL backing, offering good underfoot comfort
b) Luxury latex named LL backing
c) Extra Luxury latex named XL backing
d) Contract Latex named CL backing

All latex backings should be cut according to the instructions provided above for woven textile backing on tufted cut pile.

Felt backing:
The felt backing is a specially developed synthetic felt available in one variety:

a) Felt backing for broadloom named AB backing (Acousti Back).

The felt backing is cut according to the instructions provided above for woven textile backing on tufted cut pile.

Flat woven carpets with woven textile backing

Woven Textile Backing – Pile with pattern:
The woven textile backing is a thin, woven and synthetic material available in 2 varieties:

a) Standard Woven Textile named WT backing
b) Impervious named IP backing which, as standard, has blue threads woven into the backing to indicate that the carpet fulfils the health sector’s demands in terms of water-resistant properties.

Both types of backing should be cut according to the instructions provided below:

- Place the lengths so that they overlap and the pattern repeat fits.
- Flip the lengths to the side.
- Remember to apply a sufficient amount of adhesive – 3 m² per litre.
- Cut the lengths with aid from a ruler and a straight blade.
- Cut through both layers at once by adding sufficient pressure to the blade.
- Remove the carpet pieces which have been cut away (a sufficient amount of adhesive is left on the floor from the bottom piece).
- Finish by drum-rolling the lengths.

Woven textile backing – Pile without pattern:
The woven textile backing is a thin, woven and synthetic material available in 2 varieties:

a) Standard Woven Textile named WT backing
b) Impervious named IP backing which, as standard, has blue threads woven into the backing to indicate that the carpet fulfils the health sector’s demands in terms of water-resistant properties.

Both types of backing are cut according to the instructions provided below:

- BEFORE cutting, glue the lengths with an overlap of approximately 2-3 cm. This way, the lengths are not dislocated when cut, ensuring perfect fitting of the joins.
- Remember to apply a sufficient amount of adhesive – 3 m² per litre.
- Cut with the double cutter Duo, as it ensures that the top carpet follows the fence of the double cutter.
- Add pressure to the blade to make it cut through both layers at once.
- Remove the carpet pieces which have been cut away (a sufficient amount of adhesive is left on the floor from the bottom piece).
- Finish by drum-rolling the lengths.
10.4 Recommended tools

Using the correct tools plays an important part in ensuring a proper and professional carpet installation result. Which tools to use depends on the carpet quality in question. Below, a number of recommended carpet tools are presented for each carpet product quality.

Tufted carpets with textile backing

The black carpet cutter:
The black carpet cutter is recommended for trimming the edges. The black carpet cutter ensures fast and safe cutting of joins.
The pile rows on both cut and loop pile should be separated with a rowfinder/screwdriver prior to cutting from the pile side.

Please note the position of the blade on the black carpet cutter.

Tufted carpets with latex backing

The green carpet cutter:
The green carpet cutter is recommended for trimming the edges. The green carpet cutter ensures fast and safe cutting of joins.
The pile rows on both cut and loop pile should be separated with a rowfinder/screwdriver prior to cutting from the pile side.

Please note the position of the blade on the green carpet cutter.

Flat woven carpets

When working with flat woven carpets, either a double cutter Duo or ruler and knife is applied, depending on whether the carpet is uni-coloured or patterned.

Uni-coloured (plain) carpets:
The double cutter Duo is recommended when working with uni-coloured, flat rib carpets with textile backing. The tools ensures fast and safe cutting of joins. The cut is made by placing the carpet lengths so that they overlap and then cutting both carpet lengths at once by means of the carpet cutter fence.

Patterned carpets:
Ruler and carpet knife is recommended for cutting joins of patterned flat rib carpets with textile backing. Apply a straight blade.

Along walls

When working along walls, either the yellow edge cutter or the adjustable carpet cutter is recommended for cutting the carpet.

The yellow edge cutter:
The yellow edge cutter ensures fast and safe cutting of edges along walls where a close cut is required. The tool is intended for flat rib and tufted products with WT backing (woven textile).

The adjustable cutter:
The adjustable edge cutter ensures fast and easy edge cutting along walls where a close cut is required. The angle of the blade can be adjusted to the thickness of the carpet. The tool is applicable for woven and tufted products with both latex and WT (woven textile) backing.

Cutting around piping, columns etc.

When working around piping, columns etc. a carpet knife with a hooked blade is recommended for cutting the carpet.

Combi carpet cutter

The Combi carpet cutter substitutes both the green and black carpet cutters.
A

Abrasive wear: Wear or texture change to an area of carpet that has been damaged by friction caused by rubbing or foot traffic.

Acid dyeable nylon: Nylon polymer that has been modified chemically to make the fibre receive acid dyes. Acid dyeable yarns are available in different dye levels (light, medium and deep).

Adipic acid: A base ingredient in the production of Type 6.6 nylon. Adipic acid has a chain of six carbon atoms. It is reacted with hexamethylene diamine, which also has six carbon atoms, to polymerize Type 6.6 nylon.

Aesthetics: Properties perceived by touch and sight, colour, luster and texture of carpet.

Affinity: The tendency for two elements or substances to combine chemically. An example is the affinity of acid dye for nylon fibre.

Air-entangling (also known as intermingling, commingling or heathered): A method of producing yarn by combining two or more BCF fibres together. Fibres are “locked” together via air jets at regular or irregular intervals. The process is used to obtain special effect yarn (e.g., mixing dye variants to get heather effects upon subsequent dyeing or combining different colours of solution dyed fibre). Various air-entangling processes exist making it possible to produce a wide range of aesthetics in finished yarns, from highly blended, near solid looks to yarns where individual colours are accented and colour separation mimics that of plied yarns.

Amine end groups: The terminating (-NH2) group of a nylon polymer chain. Amine end groups provide dye sites for nylon (polyamide) fibres.

Antimicrobial: An agent that kills microbes.

Antistatic: A carpet’s ability to dissipate an electrostatic charge before it reaches a level that a person can feel.

Antistatic properties: Resisting the tendency to produce annoying static electric shocks in situations where friction of the foot tread builds up static in low-humidity conditions. Some nylon fibres introduce a conductive filament in the yarn bundle to conduct or dissipate static charges from the human body. Olefin fibre is inherently...
static-resistant, as it is similar to the surface of most shoe soles (only dissimilar surfaces rub to create a static charge). There are two basic methods for controlling the buildup of static in nylon carpets:
1. Treating the carpet with a topical spray. This is not permanent and creates a tendency for the carpet surface to soil.
2. Adding a carbon composite nylon filament into the bundle of yarn to act as a dissipating rod carrying the static charge away from the person generating it.

Atmospheric fading test: A test that indicates a change of shade or hue of dyed fabric caused by a chemical reaction between certain dyes and acid gases. Recommended test methods for carpets (AATCC 129 – Ozone and AATCC 164 – Oxides of Nitrogen) would specify a minimum rating, after two cycles, of no less than International Grey Scale for Colour Change rating of 3.

Attached cushion: Padding, such as foam rubber or polyurethane, that is made as an integral part of the backing.

Autoclave:
1. An oven-like apparatus for use in yarn heatsetting operations. Under pressure in a superheated steam atmosphere, yarn is given a “memory” of its twist. Autoclave heatsetting is a batch, not a continuous, method.
2. An apparatus for making polymer under heat and pressure.

Average pile density: The weight of pile yarn in a unit volume of carpet. It is expressed in ounces per cubic yard in the formula: Density = pile yarn Weight (in ounces per square yard) times 36 divided by pile Thickness or pile Height (in inches). Average pile density factors for commercial carpets range from 4200 to 8000.

Axminster: A weaving method originating in the eighteenth century in Axminster, England. In this method, individual pile tufts are inserted from spools of coloured yarns, making possible an almost endless variety of colours and geometric or floral patterns.

B

Backing: The fabric and yarns that make up the side of the carpet that lays next to the floor. In tufted carpets there are two types of backing.
Primary backing: a woven or nonwoven fabric through which the yarn is inserted by the tufting needles.
Secondary backing: Fabric that is laminated to the back of the carpet to reinforce it.

Back coating: An adhesive compound applied for the purpose of locking pile yarn tufts into a carpet backing, bonding a secondary backing to a primary backing, increasing the fabric body or stiffness, and increasing dimensional stability.

Backing fabric: A fabric into which a pile yarn is inserted or a reinforcing layer which is adhered to the reverse side of a fabric.

Bale: A container of approximately 650 lbs. of staple fibres, wrapped and ready to be shipped to the yarn spinner or carpet mill with yarn-spinning capacity.

Barber-pole: Two different colours of yarn twisted together to form a two-ply yarn.

BCF yarn: An abbreviation for Bulked Continuous Filament yarn referring to synthetic fibres in a continuous form. BCF yarn can be used in cut or loop-pile construction.

Beam: A large cylinder on which carpet yarns, usually pre-dyed, are wound prior to feeding onto tufting, weaving or fusion bonding equipment.

Beck dye: Dyeing of tufted greige carpet in a large vat of dye liquor. In this process, the carpet roll is sewn into a loop and then is continuously rotated and immersed in the heated vat for several hours. Most commonly used for cut pile carpet, it offers good custom colour flexibility.

Berber: A loop-pile carpet that offers great durability, a full comfortable texture and a casual, informal look. Often, these carpets incorporate flecks of colour that contrast with the primary hue. The term Berber has expanded to include many level and multi-level loop carpet styles.

Binding: A special stitch, band, or strip sewn over a carpet edge to protect and/or decorate it.

Bleeding: Loss of colour by a fabric or yarn when immersed in water or a solvent, as a result of improper dyeing or the use of dyes of poor quality. Fabrics that bleed will stain white or lightly shaded fabrics that come in contact with them when wet.

Blend: A mixture of two or more fibres or yarns.

Blending: The mixing of staple fibres before they are carded, drafted and spun into yarn. Blending is done for consistency in the final yarn and is a critical step to avoid “streaks” in a carpet.
Boucle:
1. An uneven yarn of three plies, one of which forms loops at intervals.
2. A fabric made of boucle yarns and having a looped or knotted surface.

Bound Carpet: Carpet that is cut and bound (by stitching or serging around all sides) but not attached to the floor.

Branded fibre: Synthetic fibre produced by a fibre manufacturer who also produces the raw ingredients and polymer and who has quality control of the entire process. Branded fibre is warranted by the fibre manufacturer.

Bright: The opposite of dull or matte when describing luster.

Broadloom: Wall-to-wall carpets, up to 4 and 5 meters width.

Bulking: Also known as crimping or texturizing. Bulking imparts texture/fullness to the fibre or yarn during production. Bulking is done to increase the coverage the yarn will have in the carpet face. Bulking also adds to fibre resiliency.

Bulk development: The process of a textured or latent crimp yarn to achieve maximum bulk. Carpet fibres develop maximum bulk during wet processing such as dyeing.

Cable: Carpet with casual cut pile construction featuring chunky tufts and long pile height.

Cabled yarn: A yarn formed by twisting together two or more plied yarns.

Caprolactam: The single basic ingredient in the production of Type 6 nylon. Caprolactam has a chain of six carbon atoms. It is a petrochemical.

Carding: The step after blending in the staple spinning process which combs out the loose fibres and arranges them in orderly strands called sliver. Sliver is drawn and blended, then twisted and further drawn into yarns.

Carpet: Carpet is a heavy fabric used to cover floor and made from a variety of fibres.

Carpet tile: Also called “Modular carpet” or “tile”. Generally 48 x 48, 50 x 50, 60 x 60 or 96 x 96 cm squares cut from broadloom carpet.

Cationic dyeable nylon: Nylon polymer that has been modified chemically to make the fibre receptive to cationic (basic) dyes. Cationic dyeable yarns are used in conjunction with acid dyeable yarns to produce multicolors in piece dye methods.

Cleanability: The ability or degree that a stain is removed from a carpet.

Colour matching: The proper coordination of colour and shade. Critical to colour matching are:
1. The light under which the colours are compared. (The light source being used in the real conditions of the commercial environment should be used to match colours.)
2. The surface texture of the object being matched (cut pile carpet can appear darker than loop made of the same yarn).
3. The surface luster of the object being matched (higher yarn luster can look darker than lower luster fibres).

Colour fastness: The ability of a fibre or carpet to retain colour when exposed to
1. ultraviolet light,
2. crocking (wet or dry) and
3. atmospheric conditions (according to manufacturers’ and government test standards).

Commercial matching: Matching of colours within acceptable tolerances or with a colour variation that is barely detectable to the naked eye.

Commingled yarn: See “Airentangling”

Construction: The carpet manufacturing method usually tufted, woven or bonded. The term also can refer to the specific details of a particular carpet’s specification, including fibre type, yarn twist level, density, method of dyeing, etc.

Continuous dyeing: Dyeing of carpet (greige) while it travels continuously through a dye range. The process is frequently referred to by the name of one of the prime machinery manufacturers, Eduard Kuster (pronounced “Kooster”). Continuous dyeing can produce multicoloured or solid-coloured carpet. Multicoloured carpet is achieved by using yarns of varied dye affinity, or with various accessories that can give a pattern or overprint. Advantages include
large dye lots, relatively low cost and colour flexibility. However, this method is more critical than beck dyeing or yarn dyeing for side-to-side matching consistency (the carpet must be installed in roll sequence).

Continuous filament: Unbroken strand of synthetic fibre, such as filament nylon or olefin. Nylon and olefin are made by extruding molten polymer through a spinnerette (similar to a showerhead). The fibres are cooled, then stretched and textured into bundles referred to as yarn. This yarn can be plied or commingled with other yarn and then tufted.

Continuous heatsetting: The process of applying heat to yarns to “set” or retain bulk, twist and spring introduced by spinning and/or twisting. Continuous heatsetting can be applied to staple or continuous filament yarns. The two primary types of continuous heatsetting equipment are the Superba, which uses steam and pressure, and the Suessen, which uses dry heat.

Conventional backing: Carpet with a primary and secondary latex-laminated woven or nonwoven fabric.

Converter: An intermediate that usually buys raw fibre, processes it to a carpet manufacturer’s specification, then sells the finished product to the carpet manufacturer.

Cotton count: The yarn numbering system based on length and weight originally used for cotton yarns and now employed for most staple yarns. It is based on a unit length of 840 yards, and the count of the yarn is equal to the number of 840-yard skeins required to weigh one pound. Under this system, the higher the number, the finer the yarn. A typical carpet yarn might be a three cotton count two plied, written as 3.0/2c.c.

CRI (The Carpet and Rug Institute): A national trade association representing the carpet and rug industry.

Crimp: In fibre, a nonlinear configuration, such as a sawtooth, zigzag or random curl relative to the fibre axis. Most synthetic fibres, both staple and filament, used in carpets are crimped. Fibre crimp increases bulk and cover and facilitates interlocking of staple fibres in spun yarns.

Crock fastness: The resistance of transfer of colorant from the surface of a coloured yarn or fabric to another surface, or to an adjacent area of the same fabric, principally by rubbing.

Crocking: The removal of dye from a fabric by rubbing. Crocking can be caused by insufficient dye penetration or fixation, the use of improper dyes or dyeing methods, or insufficient washing and treatment after the dyeing operation. Crocking can occur under dry or wet conditions.

Cross section: The shape of a fibre when cut perpendicularly to its axis. Man-made fibre cross sections vary to produce a wide variety of physical effects such as soil-hiding characteristics, soil releasing, luster, and fineness or coarseness. Hollow filament fibre shapes are highly engineered and are among the most advanced filament cross sections. The delta is among the most advanced staple cross section.

Crushing: The collapsing of pile yarns, resulting in carpet matting and loss of resilience. This form of carpet failure usually occurs in the areas of heaviest traffic. It is also called “matting” and “walking out.” It can be minimized by the use of more resilient fibres, denser construction, somewhat higher weight and (in cut pile) with higher tuft twist and proper heatsetting.

Curvilinear crimp: The three-dimensional crimp patented by IN-VISTA for its BCF yarn. This texture is added to the yarn by a series of air jets. Curvilinear crimp gives consistency, bulk and spring-back memory that is needed in the manufacture of cut pile filament carpets and streakfree loop carpets.

Cushion: The material placed under a carpet for softness and support. It helps reduce noise, increases insulation benefits, and contributes to a softer feel underfoot. Purchasing an incorrect type of cushion may invalidate your warranty. Also known as padding or underlay.

Cushion-backed carpet: Carpet having a cushion, padding or underlay material as an integral part of its backing.

Cut and loop pile: Carpet hose face shows a pattern, either geometric or floral, made up of a combination of loop pile tufts and cut pile tufts. Also called cut/uncut. The carpet can be dyed solid or multicoloured.

Cut pile: A carpet in which the yarn loops are cut to create a textured look and feel. Pattern cut pile: Made from saxony yarn, this carpet features a sophisticated look created by running cut pile and loop pile on a level pile height.
Decitex: The metric equivalent to denier; equals the total weight in grams of 10,000 meters. Decitex is used in Canada and Europe.

Deep-dyeing fibres: Fibres made from polymers that have been chemically modified to increase their dyeability. Carpets made of deep dye fibres can be dyed more easily to a darker colour depth.

Delamination: A form of deterioration of tufted carpet in which the primary backing and face yarns separate from the secondary backing.

Delustering: Synthetic fibres with polymer additives and/or cross-section design modification that limit its natural brightness or reflectivity. Delustering improves soil-hiding characteristics, as it limits the soil magnification that would occur with clear or shiny fibre.

Denier: Denier is the amount of yarn per area of carpet.

Denier per filament (dpf): The size of an individual filament (BCF or staple). Dpf is the weight in grams of 9,000 meters of the individual filament. It can be calculated by taking the yarn denier and dividing it by the number of filaments in the yarn bundle. Common range of commercial carpet dpfs is 15 dpf to 28 dpf.

Density: Density refers to the amount of pile yarn per area of carpet or the closeness of the tufts. Higher density carpet improves resistance to crushing and matting.

Differential dyeability: Fibres which have different dye affinities combined together to produce multicolour carpet from a single dyeing.

Dimensional stability: The ability of carpet to retain its size and shape once installed. Typically, dimensional stability is obtained in tufted carpet by the application of a secondary backing. In woven carpet, dimensional stability is normally provided by choosing stable backing yarns, especially the stuffer and filling, as well as by application of latex to the completed carpet.

Double-glued seams: Double-glued seams attach carpet to bare floor to prevent delamination and edge ravel. Installers should double-glue seams to prevent fuzzing.

Drawing (Third stage of nylon production):
1. The process of fibre stretching to align molecules after extrusion. This process gives fibres greater tensile strength. This is done in synthetic fibre production after the molten fibre strands harden.
2. The process of pulling and thinning of sliver (combed staple fibre strands) in the spinning of staple yarn. Multiple ends of sliver are blended by feeding them through rollers at a slower speed than their uptake. This causes the fibres to be pulled or drawn and parallelized. The resultant finished sliver is ready to be spun into yarn.

Drop match: A drop match is a pattern that continues across the carpet diagonally or at a 45-degree angle to the edge of the seam.

DSDN® solution dyed nylon: Carpets of DSDN® nylon provide the right balance of stain resistance, colour fastness and value for budget sensitive installations. It is ideal for tenant improvement (TI) and hospitality (rooms carpet).

Dull: A term applied to manufactured fibres that have been chemically or physically modified to reduce the brightness of the fibre.

Dye lot: A quantity of carpet dyed at one time or made from yarn dyed at one time which is consistent in colour throughout the fabric.

Dye sites: Functional groups within a fibre that provide sites for chemical binding with the dye molecule. Dye sites may be either in the polymer chain or in chemical additives included in the fibre.
1. An individual fibre making up a yarn to be tufted into carpet.
2. An individual pile yarn in a tufted carpet or a roll.
3. An end or short length of carpet or remnant.

E

Extra heavy traffic: More than 10,000 traffics per day. Could also include some directional, nondirectional, pivoting and rolling traffic, as well as tracked-in dirt. See “Foot traffic units.”

Extrusion (Second stage of nylon production): The process of forcing molten material through a spinnerette (similar to a shower-head). Once exposed to air cooling, the fibre strands harden. It is at the extrusion stage that many of the fibre engineering improvements take place: cross section design, shape, size and uniformity to give better soil hiding, soil releasing, and strength. All synthetic carpet fibres are extruded.
**Face weight**: Face weight is the number of ounces of fibre per square yard in the face of the carpet (not including the backing). The face weight affects performance and durability. Face weight is different from density because it varies with carpet height.

**Fadeometer**: A standard laboratory testing machine, which uses gas, light or ozone to conduct fading tests.

**Fading**: Loss of colour caused by sunlight or artificial light, atmospheric gases including ozone, nitrogen dioxide and hydrogen sulphide, cleaning and bleaching chemicals such as sodium hypochlorite, and other household and industrial products. Commercial installations in areas where such exposures occur require care in selection of colourfast carpet.

**Fading tests**: Laboratory tests designed to predict the likelihood of carpet fading under actual use conditions. Fading is usually caused either by ultraviolet light or by exposure to ozone or nitrogen oxide gas. Carpets can be tested in laboratory for results against fading agents. Dye stuff, hue or fibre can affect fading. A specific carpet being considered for a critical installation should be tested prior to final selection.

**Fibre**: Fibre is the fundamental unit of carpet. Carpet fibres are made from nylon, polyester, cotton, acrylics, wool, and recycled material.

**Fibre engineering**: Refers to improvements to the fibre including:
1. Polymer characteristics
2. Polymer additives (delusterant or solution dye pigments)
3. Cross section design
4. Fibre finishes (low surface energy fluorochemical coatings for soil release)

**Fibre shape**: Refers to the cross section and size of individual filaments. Fibre shape impacts soil hiding and soil release (cleanability).

**Fibre size**: Refers to the denier per filament (dpf) or thickness of a filament. Fibre size impacts soil-trapping and soil-releasing capabilities.

**Filament**: Fibre which has been extruded and is then converted into yarn fibre, staple or tow.

**Filament count**: The number of individual filaments that make up an extruded yarn fibre, staple or tow.

**Finishing**: Processing of carpets after tufting (weaving) and dyeing is called finishing. Processes include application of secondary backing, application of attached foam cushion, application of soil-resistant treatment, shearing, brushing, dyeing, printing and others.

**Flame-resistant**: A term used to describe a material that burns slowly or is self-extinguishing after removal of an external source of ignition. A fabric or yarn can be flame-resistant because of the innate properties of the fibre, the twist level of the yarn, the fabric construction, the presence of flame retardants or a combination of these factors.

**Flame resistance tests (also called “flammability tests”)**: Procedures that have been developed for assessing the flame resistance of carpets. The European accepted method is EN 13501-1, Radiant panel test: A test for the flammability of carpets in which the specimen is mounted on the floor of the test chamber and exposed to intense radiant heat from above. The rate of flame spread and the smoke emission is assessed.

**Flocked**: Flocked carpet is made of tufts of wool or cotton fibre.

**Fluffing**: Loose fibre fragments remaining from the manufacturing process that appear on a carpet surface. This condition is remedied by vacuuming and carpet use; also known as “fuzzing” or “shedding”.

**Fluorine analysis**: A measurement of the amount of soil resistance chemical (fluoro-chemical) applied to the fibre during the carpet manufacturing process. This can be performed for the initial application of the fluorochemical as well as for the durability of the chemical to remain after hot water extraction cleaning.

**Foot traffic units**: One foot traffic unit is described as a pedestrian walking across a measured section of carpet, one time. Foot traffic is classified as follows:
- Light: less than 100/day,
- Moderate: 100 – 1,000/day,
- Heavy: 1,000 – 10,000/day,
- Extra Heavy: more than 10,000/day.

**Frames**: Racks at back of a Wilton loom that hold spools from which yarns are fed into the loom. Each frame holds separate colours; e.g., a three-frame Wilton has three colours in the design.
Frieze: A yarn that has been very tightly twisted to give a rough or nubby appearance to the finished carpet pile. It is good for hiding footprints. Pronounced free-zay.

Fusion bonding: Fabrication of carpet for a 6” wide or modular tile. It uses a thermoplastic process that implants yarn in a liquid vinyl compound to two backing materials in a sandwich configuration. A knife splits the sandwich to create two carpets simultaneously. Spun yarn is used in this process, and only cut pile carpets are produced.

Fusion bonded carpets: Backing material for fusion-bonded carpet is a system of layered vinyl or plastic compound and fibreglass scrim for dimensional stability.

For Tufted Carpets:
1. Primary backing – In tufting, a woven or nonwoven fabric in which the pile yarn is inserted by the tufting needles. Usually woven or nonwoven polypropylene for carpet. In the past woven jute was used.
2. Secondary backing – Fabric laminated to the back of carpet to reinforce and increase dimensional stability. Usually woven or nonwoven polypropylene.

For Woven Carpets:
Backings of woven carpets are the “construction yarns” comprising chain warp, stuffer warp, and shot or fill, which are interwoven with the face yarn during carpet fabric formation.

Fuzzing: Fuzzing occurs when fluffy particles appear on carpet surfaces. It is caused by fibres that loosen because of weak twist or snags. Professional carpet cleaners can shear the carpet to remove fuzzing.

G

Gauge: The distance between two needle points in knitted or tufted carpet. It is usually expressed in fractions of an inch.

Gauge/pitch: The number of ends of surface yarn counting across the width of carpet. In tufted carpet, gauge is the number of ends of surface yarn per inch counting across the carpet; e.g., 1/8 gauge = 8 ends per inch. In woven carpet, pitch is the number of ends of yarn in 27 inches of width; e.g., 216 pitch divided by 27 = 8 ends per inch. To convert gauge to pitch, multiply ends per inch by 27, e.g., 1/10 gauge is equivalent to 270 pitch, or 10 ends per inch.

Graphics machine: A form of tufting machine capable of producing patterns, usually by the use of shifting needle bars that may be individually controlled, or by individually controlled needles or a combination of the two. Major refinements using computer technology have been engineered into graphics machines. Each new machine improvement brings tufting patterns nearer to those of woven capability.

Greige goods: Pronounced “gray” goods. Term designating carpet in an undyed or unfinished state.

H

Hand: How the carpet feels to the touch. Factors determining how the carpet feels include weight, stiffness, fibre type, dpf, density and backing.

Heatsetting: Heatsetting is the process of heating or steam ing yarns to hold their twist. Most nylon, olefin, and polyester cut pile carpets are heatset.

Heavy traffic: 1,000 to 10,000 traffics per day. Could also include some directional, nondirectional and rolling traffic, as well as tracked-in dirt. See “Foot traffic units.”

Heddle: A frame of parallel wires (like needles) through which warp yarns are threaded. The heddle is raised and lowered to interlace face yarns.

Hexamethylene diamine: A chemical compound with a chain of six carbon atoms which is reacted with adipic acid to make Type 6.6 nylon. It is a petrochemical.

Hexapod drum test: An instrument to test pile floor coverings to produce changes in appearance and colour due to changes in surface structure by mechanical action. This accelerated test, primarily used in Canada, provides a specific rating of the ability of the carpet to withstand crushing and matting.

Hollow filament fibres: Refers to filaments with one or more interior voids. Hollow core fibres improve the soil-hiding ability of nylon by diffusing light passing through the fibre.

Hybrid carpet: A carpet in which two or more different yarn types are combined in the carpet construction.
International Grey Scale for Colour Change: A standard comparison to rate degrees of colour change from 5 (no change) to 1 (severe change).

International Grey Scale for Staining: A standard comparison to rate degrees of staining from 5 (no stain) to 1 (severe stain).

ISO (The International Organization for Standardization): A non-governmental, worldwide organization whose work results in international agreements that are published as International Standards.

Jute: A fibrous plant, native to India and Asia, which can be shredded and spun into yarn, used for backing in woven carpets, or itself woven into sheets and used as secondary backing on tufted carpet. In many applications, jute is being replaced by fibreglass, polypropylene or other synthetic fibres.

Knit-de-Knit: See “Space dyed.”

Knitting: A fabrication process comprised of interlacing yarns in a series of connected loops with needles. Some carpet is produced by knitting, but it is generally categorized as woven carpet. In carpet knitting, as in weaving, pile and backing are produced simultaneously. Multiple sets of needles interlace pile, backing and stitching yarns in one operation.

Kuster: A trade name of a manufacturer of continuous dyeing machines which apply dye to tufted carpet.

Latex: A water emulsion of synthetic rubber, natural rubber, or other polymer. In carpet, latex is used for laminating secondary backings to tufted carpet, backcoating carpet and rugs, and for backcoating woven carpets and rugs. Almost all carpet latex consists of styrene-butadiene synthetic rubber (SBR) compounded with large quantities of powdered filler.
chemical manufacturer. Type 6 nylon and polypropylene (olefin fibre) are commonly mill extruded.

**Moderate traffic:** 100 to 1,000 traffics per day. Could also include some directional and nondirectional traffic, some pivoting and little tracked-in dirt. See “Foot traffic units.”

**Modified delta cross section:** An advanced fibre cross section engineered by INVISTA. The smooth delta shape hides soil and minimizes soil buildup more than trilobal cross sections. (The trilobal has deep crevices that trap soil particles).

**Modular carpet or tile:** Also called “carpet tile.” Generally 48 x 48, 50 x 50, 60 x 60 or 96 x 96 cm squares cut from broadloom carpet.

**Monofilament:** A single filament of a man-made fibre usually of a denier higher than 14. Monofilaments are usually spun individually instead of through a spinnerette.

**Moresque:** A multi-colour carpet made of (moresque) yarns which are produced by ply-twisting two or more singles yarns of different colours or shades. The moresque aesthetic can be achieved by using long space dyed yarns in a patterned carpet where tonal colours have been used in the space dyed yarns.

**Multifilament:** Multiple continuous filaments or strands of man-made fibre that are extruded together, usually from multiple holes of a single spinnerette. Multifilament yarns are texturized to increase bulk and cover, and are called “bulked continuous filament” (BCF) yarns.

**Multilevel loop pile:** A woven or tufted carpet style having tufts of varying pile heights, resulting in a sculptured appearance, pattern or subtle shading. Today most multilevel loop styles are made on tufting machines equipped with servo motor controls. The servos allow for precise patterning and more exact yarn control/usage.

**N**

**Needle punched:** Needle punched carpet is stitched into backing material.

**Nonwoven:**

1. Any carpet manufactured by a method other than weaving, but particularly those composed of fibres held together by chemical, mechanical, adhesive or fusion means.

2. Any primary backing material manufactured by a method other than weaving.

**Nylon:** A petrochemical-based fibre invented in 1938. There are two basic types of nylon used in the production of carpet: Type 6.6 nylon and Type 6 nylon. Nylon is produced in bulked continuous filament for use in loop carpets and cut pile carpets, and staple nylon that is spun into yarn for use in cut pile carpets. Nylon is the dominant fibre choice for commercial use due to its wear characteristics.

**Nylon – Type 6.6:** Made with two base chemical ingredients: adipic acid and hexamethylene diamine. Type 6.6 nylon has a tighter molecular structure, making it more resilient and more resistant to stains than Type 6 nylon. In the U.S., where the highest commercial carpet standards are set, more than 60% of all nylon carpets specified are Type 6.6 nylon.

**Nylon – Type 6:** Made from one base ingredient: caprolactam. Compared to Type 6.6 nylon, Type 6 nylon accepts dye at a faster rate. The more open molecular structure of Type 6 nylon allows dye stuffs (and stains) in more readily. Common spills and stains such as coffee, soda, foodstuffs and medicine will stain Type 6 nylon more readily than Type 6.6, whether solution dyed or conventionally dyed.

**Nylon flake (or chip):** Polymer that has been cut into small pieces for storage or for immediate melting in the fibre extrusion process.

**O**

**Olefin fibre:** Also known as polypropylene. It is used for molded items, sheets, films and fibres. Made from a by-product of gasoline refining, olefin has one ingredient: propylene. Since propylene is widely available at a comparatively lower cost than nylon base ingredients, olefin is less expensive than nylon. Olefin does not accept aqueous-based dyes or stains. Colour is added in the manufacturing process in the form of pigment. Printable modifications are available but not extensively used. Olefin is a lightweight fibre and can have good bulk and cover. However, the polymer base creates a soft fibre which has poor resiliency, a lower melting point and poor texture retention as compared to nylon. The carpet fibre is available as bulked continuous filament yarn. Only when budget is the main consideration, lower life expectancy is anticipated, and long-term appearance retention is not a priority, olefin can be considered.
Optimum twist: The term used to describe the amount of twist that gives the best texture retention and/or necessary carpet aesthetic.

Ozone fading: The fading of colour from a dyed or pigmented fibre caused by atmospheric contaminants of ozone.

Package dyed: This is similar to skein dyeing in as much as undyed yarn is wound on perforated tubes and the packages are dyed by passing dye liquor through the packages under pressure.

Pad dyed: A process of dyeing carpet, yarn or fibre stock continuously. The material to be dyed passes through a trough containing the dye liquor and then between heavy rollers that squeeze the dye liquor evenly into the material.

Parallel spinning: Spinning method most commonly used in spinning nylon staple fibre into yarn. Staple fibres measuring 4” to 8” are paralleled by combing and drafting until the fibres are in regular even slivers, or strands of combed yarn. Multiple slivers are combined to make up one finely drafted sliver. This sliver can be further blended for extreme consistency. The final sliver is put on a spinning frame and further drawn (or pulled) as twist is applied, turning the fibre into a cohesive singles yarn ready to be plied and heatset. See “Sliver.”

Pattern match: Lining up patterned carpet in such a way that the design element is continued across seams, making the finished installation appear cohesive. Patterns must be matched in the same way as they appear on the carpet itself either in a set match or drop match.

Pattern streaks: Visually apparent streaking in patterned carpet resulting from linear juxtaposition of pattern elements in one direction. It is usually most visible in the length direction. It is not a carpet defect, but is inherent in certain designs. Contract specifiers should view rolls of carpet laid out on a floor to evaluate geometric or other busy patterns for this characteristic which may be objectionable in long corridors and other large areas, but not visible in small rooms.

Patterned loop: A woven or tufted carpet style having all tufts in a loop form in either a defined or random pattern or design.

Picks per inch: In woven carpet and fabric, the number of fill yarns per inch of length. Comparable to stitches per inch in tufting.

Piece dyed: A method in which tufted carpet is dyed, as opposed to yarn dye methods in which colour is added to yarn before tufting.

Pigment: Highly coloured, insoluble substance used to impart colour to other materials. White pigments (e.g., titanium dioxide) are dispersed in fibre polymers to produce delustered (semi-dull and dull) fibres. Coloured pigments are added to polymer to create producer coloured or solution dyed yarns.

Pile: The visible surface of a carpet, consisting of yarn or fibre tufts in loops that can be either cut or uncut. Also known as the “face” or “nap” of a carpet.

Pile crush: Loss of pile thickness by compression and bending of tufts caused by foot traffic and heavy pressure from stationary furniture. The tufts collapse into the space between them. It may be irreversible if the yarn has inadequate resilience and/or the pile has insufficient density for the traffic load.

Pile height: The length of the tufts measured from the primary backing top surface to their tips. Pile tufts should be gently extended but not stretched during accurate measurement.

Pile Reversal: Pile reversal or shading is a feature of cut pile carpet. Traffic bends the carpet fibre in different directions creating an impression of light and dark areas. Regular vacuuming can create uniform shades.

Pile thickness: The resulting thickness when the thickness of the backing is subtracted from the total thickness of the finished carpet.

Pile yarn: The yarn making up the tufts of the carpet.

Pill test: See “Flame resistance tests.”

Pilling: A condition, often caused by heavy use, in which fibres from different tufts of carpet become entangled in one another forming hard fibre masses or “pills.” These pills can be cut off with scissors.

Pin drifter: A mechanism used in parallel spinning to orient the fibres by using combing pins and rollers.
Pitch: See “Gauge/pitch”.

Plush: A cut pile carpet in which the individual carpet fibres appear to be cut the same length. The carpet offers a smooth, luxurious surface.

Ply: A measure of the number of individual yarns twisted together to produce the finished carpet yarn. For example, a two-ply yarn means that each tuft consists of two yarns twisted together. For cut-pile carpets, plied yarns must be heatset to prevent untwisting under traffic.

Polyester fibre: A synthetic fibre, usually produced with staple fibre and spun yarns, that is used in some carpet fibre.

Polymer: Polymers are large chemical molecules from which synthetic fibres are made. Polymers are complex, chain-like molecules made by uniting simpler molecules called monomers. Synthetic polymers used for commercial carpet fibre include Type 6.6 nylon and Type 6 nylon (polyamides) and polypropylene.

Polymerization (first stage of nylon production): A chemical reaction where small molecules combine to form much larger molecules.

Polypropylene: See “Olefin fibre”.

Post-dyed: Carpet that has been dyed in its tufted form. Post-dyed means the carpet rather than the yarn has been dyed.

Power Stretcher: A tool used to install residential carpet that prevents wrinkles and ripples.

Pre-dyed: Carpet that has been constructed with coloured yarns either by solution dyeing or yarn dyeing.

Primary backing: See “Backing”.

Printed carpet: Carpet having printed coloured patterns. Printing methods include flatbed screen printing, rotary screen printing, and modern computer-programmed jet injection printing.

Private label: A carpet manufacturer brand name given to a fibre that is mill extruded or produced by a fibre manufacturer. At any given time the carpet manufacturer may choose to change the source of fibre which results in varying performance characteristics of the carpet.

Producer-coloured pigment: Colour introduced into nylon fibre at the nylon manufacturing stage.

PVC hard-backed or closed-cell PVC (polyvinyl chloride): Used mostly in carpet tile or 6” wide goods due to its weight and stiffness. PVC gives a stiff, stable backing with little cushioning but excellent tuft bind and stability.

R

Radiant panel test: A test for the flammability of carpets or rugs in which the specimen is mounted on the floor of the test chamber and exposed to intense radiant heat from above. The rate of flame spread is assessed. (ASTM-E-648 Class I .45 watts/cm; Class II 22 watts/cm.)

Random sheared: A carpet texture created by lightly shearing (shaving off) either level loop or high-low loop so only some of the tufts are sheared. Shearing gives a cut and loop texture.

Red 40 Stain Scale: A standard comparison to rate degrees of Red Dye 40 staining from 10 (no staining) to 1 (severe staining).

Repeat: The distance from a point in a design in a patterned carpet to a point where the identical pattern appears again, measured lengthwise and widthwise in the carpet. In matching the pattern, there will inevitably be some waste of carpet in order to obtain the best possible side match—whether it is a drop or set match pattern.

Resilience: The ability of carpet to spring back to its original texture and thickness after being walked on or compressed by the weight of furniture. Also known as “resiliency.”

Rippling: Heat and humidity can cause ruffles or waves in wall-to-wall carpet. A professional carpet retailer or installer can re-stretch the carpet with a power stretcher.

Rows or wires: In woven carpet, this is the number of pile yarn tufts per running inch lengthwise. Called rows in Axminster and wires in Wilton and Velvet carpet. Analogous to “stitches per inch” in tufted carpet.

S

Sawtooth crimp: Also called zigzag crimp, this is a two-dimensional crimp that gives yarn cohesion, texture and bulk.
Saxony: The carpet fibre loops are cut and twisted to create a relatively dense, consistent look. Saxony carpet presents a smooth, luxurious surface and is generally for formal settings.

Seams: The line formed by joining two pieces of carpet. The pieces can be sewn together, or fastened with various seaming tapes or other adhesives.

Secondary backing: See “Backing”.

Selvage: The edge of the carpet. Most commercial carpets are shipped with the selvage on. Residential carpet is usually trimmed to the face yarn.

Set match: Refers to a pattern in a carpet which continues straight across the installed carpet at right angles to the seams.

Shading: Apparent colour shade difference between areas of the same carpet caused by normal wear and/or random difference in pile lay direction. It is a characteristic of cut pile carpet. It is not a manufacturing defect.

Shearing: Finishing process in cut pile carpet manufacturing to create a smooth carpet face. The shearing process can also be used to create texture, as in random shearing.

Shedding: New carpet tends to shed for a few weeks after installation. Regular vacuuming can resolve this problem. Shedding is more common in cut pile carpet and in wool carpet. Synthetic fibre carpet (such as nylon) does not shed as much.

Singles yarn: One yarn end of either continuous filament yarn or spun yarn. Singles yarn is most often plied, twisted, or air-entangled with additional singles yarns to create a “two-ply,” “three-ply” or “four-ply” yarn bundle.

Sisal: A type of woven floor covering originally made of vegetable fibres such as grass and jute. Now synthetic alternatives are available that offer a more comfortable feel as well as interesting textures, patterns and prints.

Skein dyed: A method of dyeing yarn. Undyed spun or filament yarns are plied and heatset, then reeled into skein form and dyed in skein dye kettles.

Sliver: An intermediate stage in the production of spun yarns from staple fibre. It is a large, soft, untwisted strand or rope of fibres produced by carding or pin drafting.

Smoke chamber test: Method that assesses smoke generating characteristics of a carpet sample due to pyrolysis and combustion by measuring the attenuation of a light beam by smoke accumulating in a closed chamber under controlled conditions.

Snags: Snags can occur when an object tangles in carpet. Usually, you can simply cut the snag with sharp scissors. If the snag is large, however, call in a professional carpet cleaner, retailer, or installer to resolve the problem.

Soiling: Soiling occurs when dirt particles build up in carpet fibres. Regular vacuuming and cleaning will prevent this problem.

Soil hiding: The ability of a fibre to mask the presence of soil.

Soil resistance: The ability of a carpet fibre to resist dry soil and maintain its original appearance after intermittent or restorative cleanings. The amount of soil resistance can be determined by fluorine analysis.

Soil retardant: A chemical finish applied to carpet fibres or surfaces that inhibits the attachment of soil.

Solution dyed: Pigment is added to the molten polymer from which the filaments are made. The fibre is extruded in coloured form.

Space dyed: A method of dyeing yarn. Space dye refers to yarn with multiple colours printed on each strand. There are three basic processes used to create this effect: the warp system, the knit-de-knit process and the continuous dye process.

1. In the warp system, multiple strands of yarn are continuously printed at spaced intervals with different colours. These yarns usually have “long” spaces of each colour.

2. In the knit-de-knit process, the yarn is first knitted into a tubular fabric (sock), then dyed to a solid colour and then overprinted with up to seven different colours. These yarns usually have “short” spaces of colour.

3. In the continuous dye process, yarn is dyed as singles or plied yarn and colour is applied either by air jet or dye rolls. This process allows for yarns to have either long or short spaces of colour.

Spinnerette: The device (similar to a showerhead) which forms strands of filament as molten polymer is pumped through. It is at
this stage that the fibre cross section, fibre size and the number of filaments in a yarn bundle (for continuous filament) are determined.

**Spinning:** The conversion of staple fibre into spun yarn.

**Sprouting:** The raising up of an individual tuft or fibre above the level of the pile. These may be cut with scissors. If the sprouts are large, however, call in a professional carpet cleaner, retailer or installer to resolve the problem.

**Spun yarn:** Yarn that is made up of short lengths of fibre, either synthetic staple or natural fibre.

**Stain resistance:** The ability of a carpet fibre to resist the absorption of stain and maintain its original appearance. For carpets to resist stains, some manufacturers use a topical stain resist treatment that may be removed after hot water extraction.

**Staple fibre:** Also called staple. Short lengths of fibre which have been chopped from continuous filament in lengths of 4” to 7.5”. Staple fibre must be further processed (spun) into yarn before it can be tufted/woven into carpet. Nylon and polyester are examples of synthetic fibres available in staple form.

**Static control test:** A measurement of the amount of static discharge that occurs under specified conditions.

**Static control:** See “Antistatic properties.”

**Static electricity:** Cold and low humidity often create isolated motionless charges of electricity. Some carpets provide static resistance. Humidifiers also limit static electricity buildup.

**Static shock:** Buildup of electrostatic energy on a carpet and the subsequent discharge to a conductive ground such as a file cabinet. Various static control conductive systems are used in commercial carpet to dissipate static charge before it builds to the human sensitivity threshold, which is 3.5kV.

**Stitches:** The number of yarn tufts per running inch of a single row in a tufted carpet.

**Stitches per inch (SPI):** Number of yarn tufts per running inch along the length of the carpet (as opposed to the gauge which is the number of stitches across the width of the carpet).

**Stock dyed:** Used for staple fibre only. Undyed, loose staple fibres are dyed in a vat. They are then blended, carded and spun into yarn.

**Stretch-in:** The procedure for installing residential carpet over a separate cushion using a tackless strip with a power-stretcher.

**Suessen:** A trade name of a German manufacturing company and its continuous heatsetting process. In Suessen setting, dry heat is applied to twisted yarn. The heat builds bulk and locks twist into the thermoplastic fibre’s “memory.”

**Superba:** A trade name of a French manufacturing company and its continuous heatsetting process. In Superba setting, steam and pressure are applied to twisted yarn. Heat and pressure are applied to build the bulk and lock twist into the thermoplastic fibre’s “memory.”

**Surface area:** The perimeter of an individual fibre filament or multiple filaments.

**Surface energy:** Technical measure of the tendency of a surface – in this case, the carpet yarn – to repel molecules of another substance. Low surface energy refers to a repelling action.

**Synthetic fibre:** Produced by man-made means, not available in nature in the same form.

**Tackless trip:** Wood or metal strips fastened to the floor near the walls. The strips have two or three rows of pins angled up toward the walls on which carpet backing is fastened during a stretch-in installation.

**Tensile strength:** The strength along the length of a fibre.

**Texture:** Visual and tactile surface characteristics of carpet pile, including such aesthetic and structural elements as high-low and cut and loop patterning, yarn twist, pile erectness or layover, harshness or softness to the touch, luster, and yarn dimensions.

**Texture Retention:** Texture retention or carpet memory is the ability of tufts to retain their shape under traffic. Caring for care will help texture retention.
Textured loop: A woven or tufted carpet style having all tufts in a loop form, usually with two or three pile heights. There is generally less difference between the lowest and highest pile heights than would be found in a multilevel loop carpet.

Texturizing: In synthetic fibre production, crimp or texture can be put into the fibre by different methods. The most common for carpet yarns are:
1. Air jet methods for BCF. In this texturizing process, yarn is fed through the turbulent region of an air jet. In the jet, the yarn structure is modified by heat and air.
2. Stuffer box method for staple. Yarn is fed into a chamber and compressed. The individual filaments are forced to fold or bend at sharp angles.

Thermoplastic: A molten resin process that permanently adheres the primary and secondary backing. This backing system is branded as Unibond® by Lees Carpets.

Tip definition: Visible individual twisted cut yarn ends in a carpet surface. If, under heavy wear and pivoting, the tufts have been splayed open, the carpet is said to have lost its tip definition.

Tip shearing: Shaving off tufted high loops in the finishing process to create a cut and loop texture or pattern.

Titanium dioxide (TiO2): A compound that is used primarily as a delusterant in fibre.

Total weight: Weight (ounces) per square yard of the total carpet pile yarn, primary and secondary backings and coatings.

Tow: Continuous synthetic fibre filaments (without twist) collected in a loose rope-like form and held together by crimp. Tow is the form before fibre is cut into staple.

Tuft bind: The force required to pull a tuft from a carpet.

Tufted: A method of manufacturing carpet. Tufts of fibre are inserted through a carpet backing to create a pile of cut and/or loop ends.

Turns per tuft (TPT): The number of twists in the pile yarn above the primary backing. A more accurate way of measuring relative twist level in cut pile carpets. Generally, the greater the turns per tuft, the better the performance.

Twist: Winding the fibre around itself to strengthen a fibre’s resistance to crushing.

Twist level: Twist level is the number of turns per inch of yarn.

Two-ply: Most common yarn ply. Two single yarns are twisted together, then heatset to maintain their twisted configuration. Can be used in either cut or loop pile carpet.

Underlay: The cushion or padding that lays underneath rugs.

Unitary: A single lamination of fabric backing with high rubber content latex or hot-melt resin compound for increased tuft bind. Used primarily with loop pile carpet.

Urethane (polyurethane): A polymeric resin applied by the carpet mill in the finishing process. In the heat and curing chamber it reacts and creates a foam-like texture. This backing encapsulates the yarn for extra tuft bind with a cushion attached.

Velvet carpet: Woven carpet made on a loom similar to a Wilton loom but lacking the jacquard mechanism. Velvet carpets are generally level loop, level cut/loop or plush, in solid or tweed colors.

Vettermann drum test: An instrument to test pile floor coverings to produce changes in appearance and colour due to changes in surface structure by mechanical action. This accelerated test, primarily used in the US, provides a specific rating of the ability of the carpet to withstand crushing and matting.

Vinyl: Colloquial term for the synthetic polymer, polyvinyl chloride. Also called PVC. PVC is used as a carpet back-coating for carpet tiles and 6’ goods. Vinyl foams have been used as attached cushions. Many walk-off mats have solid sheet vinyl backing.

Warp: A weaving term for yarns in woven fabrics and carpets that run in the machine direction (or lengthwise). Warp yarns are usually delivered to a weaving loom from a beam mounted behind the loom. Woven carpets usually have three sets of warp yarns,
which may be wound on three loom beams. These include stuffer warp for lengthwise strength and stiffness, pile warp which forms the carpet surface tufts, and chain warp which interlaces with fill yarn to lock the structure together.

**Waterfall Installation:** Stairs are composed of a tread (the upper horizontal part of a step) and a riser (the upright member between two stair treads). Waterfall installation attaches carpet to two points on each step (one at the back of the tread and one at the bottom of each riser). This type of installation extends the life of carpet on stairs. When the carpet on the treads becomes worn, they can be taken up, reversed, and reinstalled with the worn areas placed over the risers.

**Watermarking:** Irregular random shading or pile reversal in cut pile carpet. Although much research has been done in an effort to determine the cause for watermarking, there has never been a single or consistent reason determined.

**Weaving:** The original method for manufacturing carpet. In the weaving process, backing yarns are woven into a durable fabric while, simultaneously, face yarns are looped over wires and interlocked in the woven back.

**Weft:** Yarns which run widthwise in woven carpet interlacing with various warp yarns.

**White dyeable fibre:** Man-made fibre that is extruded as a white fibre. The fibre can be dyed any color using a variety of dye methods either before or after the tufting/weaving process.

**Wilton:** A type of woven carpet and the loom used to manufacture it. Wilton looms have Jacquard pattern mechanisms which use punched cards/computer programmes to select yarn colour. The carpets are often patterned or have multilevel surfaces.

**Wires:** Parts of carpet weaving looms composed of thin metal rods or blades on which the pile tufts are formed. Round wires and cut wires are identical in shape. The cut wire has a small knife blade at the end and, as it is withdrawn, it cuts the yarn looped over it to form cut pile.

**Wool:** The original carpet fibre. Wool is noted for its excellent dyeability, luxurious feel and relatively high cost.

**Woolen spinning:** Spinning method which produces bulky, hairy yarn, usually used for wool yarns. A series of cards, or large cylinders with comb-like teeth, straighten the fibres into a paralleled fibre webbing. This webbing is blended with other webbing, then spun into yarn.

**Woven backing:** A tufted carpet term for primary or secondary backing manufactured by the weaving process. Secondary backings are usually woven jute or woven polypropylene.

**Woven carpet:** Carpet produced on a loom. Warp pile yarns intertwine with wires and backing yarns called warp yarns. These yarns are locked in with the weft yarns. Warp stuffer yarns are included to provide extra stability. Weaving is a slower, more expensive, labour-intensive fabrication method than tufting. Woven carpet is distinguished by intricate patterns and tailored, controlled textures.

**Woven:** Carpet that is manufactured on a weaving loom in which the lengthwise yarns and widthwise yarns are interlocked to form a fabric.

**Y**

**Yarn:** A continuous strand of fibres used in tufting, weaving and bonding to form carpet and other fabrics. Carpet yarn is often plied and may be either spun staple or continuous filament.

**Yarn construction:** An indication of the number of singles yarns combined to form a plied or heathered yarn.

**Yarn count:** A number used to describe the size of the yarn. Denier is used for BCF yarns, and cotton count for spun yarns.

**Yarn denier (bundle):** The total weight in grams of 9,000 meters of a filament yarn bundle. Common commercial carpet yarn deniers range from ~1,200d to 5,000d.

**Yarn dyeing:** Applying colour to yarns which are later used in making carpet. It can be in continuous yarn dyeing methods such as space dyeing or can be in batch methods such as skein dyeing.

**Yarn ply:** The number of single fibres twisted together to form a plied yarn.

**Yarn size:** The weight measure of the total bundle of filaments making up a yarn that indicates whether the yarn is fine or coarse. Continuous filament yarns are sized by the denier or decitex system. Spun yarns are sized by the cotton count system.
Yarn weight: Total amount of yarn used in the manufacturing of carpet. It is measured in ounces per square yard.

Z

Zippering: A loop pile carpet in which tufts are pulled from the backing resulting in long, lengthwise pulls out of the carpet. Zippering occurs when the tuft base is not securely encapsulated by the backing compound.

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