Consumer Information Service

A Consumer’s Guide to Carpets

The Flooring Guild is dedicated to raising standards in the flooring industry through the delivery of high quality training and education. We believe Consumers should be given unbiased information to help make an informed choice and have produced a series of guides to help in that process.

The contents of each Guide are believed correct at the time of printing. Nevertheless, The Flooring Guild cannot be held responsible for any errors or omissions or for changes in the details given in this Guide or for the consequences of any reliance on the information provided in the same.

Although every effort has been made to ensure accuracy, we will always welcome any information to assist in such efforts and to keep the Guides up to date.

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Choosing the Right Carpet

A new carpet is an investment that is likely to be with you for years and so, if possible, it is a good idea to choose your carpet first and then match other items to match it when decorating or furnishing a room.

Before you select your carpet, you should think about the colour, style and texture that is most suited to your taste and your life style. The type of fibre and the quality of the carpet is equally important because the way it performs on the floor will also be a major consideration.

It is also worth thinking about what you expect from your new carpet and explain that to the sales assistant. After all, some people want to change their decorations and furnishings frequently and others want a carpet to last 20 years. Either way, there will a product available to suit your requirements and your retailer will be able to help you find it.

Of course, with carpets and rugs, as with most other products, you generally get what you pay for and paying even a little bit more can result in a substantial increase in quality and performance.

A cheap, low quality carpet may last for a reasonable time from a wear point of view but will probably flatten and lose its appearance quickly. It is also unlikely to provide the comfort level you are looking for and can cost you more in the long run.

You will probably want your carpet to look good for many years. In order to achieve this, there are certain factors which should be taken into account.

It is fairly obvious that the more use a carpet receives the quicker it will lose its appearance and the quicker it will wear. Areas such as hall, stairs and landings will normally receive much higher wear than, say, a bedroom or even a lounge but this can vary enormously.

For example, a student studying for several hours each night in the relative quiet of a bedroom could generate excessive wear under a desk or table in what would normally be a light wear area. Conversely, a stairway leading to a self-contained flat would receive far less wear.

However, the principle is fairly clear - identical carpets laid in different wear situations will perform differently.

Many people recognise the terms Axminster or Wilton and identify them with quality. Whilst many Wiltons and Axminsters are good quality, these are merely names derived from the type of loom or machine on which the carpet is produced.

Consequently don’t buy just on the name alone – ask the sales assistant for advice on the quality that you need and look for added reassurance look at the manufacturer’s suggested wear rating.

Also some fibre producers, such as The British Wool Marketing Board and Wools of New Zealand have a branding policy which means that only carpets meeting certain standards are allowed to carry their logo.
The Factors That Determine Carpet Quality

In practice, virtually all carpets, irrespective of style or type, share the same basic construction.

In other words, there is a pile or surface yarn which is fixed to a backing material in some way so how the carpet i.e., Axminster, Wilton or tufted is made is not necessarily an indication of quality.

The factors which determine quality will be:

1. the density of the pile (surface pile density) and
2. fibre or blend of fibres from which it is made (pile content).

The illustration below explains why surface pile density is so important.

The top one has a long pile that will distort and flatten easily. Initially, it may feel soft and luxurious but will lose its appearance very quickly.

The lower one has a denser, shorter pile, which means that it will resist flattening and look better for longer than the one above.

In practice, the closer the pile is packed together, the longer the carpet will last because it will resist abrasion better. There are simply more tufts to wear away but the carpet will also last longer for another reason.

If you look closely at a carpet that has had a lot of use, you will see that the tufts are thinner as well as shorter. When a carpet is walked on, the tufts tend to bend and move underfoot and in doing so rub against each other. This movement causes friction and the friction causes wear.

Through the action of foot traffic the pile will be abraded and, once this has flattened or worn away, the carpet’s useful life is virtually ended.

Consequently, if the tufts are closely packed together they will move less. Less movement means less friction and less wear so the carpet lasts much longer.
CARPET STYLES AND TEXTURES

A carpet will often attract a description such as ‘velour’ or ‘loop pile’. Most descriptions are fairly obvious in meaning whilst others such as ‘Saxony’ are not.

Illustrated below are some of the more common styles with a brief explanation.

**Level Loop Pile**
In this type of carpet all tufts are produced in loops and left uncut. All loops are the same height hence the term “level loop”.

**Multi-Level Loop**
A “sculptured” effect can be created in a loop pile carpet by using varying pile heights.

**Cut and Loop**
As the name implies, it is possible to produce carpet containing both cut and uncut tufts.

**Velvet or Velour**
Relatively short pile, which is often fairly dense. The tufts have a limited degree of “twist” incorporated during the spinning process. This allows the tufts to “burst” open and create the “velvety” appearance.

**Twist Pile**
The yarns used will have a higher degree of twist than the velvet. As a result the tufts retain a more individual appearance.
**Frieze**
The yarns used will be produced by folding two or more individual yarns together. If each component yarn has a different degree of twist, the resultant yarn will not stand upright but will take on an irregular or random appearance.

**Saxony**
The tufts will be fairly tightly twisted and “heatset” to retain that configuration. The tuft length will be around 8-12mm (above the backing). The heat setting allows the tufts to remain well defined since the amount of “burst” will be restricted.

**Plush**
Similar to a “Saxony” but without the same degree of heat setting. The tufts will burst open at the tip creating a longer version of the “velvet” or “velour”.

**Shag Pile**
Tufts can vary from around 25-50mm in length. The extra long pile will considerably increase the cost of the carpet unless compensated by spacing them out into a low-density construction. Most “shag” pile carpets are unsuitable for heavy traffic areas.

Longer pile carpets will tend to flatten quickly and show shading, so should generally be avoided in heavy use areas such as stairs.

Loop pile carpets are more prone to snagging and damage by smaller, sharper objects such as pets’ claws, high-heeled shoes or, perhaps, children’s toys.
There is no such thing as the perfect carpet fibre. Carpet manufacturers often blend different fibres together either to enhance performance or as an economy measure to meet a particular price point.

With carpets and rugs, as with most other products, you generally get what you pay for. Paying even a little bit more can often result in a large increase in quality.

In order to understand how a carpet is likely to perform in use, it is important to understand the difference between the various fibres used for the pile.

The working materials of the textile industry are “fibres” which are hair-like filaments or threads of continuous or cut length. These are processed into yam” consisting of bundles of filaments which can then be either directly tufted into carpet or further processed prior to tufting.

All fibres are different, with varying properties, and, to do them justice we should remember that there is no such thing as the “perfect carpet fibre”. The carpet manufacturer may use a yarn containing fibre in 100% form or may blend different fibres together to create a yarn which achieves a balance between performance and cost.

Unfortunately, many sales people are biased towards, or against, certain fibres - often unjustifiably so - and then proceed to make recommendations irrespective of the use the carpet will be subjected to.

The following pages are designed to give a brief insight into what is, in practice, a very complex subject.

Carpet pile fibres are divided into three categories or families as shown below.

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<th>MAN REGENERATED</th>
<th>SYNTHETIC</th>
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<tr>
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<td>Viscose Rayon</td>
<td>Polyamide</td>
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<td>eg Camel hair</td>
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<td>Polypropylene</td>
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<td>Silk</td>
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<td>Wool</td>
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<td>Sisal</td>
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Let’s take a closer look at some of these fibres and their properties.
**NATURAL FIBRES**

These derive from natural sources and are:

a) Animal – eg wool, silk, mohair, camel hair  
b) Vegetable/Plant – eg coir, cotton, sisal, sea grass, jute  
c) Mineral – eg asbestos

In very simple terms, natural fibres undergo various cleaning and spinning processes before being used as yarn, but these processes do not chemically alter the fibre.

**ANIMAL FIBRES**

**Wool and its Properties**

Wool is the most widely used animal fibre for carpets and rugs but what is it? The dictionary defines wool as “fine soft wavy hair from the fleece of sheep, goat etc” and that is actually quite a good description.

From a technical point of view wool, fur and hair have a fibrous structure and are chemically similar. They belong to the keratin family of proteins, which includes nails and horns, but these are “solid” rather than “fibrous” keratin.

Wool fibres are, in fact, over 90% protein. Protein is known as a long chain molecule made up of amino acids, which are like building blocks. Depending on the breed of sheep and its diet, wool is consists of over 20 amino acids.

Although we take wool for granted, it is an amazing product as the drawing below clearly demonstrates.

Notice how the outside layer (cuticle) is not smooth as you might expect but is made up of a series of overlapping scales – a bit like roof tiles!

This gives wool certain unique characteristics that make it a good choice for carpets and rugs.
For example, its natural springiness makes a carpet resilient which helps keep its appearance well over a long period of time. It also dyes well, producing the very best clarity and definition of design which allows wool carpets to be produced in subtle, as well as strong colours.

Wool is easily maintained; resists soiling, repels surface spills and responds well to cleaning. It is safe, non slip and naturally fire resistant. And, being a natural fibre, it is very environmentally friendly.

Depending on the breed of sheep, wool fibres vary in diameter between 10 to 60 microns compared to a typical human hair at around 100 microns in diameter. (A micron is one millionth of a metre or one thousandth of a millimetre)

The fibre diameter affects the ease with which a fibre bends and, in turn, this influences its suitability for certain end uses. Finer (thinner) wools bend more easily than coarser (thicker) ones and can be spun into finer yarns.

This gives them a softer feel and makes them ideal for clothing worn close to the skin. By contrast, coarser wools are better suited to carpets and rugs or for use as filler in bedding and upholstery.

Some types of wool have a hollow core called the medulla and are known as medullated fibres. Medullated fibres tend to be stiff and brittle and produce harsher yarns with a rough hairy appearance that are generally unsuitable for apparel products. Breeds like the Scottish Blackface and the Drysdale (New Zealand) are the most well known providers of this type of fibre.

Their wool is generally coarser than non-medullated fibres but they are light and strong (rather like scaffolding tubes) which means they flatten less and are also very resilient. These fibres also have exceptional dyeing properties, which makes them particularly suitable for carpets and rugs.

Other characteristics include:

- **Moisture absorption:** The amino acids in the keratin easily bind with water molecules. This gives wool the ability to absorb up to 30% of its own weight in water. This absorption process creates a significant amount of heat.

For this reason, in humid, cool conditions a wool garment feels warm because of this heat generation, as well as having insulation properties through the trapping of air.

Conversely, as water leaves the fibre under hot, dry conditions, heat is absorbed and the fabric feels cool. Wool fabrics are therefore a buffer to changes in the ambient atmospheric conditions; eg wool carpets readily absorb moisture produced by human occupation in the home.

Many other fibres absorb much less to become clammy.

- **Water repellence:** Wool has a thin waxy layer on the surface which liquid water cannot penetrate, yet water vapour, with its smaller molecular structure, can diffuse the wool fibre’s microscopic surface pores.
Soiling and cleaning: Compared with most other fibres, wool has a high resistance to soiling but it is also easy to clean.

The water-repellent surface of the fibre allows a short time for spills to be wiped-up before they cause permanent pigment staining.

The overlapping scales of the fibre trap soil particles in the upper region of a carpet pile so that they are readily removed by vacuuming. (A good maintenance programme is still essential). NB wool provides natural resistance to about 80% of all stains.

Flexible behaviour: Wool is capable of bending thousands of times without suffering permanent damage. The core of the fibre is formed like springs of a mattress and these spirals are linked by chemical bonds which prevent them rotating when pulled or pushed.

This gives wool its excellent elastic recovery and resistance to twisting.

Abrasion resistance: Wool is moderately abrasion resistant. Nylon is blended with wool to increase abrasion resistance.

Static electricity: Under normal humidity conditions where wool contains a significant amount of moisture, (40% relative humidity and above), static is much less evident than in products made of synthetic fibres.

In atmospheres lower than 30% relative humidity, wool carpets can be treated with anti-static agents to minimise the effects.

Flammability: Like all protein, the keratin component of wool is difficult to ignite.

The presence of a large amount of nitrogen, and its ability to absorb large amounts of moisture, also contribute to wool’s natural flame retardancy.

Unlike most synthetic fibres, wool does not melt and its ash is non-sticking, thus burn marks can be readily brushed away on carpets. In addition, wool contributes less to smoke or toxic gas formation than other carpet fibres.

Odour absorption: Its large surface area, and the sites within the fibre where odour molecules can become attached, enable wool in carpets to improve indoor air quality.

It rapidly removes formaldehyde, nitrogen dioxide and sulphur dioxide - common contaminants in today’s environment.

Acoustic Insulation: Carpeting is one of the most effective ways of reducing noise.

It can absorb sound equally as well as dedicated acoustic materials and reduces its generation on and propagation through floors.

Consequently in the home, the acoustic properties of wool carpets provide comfort. Alternatively, in the office they create a pleasant environment and increase job satisfaction and performance.
Summary

It is apparent that there is a great deal more to wool than meets the eye and all this in a fibre which is typically less than half the thickness of a human hair!

In fact, nature has created something as complex as any piece of engineering yet devised by man!

But we should remember that there is more than one kind of wool. Apart from different breeds of sheep, wool can also be taken from other animals too, such as goats and camels. Of course, the various wools will look and perform differently which makes some more suitable for clothing and others are better for floor coverings.

All these factors have to be taken into consideration when producing high quality carpets. Wool selection and blending is therefore extremely important.

As you will appreciate, there are many conflicting requirements, eg the wool buyer is concerned with price and yield; the dyer with colour and dye ability; the spinner with length, strength and spin ability; and the carpet manufacturer, just like consumers, with yarn properties, appearance, performance and price.

British wool and New Zealand wools offer a diversity of types and the Crookmark, (a minimum of 50% British wool in the blend), and Fernmark (60% New Zealand wool in the blend) are your guarantees of quality products. Remember all wools are not the same.

Around 70% of the fleece wool grown in Britain is used in carpets world-wide. It is generally recognised as having more bulk and resilience than any other carpet wool and these characteristics ensure excellent cover and wearability.

**Vegetable Fibres**

**Natural Flooring**

When people think of “natural flooring” they typically mean natural fibres. Strictly speaking, natural flooring is, in fact, any flooring made from 100% natural and renewable products.

Although this description could include wood flooring, natural flooring is generally perceived to consist of products manufactured in Seagrass, Sisal, Coir and Jute.

**Jute**

Jute yarn comes from India and is made from the stalks of the tiliaceae plant. These are harvested by hand, tied in bundles and soaked in water. Later, the stems are pounded with wooden mallets and resulting fibres are spun into a beautiful yarn. The jute is backed with a latex backing.

Jute is the softest of all natural flooring and is ideally suited for bedrooms or in light domestic situations. Jute should last up to eight years in a light domestic situation but will fade in direct sunlight.
Seagrass
Seagrass is produced mainly in China but also in other Far Eastern countries. The grass crop is flooded by seawater during its growing cycle then plaited into strands, woven into floor covering and finally backed using latex.

Unlike Coir or Sisal, Seagrass cannot be successfully bleached or dyed and therefore the colour of Seagrass can vary from a yellow green to a dark green depending upon the time of harvest.

Seagrass can be installed in all domestic areas including kitchens, stairs, and some light contract locations (except where moisture is a problem) but is not recommended for bathrooms.

Chair mats are needed under castor chairs and nosings are recommended for heavily used staircases. But remember - Seagrass is still a grass. All these products are light to medium domestic usage with a life span of up to five years given normal usage.

Sisal
Sisal is obtained from the leaf of Agave Sisalana which grows in abundant supply in South America and East Africa. The dark green leaves provide the sisal fibre for ropes and twine; only the very finest and purest in colour are put aside. Having been cleaned, these fibres can be dyed to almost any colour and are then spun and woven into floor covering.

Sisal floorcovering is both durable and hardwearing making it an extremely versatile product which can be dyed easily. As with Coir and Seagrass, a latex backing is applied after the weaving process.

Sisal is the hardest wearing of all vegetable fibres and suitable for all medium to heavy domestic and medium contract use (except where moisture is a problem).

Stair nosings are always recommended for stair installations. Sisal should last for eight years in a domestic situation.

Coir
Coir originates from India and is one of the world’s sturdiest natural fibres. Coir is made from the husks of coconuts which are removed and cleansed, then softened by fresh water before being spun into Coir fibre.

The fibre is then either bleached or left in its natural golden colour ready to be woven into floor covering. After weaving a latex backing is applied.

Coir is hardwearing vegetable fibre and is suitable for most domestic and medium contract locations. Coir bleached products are not recommended for high sunlit areas simply because they will lose their original colour and will fade back to a “natural” shade. Coir should last up to seven years in domestic areas.
**MAN-MADE FIBRES**

Synthetic fibres are completely ‘man made’ and are produced by building up or ‘synthesising’ the chemical by-products of the oil or coal industries.

All man-made fibres are not equal. They are all tough and durable but some are less resilient than others, ie they don’t spring back when crushed.

Man-made fibres are relatively non-absorbent and dry quickly. They are also non-allergenic and are not affected by moths or mildew.

There are 4 types of synthetic fibre typically used in carpet manufacture.

**Polyamide** is known to the carpet industry by the generic term "nylon". It is exceptionally strong and durable, is very resilient and easy to clean.

**Polypropylene** is a hardwearing fibre but not as resilient as other fibres. It is stain resistant but is sensitive to heat.

**Acrylic** is not as hardwearing as nylon but has good resilience.

**Polyester** is less resistant to flattening than some other fibres and is generally used in luxury Saxony style carpets.

**SUMMARY OF FIBRE PROPERTIES**

Appearance retention and ease of maintenance are of equal concern to most consumers. Wool has a natural ability to ‘disguise’ flattening and soiling. This would help to extend its useful life when harder wearing properties, found in some other fibres, may not compensate for their loss of appearance.

However, this does not mean that ALL synthetics lose their appearance and, in certain cases, advanced generation nylon in particular will out perform other fibres.

The chart below summarises the basic properties of the various fibre types.

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<th>Wool</th>
<th>Polyamide</th>
<th>Polyester</th>
<th>Acrylic</th>
<th>Polypropylene</th>
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<tbody>
<tr>
<td><strong>Wear resistance</strong></td>
<td>good</td>
<td>excellent</td>
<td>very good</td>
<td>good</td>
<td>very good</td>
</tr>
<tr>
<td><strong>Cleanability</strong></td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>fair</td>
<td>good</td>
</tr>
<tr>
<td><strong>Soil resistance</strong></td>
<td>good</td>
<td>good</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td><strong>Stain resistance</strong></td>
<td>fair</td>
<td>good</td>
<td>very good</td>
<td>fair</td>
<td>very good</td>
</tr>
<tr>
<td><strong>Static resistance</strong></td>
<td>good*</td>
<td>good*</td>
<td>good</td>
<td>good*</td>
<td>good</td>
</tr>
<tr>
<td><strong>Flammability</strong></td>
<td>good</td>
<td>good</td>
<td>poor</td>
<td>poor</td>
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* with antistatic protection
**DOES A NEW CARPET NEED A NEW UNDERLAY?**

Consumers rarely appreciate exactly what an underlay does for their carpet and often try to “save money” by making do with their old one.

This can be a serious and costly mistake because your choice of underlay does have a substantial effect on the performance of the carpet.

Don’t be tempted to “save” money by re-using an existing underlay or buying a “cheap” one. Either option is likely to provide the protection that your new carpet really needs to perform properly.

**Benefits of Carpet Underlay**

The right underlay will provide five important benefits:

- **Underfoot comfort**
  The carpet must feel “right” underfoot

- **Appearance retention**
  The carpet should look good for as long as possible

- **Wear protection**
  Extend the useful life of the carpet

- **Heat insulation**
  10% to 15% of heat is lost through the floor

- **Noise insulation**
  Reduces impact sound

Underfoot comfort is often seen as the most important benefit of an underlay.

Clearly, comfort is important.

However, research shows that too much softness under the carpet will lead directly to its loss of appearance and ultimately to premature wear.

The underlay should provide:

- Just the right amount of ‘give’ to feel comfortable underfoot

- Sufficient density and hardness to minimise excess movement of the carpet

- The resilience to restore the carpet pile to its former configuration immediately after it absorbs foot pressure

In fact, a carpet underlay acts in a similar fashion to a shock absorber in a motor car. Too much ‘give’ will actually make the ride uncomfortable, as indeed no give at all will be equally uncomfortable. Exactly the same principle applies to a carpet and underlay. Too much ‘give’ and both comfort and wear protection is reduced.
There is another effect, which may not be apparent. Softer underlay allows the backing of the carpet to flex considerably during use due to the action of foot traffic.

At the time of installation, the carpet is stretched from the gripper on one side of the room to the gripper on the opposite side of the room. The shortest distance between those two points is obviously a straight line.

If the carpet is continually distorted by 'sinking' into a soft underlay the carpet will eventually become longer than it was and wrinkling will become apparent on the surface with the resultant need for re-stretching. The softer the underlay the more this process will occur.

In contrast, a firm underlay will allow less flexing and distortion of the carpet backing which reduces the need to re-stretch the carpet after fitting.

In addition, because the carpet is able to 'travel' less, the pile will become less distorted and will keep its configuration far better. In other words, it looks better for longer.

The effect of a good quality, high-density rubber underlay is best seen on stairs where the wear is concentrated in a very small area on the nose of the stair.

Tests carried out by 'Which' magazine, and other, have demonstrated that a crumb rubber underlay helps to keep the carpet looking good for much longer.

This is particularly true in a demanding domestic situation such as a hall, stairs and landing.

The degree of underfoot comfort offered by any underlay is simply a measure of the amount of "give" in the underlay. Typically, a crumb rubber or high-density rubber underlay will offer less underfoot comfort than a typical waffle or sponge underlay.

In most cases, you must choose between a high level of comfort and a high degree of protection for the carpet. A crumb rubber underlay generally offers a good compromise in terms of comfort but with the right amount of protection.

With regard to heat and sound insulation, two things - the density and the thickness of the underlay - affect these properties.

Crumb rubber underlays have a greater density than other rubber types and, in proportion to their thickness, are generally twice as dense as waffle or foam types. Their density, allied to their thickness, means they act as a good heat insulator and help to reduce energy costs.

Obviously, this will help to reduce the effectiveness of under-floor heating systems but, since heat is still able to pass through the underlay, there is no reason to avoid crumb rubber in that situation.

A dense underlay absorbs airborne transmitted sound. This means that sound, which would normally echo around a room, is more effectively absorbed by the carpet and underlay in combination with each other. Similarly, heavy noisy footsteps would also be absorbed better with an effective underlay.