

MODULE 1

Wool - The 'Smart' Performance Fibre

Wool Specialist
The Take Five Education Programme

Wool is a fibre that has grown on a sheep and has a natural structure in the same way that your hair does.

Unlike your hair - wool maintains its characteristics throughout its entire lifecycle - from fleece to floor and even in subsequent recycled forms. Wool is mainly composed of proteins which provide flexibility and superior performance benefits in flooring.

The cell structure has a high water and nitrogen content - this is a major asset to the fibre particularly in fire retardancy.

Multiple layers - as shown in the diagram - contribute to its dynamic performance.

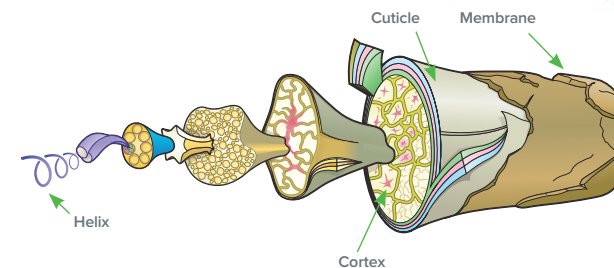
1. The outer - **cuticle** - layer is formed of microscopic, overlapping scales - these provides softness and lustre but also trap dust and floating particulate in the air. This helps to create cleaner internal air and also makes it easy to clean when vacuumed.
2. The **membrane** - is a two-way filtration which controls what is absorbed and released. For example while humidity is absorbed, it is also released when the temperature changes creating a comfortable interior space. Importantly, the membrane will not absorb spills instantly, the membrane resists the composition of liquid spills and only absorbs if left unattended, making it naturally stain resistant.
3. The inner layers - the **cortex** - has millions of spongy cells - and this will add bulk, volume and bounce-back to carpet as well as adding insulation against noise and heat loss.
4. The **helix** - A robust countering force siting in the centre - that will fight compression in the same way as a tightly wound spring within a mechanical system bouncing back over and over again. This fights footfall and tracking and helps maintain long-lasting appearance.

Learn About the science and anatomy of wool as a fibre and how this contributes to its superior pro-active performance within carpet and flooring.

Understand What makes wool different and better.

The four parts of wool fibre that play a major part in the performance of a wool carpet are:

1. **Cuticle**
2. **Membrane**
3. **Cortex**
4. **Helix**



Multiple choice

On all questions - there is at least one correct answer and sometimes two. Please mark your chosen answer/s in the box.

1. How long after being shorn from a sheep does wool maintain its natural performance and functionality?
 - Ten years
 - Always
 - It loses them immediately
 - It maintains them for a short while
2. Wool carpet can provide excellent fire safety because of what?
 - Manufacturer fire treatment
 - The wool dyes
 - Wool's nitrogen and water levels
 - The carpet structure
3. Wool carpet has long-lasting bounce-back ability - why?
 - The carpet has reinforced backing
 - Wool has longer pile
 - Wool fibre has millions of spongy cells inside
 - Wool is natural
4. What does the countering spring of the helix help prevent?
 - Footfall Tracking
 - Odour
 - Falls
 - Poor surface appearance
5. How does the membrane of the wool fibre help the carpet?
 - It reduces waste
 - Its cheaper than chemical treatments
 - It resists liquid spills
 - It absorbs humidity

MODULE 2

Wool - Benefits in the Home

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Let's Refresh our Memories...

From Module 1 - We learned that wool fibre has a complex anatomy with many natural proactive performance benefits. Its spongy cell based composition enables resistance to pressure and also other naturally responsive functions.



- Learn** What the key performance benefits of wool in carpet and flooring.
- Understand** Why Wool is a good choice for the consumer.

MODULE 2

Wool with its complex science is a valuable fibre to the flooring sector. It has an historic track record of offering quality and performance. But more importantly the lasting appearance (quality) of wool make it an economic choice for the consumer. Here we look at some of the natural unique selling points of wool that a consumer should understand when deciding which type of carpet fibre is right for them.

Take Five Good Reasons to Buy Wool Carpet

1. Lasting Appearance
2. Easy-care
3. Low-Flammability
4. Improved Internal Air Quality
5. Quiet Comfort

Let's Take a Closer Look at those Five Key Consumer Benefits

Lasting Appearance

Robust strength and the ability to spring/bounce back are structurally built in to wool fibre. Imagine trying to compress a handful of wool - it is impossible as its natural spring will resist. This also happens on the floor. The spongy cells and the helix (ref.module 1) push back and this means you get less flattened fibre and distortion - the wool carpet looks better for longer.

Easy-Care

A wool carpet is easy to clean.

Wool fibre with its membrane and scaly surface protects the sheep so it stands to reason it protects itself in all its guises. A wool carpet benefits from this membrane as it naturally resists spills and dirt. Liquid beads up, letting you blot up everyday accidents with no need to resort to chemical cleaning solutions.

Low flammability

Wool resists fire and does not emit smoke or fumes. A family home with wool furnishings benefits from the innate capacity of real wool to resist flame. The high water and nitrogen composition does not respond to ignition/combustion and largely self-extinguishes in seconds.

Improved Internal Air Quality

Wool will clean internal air.

Breathing means breathing what is in the air around us and sometimes that air could be better! Wool with its complex structure has proved an asset to the interior space. Its scaly surface traps dust until vacuumed and also filters the room of invisible toxins to ensure a healthier environment. Its natural breathability allows it to absorb and release humidity and temperately adjust to the space or person - so never too hot or too cold. And this is how wool works in the fleece - to protect the sheep too!

Quiet Comfort

Wool absorbs noise and echo.

Imagine a room with no sound barriers - noise erodes our comfort and becomes irritating and unpleasant. The dense sponge-like cortex of each wool fibre soaks up sound waves, insulating the home against noise as well as costly heat loss. Used in flooring, you will feel a difference as echo is totally removed. The multiple spongy cortex with their cushioning quality removes the impact and transfer of floor to floor and room to room noise.

Multiple choice

On all questions - there is at least one correct answer and sometimes two. Please mark your chosen answer/s in the box.

1. What makes wool carpets/rugs so hard to flatten?
 - Wool's ability to spring back
 - The backing
 - The spongy structure
 - The way it is fitted
2. Why does the fire service consider wool so safe in the home?
 - It is treated with protector
 - It does not emit fumes
 - It does not ignite easily
 - It is environmentally friendly
3. Wool initially resists spills naturally - how?
 - The membrane is slow to absorb
 - It is non-porous
 - It is treated when dyed
 - Liquids bead up on its surface
4. Cleaner air is a benefit of wool furnished rooms - why?
 - Wool is breathable
 - Wool captures and holds dust in its scaly top layer
 - It emits neutralisers
 - It absorbs contaminants
5. If a room has wool carpet, rugs and furnishings, it is much quieter - which of the below statements are correct?
 - It offers better noise insulation
 - It offers no more benefits than other fibre flooring
 - The cortex absorbs/dulls sound waves
 - Only if it is woven

MODULE 3

Wool - The Environmental Fibre

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Let's Refresh our Memories...

From Module 1 - we learned that wool has a natural composition which is largely made of water and nitrogen. In Module 2 - we learned that wool has many superior benefits in carpet and the home including a better appearance over time.



- Learn** About the environmental and sustainable benefits of real wool.
- Understand** Why a natural fibre is environmentally important and how it makes a difference.

MODULE 3

Wool as a fibre is...

1. **Naturally Grown**
2. **Renewable and Sustainable**
3. **Biodegradable**
4. **Carbon Efficient**
5. **Long-Lasting**

Sheep have grazed the landscapes of our world throughout history and so wool has always been an important fibre to textile manufacturing across the globe. This has not changed and wool manufacturers still understand the value of naturally grown fibres in a world which is gradually reducing its reserves and resources. Wool with its natural structure is also capable of lasting longer with good appearance (ref module 2).

Let's look at these in more detail...

Naturally Grown

Sheep are largely free-range animals throughout their lives and their naturally grown wool is a fibre that is nourished by the land. The fibre's performance capability cannot be replicated by manmade fibres as it is a by-product of the sheep and has an active responsive cell structure.

Renewable and Sustainable

The fleece of the sheep is shorn annually (sometimes more often) and is sheared for the health and wellbeing of the sheep. The fleece is then made available to the textile industry providing a truly renewable supply of fibre on an annual basis.

Biodegradable

Wool can biodegrade easily and quickly in its 100% form as it is a completely natural fibre that will break down and decompose in the ground. It is often used to nourish the ground as fertilisers and in a range of other products.

Energy Efficient in the Home

Reducing carbon emissions is important and the natural structure of wool (ref module 1) can offer better insulation against heat loss, reduces energy usage and therefore lower carbon emissions.

Long Lasting

Durable and long lasting, wool carpet will retain good appearance for many years. The bounce-back of the spongy cortex (ref module 1) will resist crushing. Longer lasting, better quality products offer great satisfaction over longer periods which will reduce waste and landfill.



Multiple choice

On all questions - there is at least one correct answer and sometimes two. Please mark your chosen answer/s in the box.

1. What is the average renewable period of real wool ?
 - Quarterly
 - Bi-Annually
 - Annually
 - As needed
2. Wool is a by-product of the sheep - the performance assets of the fibre are...
 - Completely Natural
 - Added during carpet manufacturing
 - Provided by manmade fibres
 - Active in textile products
3. Wool carpet assists in the reduction of carbon emissions from the home - how?
 - It is a good insulator
 - It removes carbon in the air
 - It reduces the need for excessive energy use
 - It is carbon neutral
4. The natural quality and durability of wool can help reduce landfill - why?
 - Wool carpets use less space in landfill
 - It is not disposed of in landfill
 - Wool carpet maintains appearance well
 - Better appearance equals longer life in the home and less landfill
5. Wool in 100% form has the ability to biodegrade quickly - how?
 - It decomposes
 - Its natural composition changes
 - Soil and wool are incompatible
 - Wool needs air

MODULE 4

Wool - Construction and Performance

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Wool Carpet Construction

Wool carpet is made in different ways which create different appearance, texture and also price-point. The manufacturing construction is an important part of the product and requires strong fibre. Wool is historically proven as a very strong fibre and copes well with the highly mechanised/automated production methods of carpet today. The construction method chosen should be appropriate for the end use and the usage/traffic requirements within the home as well as the consumer's desired appearance requirements.



- Learn** About the different styles of wool carpet and the common industry terms.
- Understand** Construction and Performance and the essential details.

MODULE 4

Types of Carpet...

Woven

Tufted

Let's look at these in more detail...

WOVEN

Woven carpets are made on looms and the backing and the pile of the carpet are made at the same time, so no secondary backing is required. Woven carpets are often used in commercial locations as the structure is known to be very hardwearing and will last many years.

Wilton - The Wilton is made on a loom and uses continuous yarn that comes to the surface in loops and these can be cut for a velvet or twist finish, uncut for a loop pile or have a combination of both to create textured designs. Wilton carpets in the UK today are often plain but can be patterned.

Axminster - In an Axminster loom construction, each tuft of carpet is cut and woven through the backing material, one row at a time which allows intricate designs and multiple colours.

Flat Weave

Manufactured in the same way as Wilton carpets, flat weave is a loop pile which allows the yarn to be woven across a wider area to create a flatter, more textured effect.

TUFTED

Tufted is now the most popular form of construction for carpet. Pile yarn is continuously punched by rows of needles through primary backing material to form loops or tufts. An adhesive coating is applied to hold the tufts in place and it is then heated to bond the layers. Tufting is faster than weaving carpets and this is why tufted carpets are usually more economical at price point.

There are a number of different styles within the tufted product range.

Cut Pile

The best-selling type of carpet is textured cut pile. Cutting looped carpet fibres at the top creates cut pile with yarn bundles standing straight. Cut pile is less resistant to crushing than other types of carpet.

Twist

Twisted carpets are one of the most popular types of carpet in the UK. The yarn is tightly twisted to give a defined, textured surface and heat set. The result is a versatile finish that is extremely hard wearing and less likely to show footprints or vacuum marks. Twist carpets are ideal for plain colours.

Saxony

Saxony carpets are tightly twisted cut piles that are heat-set straight. They consist of two or more fibres twisted together in a yarn. The tips of the fibres remain very distinct, rather than blending together creating a soft texture and elegant finish. Saxonies show every footprint and vacuum-cleaner mark so are ideally suited to more occasional rooms in the home. Choosing a more textured variation will improve the practicality. These carpets have medium durability.

MODULE 4

Wool - Construction and Performance

Frieze

Frieze (pronounced free-say) is a tightly twisted cut pile carpet with a dense, low pile surface. Its coarse, pebbly texture is very durable and perfectly suited for high traffic areas. The short fibres tend to curl in different directions at the surface hiding footprints, dust and vacuum marks.

Velvet

Velvet Carpets (sometimes called 'velour' or 'plush') have a sheared surface pile giving a smooth, soft, luxurious finish. The yarn contains very little twist enabling the ends to blend together, further enhancing the overall finish. Velvet carpets tend to 'shade' with heavy use. Footprints show easily and the colour looks different from place to place because fibres lying in different directions reflect the light differently. They are a beautiful luxury – but perhaps best kept to occasional rooms.

Loop Pile/Berber

Berber carpets look like and are named after a handmade bulky wool carpet made by the Berber tribes of North Africa and Asia. The loops are made from 100% wool providing high durability and a luxurious cushioned effect underfoot. They can be either level loop or multilevel loop. The loops can be vulnerable to pulling from pets claws etc.

Level Loop Pile

Level loop pile is made by weaving even loops of yarn into carpet backing at both ends. This type of carpet is very durable and track resistant as well as having a natural, sisal-like appearance. Higher loops create a more luxurious appearance. Level loop piles with short and densely packed loops are easy to clean and so offer a good blend between luxury and practicality. This type of carpet is ideal for high traffic areas. The loops can be vulnerable to pulling from pets claws etc.

Multi Level Loop Pile

Multi-level loop pile is like level loop pile except that the loop heights vary (usually two to three different loop heights) creating an informal, random textured appearance. This type of carpet is very forgiving and therefore ideal for high traffic areas and family rooms. The loops can be vulnerable to pulling from pets claws etc.

Cut and Loop

These carpets combine fibres that have been cut with ones that have been looped. This provides great scope for creating surface textures and patterns in both solid and multiple colours. The multi-level finish is excellent for hiding footprints and stains making it ideal for high traffic areas.

Construction and Performance Tufted - Key Points

- Yarn density, gauge and yarn size all play a part in performance and are determined by individual manufacturers.
- Performance is associated with with pile yarn density - the amount of pile yarn in a given volume of carpet face.
- Density is influenced by the number of tufts per inch when counting across a width of carpet,
- So the distance between tufts on the width provides the the gauge i.e. 1/8th gauge or 3/16th gauge



Multiple choice

On all questions - there is at least one correct answer and sometimes two. Please mark your chosen answer/s in the box.

1. Which carpet type is made on a loom?
 - Cut Pile
 - Woven
 - Twist
 - Loop
2. Name the top selling carpet types in tufted carpets
 - Axminster
 - Cut-Pile
 - Twist
 - Flatweave
3. What is the common reference for loop pile carpet?
 - Jacquard
 - Frieze
 - Plush
 - Berber
4. What is the industry yarn density reference for tufted carpets?
 - Volume
 - Gauge
 - Yarn Length
 - Tufts per Inch
5. Which carpet type can include the most colours in one carpet?
 - Loop-pile
 - Wilton
 - Twist
 - Axminster

MODULE 5

Wool - Carpet Care and Cleaning

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Appearance Retention and Maintenance

Wool is renowned for long lasting appearance and quality performance. Wool is not a 'needy' fibre but is very hard-working in flooring and is chosen for some of the most hardwearing locations in the world - airports, casinos, hotels and public buildings.



- Learn** How to care for and maintain wool carpets.
- Understand** How the structure of wool helps to maintain appearance and is easy to look after.

The unique structure (ref. module 1) provides wool with a unique spring-like bounce-back to resist pressure and fight flattening and tracking. The natural oils protect each individual fibre from becoming easily soiled with dirt and the dust that gathers on the surface of other fibres will be captured in its microscopic scales until vacuumed. In addition, wool repels spills, as due to its membrane (ref. Module 1) liquid will initially bead-up on the surface providing time to blot up.

Wool does not need bleach in the cleaning process - bleach is a very harsh chemical agent and is harmful to wool (and bleach residues are potentially harmful to children and pets). The natural layered structure of wool can mostly deflect staining from spills without the use of strong chemicals

Easy-Care - Tips

Door Mats

Prevent dirt and grime by buying a good quality doormat to prevent excess dirt from entering the home and entering the pile.

Vacuuming

The regular and most important care for a wool carpet is a simple vacuuming to maintain a good surface appearance and to revive the pile. Vacuuming can be done as often as the customer wishes - a wool carpet cannot be vacuumed too much. Carpets can be vacuumed as soon as they are installed in the home. An upright vacuum with brushes returns the best results on woven and tufted. A cylinder carpet is advised on loop pile styles.

Spills and Stains - Actions and Advice

Prompt action is recommended - the natural reaction of wool to resist the spill - the spill will bead up on its surface and it cannot immediately penetrate the surface. This will provide time to blot and remove the spill.

- Solid Residues - should be gently removed with a spoon or if necessary a blunt knife.
- Mud should be allowed to dry and then gently brushed and finally vacuumed.
- Liquids - should be blotted - not rubbed - with clean, white terry towel cloths or paper (kitchen) towels.

- Blot spill repeatedly, using lots of fresh towels, until there is no excess liquid remaining and then inspect the area.
- In many cases - speedy action with blotting will remove most spills even wine, as the spill will not have fully penetrated the inner fibre.
- Do not wet the carpet excessively, particularly if the original spill has not been fully absorbed - as this spreads the issue further.
- If the spill has been fully blotted, small amounts of water (a spray is useful to minimise the application) with a very mild amount of liquid detergent dissolved in it can be used to further clean the area.
- Always work from the outside of the spill area to the centre and do not rub as this can damage the pile, rather dab and blot continuously.
- Once all spillage evidence is removed, leave to dry naturally.

Specialist Cleaning and Solutions

Specialist stain help, spot cleaners and/or professional cleaning advice may be needed if a difficult problem occurs. The wool industry recommended body for this is **WoolSafe.org**. This is a long-standing and trusted advisory organisation which offers a fully tested and approved range of wool cleaning products through approved representatives across the UK.

MODULE 5

Wool - Carpet Care and Cleaning

Multiple choice

On all questions - there is at least one correct answer and sometimes two. Please mark your chosen answer/s in the box.

1. Wool naturally repels liquid spills, how?
 - The membrane does not immediately absorb
 - Chemical treatments
 - Dyes in the wool repel it
 - It is a solid fibre
2. What is the best action when cleaning up a spill on wool flooring?
 - Act promptly
 - Leave it until its dry
 - Blot and blot until all spill is removed
 - Use pure detergent on it
3. What should you do if a solid residue is tracked into the house or dropped on the carpet?
 - Spray water on it
 - Spray detergent on it
 - Remove excess with a spoon/blunt knife
 - Brush and vacuum
4. What solution should initially be used to deal with remaining stains on wool flooring?
 - Bleach
 - Small amount of mild liquid detergent in water
 - Specialist trouble shooter by WoolSafe
 - Nothing
5. What type of vacuum is recommended for the best regular care of woven and tufted styles?
 - Upright with brush bar
 - Cylinder
 - Hand-held
 - None of these