

THE COMPLETE GUIDE TO SPECIFYING CARPET TILES

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The Milliken logo is a stylized, handwritten-style script in blue, featuring a trademark symbol (TM) at the end.

CHAPTER 01

INTRODUCTION

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01. INTRODUCTION

This guide has been written to help interior architects and designers build a deeper understanding of the factors that should be considered when specifying carpet tiles for commercial interior spaces.





The significance of the floor in your design scheme

In almost any building, the floors and ceilings are by far the two largest surfaces. From an interior design perspective, the floor plane is the one area that can have the greatest impact on the look, feel and performance of a space.

Aesthetically, the floor can have a considerable effect on a person's impression of their environment, their mood and on how they engage with the space. It can be used to help express a company's identity or build a sense of community. Used creatively, the floor can also help to define spaces and aid navigation through a building.

One area that is often underestimated is the impact the floor can have on people's well-being. Carpet can make a positive contribution in many of areas of human health and well-being, including air quality, acoustics, comfort and ergonomics.

Whether you are designing a workplace, educational or leisure environment, the flooring will often require a significant proportion of the materials budget. This alone means that it is vital that the flooring specification is given careful consideration, for both the visual and physical performance of your interior design scheme.

“Carpet can make a positive contribution in many of areas of human health and well-being.”

Why tiles?

Compared with full width, 'broadloom' carpet, carpet in modular form offers the interior designer incredible flexibility when creating a design scheme for the floor.

Ultimate design flexibility

Carpet tiles allow limitless opportunities to 'play' with design layouts across the floor plane and can be easily adapted for different spaces according to their particular function. Until relatively recently, the choice of format in modular carpet was limited to only square tiles. However, there is now a wider range of formats available including rectangular and elongated plank formats. This allows the designer to become even more creative with the floor, extending the possibilities for installations with dramatic herringbone, brick or random ashlar layout styles. Accents can also be very easily added into the space.

Focusing on the design of the carpet itself, the possibilities are now greater than ever before. Custom design is not just restricted to broadloom carpet. With modern dye injection technology, such as Milliken's Millitron® digital colour placement, sophisticated custom designs are possible for modular carpet as well.

A sustainable choice

In today's circular economy, buildings are increasingly being designed with modularity in mind, where elements can be deconstructed, adapted and reconstructed. The latest advances in manufacturing and design technologies also now make modular carpet a more **sustainable choice** when considering factors such as material composition, recyclability and minimising waste.



Why tiles?

Easy maintenance

When it comes to maintaining the floor, carpet tiles can deliver real benefits. For particularly worn or damaged areas, individual tiles can be easily removed and replaced from 'attic stock'. This eliminates the need for difficult and often expensive spot repairs or replacing a whole area of carpet.

The agile office

In Europe, many buildings, particularly workplaces and conference centres, are built with raised access floors where data cabling and other services are housed. In this situation, the practicality of carpet in modular form comes into its own as technicians can easily lift tiles and gain access to these service areas.

Agile workplaces are fast becoming the norm. Offices are now designed to offer variety and choice for people to work in a range of different styles and settings. Carpet tiles in all their different forms offer endless opportunities to get creative with this more 'zoned' approach.

"Carpet tiles allow limitless opportunities to 'play' with design layouts across the floor plane."



CHAPTER 02

UNDERSTAND YOUR SPACE AND ITS USERS

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02. UNDERSTAND YOUR SPACE AND ITS USERS

Before considering your carpet tile specification, it is important to have a clear understanding of the nature of the building, the space you are designing for and crucially some detail on how it will be used. This section outlines 7 key questions that should be considered about your space before specifying your floor covering.



02. UNDERSTAND YOUR SPACE AND ITS USERS



1 Who will be using the space?

Your flooring specification should always consider the needs of people with particular disabilities who may have, for example, mobility issues or visual impairments. We are also now becoming increasingly aware of people with neurodiversity related needs who may have specific sensitivities to light, sound, colour and pattern. All of these factors need to be carefully considered when designing an inclusive environment and specifying floor coverings.

The rise of human-centred design

Human-centred design employs **Universal Design** principles to address, often the less obvious needs of people in an interior space. Going beyond meeting the requirements of the particular groups referenced earlier, human-centred design is about developing an interior that is empathetic for the end user and ultimately focused on wellness in the built environment. This approach is evolving the way spaces are designed whereby systems and standards are now employed to provide usability scales and feedback in order to determine the success of a design solution, notably those of the **International WELL Building Institute (IWBI)**. More details on this can be found in the '**Consider the Importance of Well-being**' section of this guide.

“Human-centred design is about developing an interior that is empathetic for the end user.”



2 What is the function of the space?

How will your space be used? Whether the interior you are designing for is a workplace, leisure, educational, public service or any other environment, developing a clear understanding of what function the space needs to perform is vital.

Today's modern workplace often needs to be multi-functional. It may require desks and castor chairs at one end of the floor, with a quiet, relaxation place at the other end, a kitchen area and a creative, inspirational area for collaborative working. The choice of flooring can play a significant role in defining and enhancing these different areas. As co-working and agile workspaces become increasingly prevalent, the additional need for ever-changing functional areas presents a whole new challenge. In this respect carpet tiles designed to co-ordinate, with transitions that can seamlessly flex and move with the space are an ideal flooring solution.

A building's entrance area may need to perform many functions. While it needs to be welcoming, it may also need to express a strong brand presence in the case of a corporate headquarters and be very open with clear and easy access to different connecting areas.

“Transitions that can seamlessly flex and move with the space are an ideal flooring solution.”



3 How will people circulate around the building?

As the different functions of a space become defined, you can begin to have a clearer idea of how users will circulate in the space. Space mapping will help to identify where areas of greater foot traffic are likely to be so that harder wearing flooring can be specified. Careful consideration in the use of colour and pattern in higher traffic areas can also retain the carpet's appearance and help manage the effects of wear or soiling.

Consider also the role that carpet can play in wayfinding and directing users more effectively around a space. In the case of public buildings, where visitors may not be familiar with the space, it is important to consider how people will navigate around the building and find the particular department they are looking for.



4 What are the acoustics of the space like?

Acoustics and its effect on health and well-being is an area of increasing focus for interior designers. When specifying your floor covering, it is important to be aware of the surfaces and features of the whole interior and their impact on the acoustics of your space. While sound absorbent walls, partitions and ceilings are frequently used as a primary solution to deaden noise, the floor can often be overlooked.

While carpet clearly absorbs more noise than hard flooring, specifying carpet tiles with an integral cushion backing will significantly boost the effect of sound absorbency as well as reducing the effects of impact noise. More information on this can be found in the **Ensure Your Carpet Will Perform** section of this guide.

The International WELL Building Institute (IWBI) identifies the significance of acoustics to well-being in the built environment with its 'Sound' standards.

02. UNDERSTAND YOUR SPACE AND ITS USERS

5 What is the floor substrate?

What will your flooring be installed on? What floor preparation will be required? Whether the floor is a concrete slab, wood or in the case of most modern office design spaces a raised access floor, it is important to know what kind of surface your carpet will be installed on. The time and cost required in floor preparation is important to factor into your new carpet tile installation.

If there is moisture in the sub-floor, this can cause serious problems, slowing the installation process and breaking down the adhesives used to stick your carpet to the floor. These issues can become even worse when carpeting is laid on curing concrete, or in areas with a fluctuating water table. If moisture is a concern, it is important to choose tiles, such as Milliken's cushion backed modular carpet, capable of withstanding a high relative humidity threshold. These are tiles that are rated on their ability to withstand differing degrees of moisture; and by choosing a tile with a high relative humidity (RH) and/or alkalinity (pH), you can reduce the impact of sub-floor moisture.

TractionBack® adhesive-free installation is available on all Milliken carpet products. This innovative coating applied to the back of every tile or plank eliminates VOC emissions from adhesives and offers a healthier and more sustainable installation method. More details are included in the **Specify for Sustainability** section of this guide.

02. UNDERSTAND YOUR SPACE AND ITS USERS

6 How sustainable is your design scheme?

New buildings and refurbishment projects are rarely conceived today without some requirement to ensure that the materials specified are from ethical sources, manufactured with minimal waste, are recyclable, and are carbon neutral. There are a host accreditations and certifications to consider for your particular interior design project. The **Specify for Sustainability** section in this guide takes you through those that are relevant to your carpet specification.

7 What is your budget?

Finally and inevitably, the 'B word' will come into play as part of your specification process. Thankfully there is a broad range of options available on the market to choose from that allow you to balance product quality, performance and design flexibility to optimise value for money.



CHAPTER 03

ENSURE YOUR CARPET
WILL PERFORM

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03. ENSURE YOUR CARPET WILL PERFORM

The useful life of your modular carpet will be largely determined by its ability to retain its appearance over time. In this section we will first look at carpet tile construction and how the design and material components affect its performance and appearance retention. We will then look to other critical factors including how the carpet will be used in the building and how it can be protected and maintained.



Carpet materials and construction

Carpet fibre

Carpet tiles are typically manufactured from Polyester, Polypropylene or Nylon yarns. As one of the hardest-wearing polymers, Nylon is almost always used for commercial installations. As well as helping to prevent dirt particles becoming embedded into the fibre structure, Nylon fibres are static-free and the majority are inherently stain resistant. Unlike some other synthetic fibres, Nylon is also highly resilient to crushing and flattening.

Wear warranties will generally give an indication of the grade and quality of Nylon. Today, Nylon fibres are also manufactured with regenerated or recycled content. See the **Specify for Sustainability** section of this guide for more details.

In natural fibres, wool is most commonly used in the manufacture of commercial carpet. It is frequently used in the hospitality industry although typically in broadloom rather than tile format. Thanks to its 'crimped' structure, wool has good recovery and appearance retention, however it is not stain-resistant and so special attention has to be paid to ensure spills are quickly dealt with.

Carpet construction types

The vast majority of carpets are one of three types of construction – woven, tufted and needle-punched. Woven carpets such as Axminster and Wilton are typically broadloom, manufactured from 100% wool or wool blends and used in commercial projects largely for high-end luxurious installations. Modular carpets are generally either tufted or needle-punched, however for durability and design flexibility tufted constructions are considered the best option and almost always used for commercial installations.

Different qualities of tufted carpet tiles can be determined by a number of different values in their technical specifications. Face Weight, which indicates the amount of yarn used, usually per square metre, is most commonly used to determine carpet quality. Other measures include the Pile Height, Tuft Density or Gauge, which indicates how far apart the yarns are across the width of the carpet.

Variations in tufted loop heights and combinations of closed and cut loops can be created offering a wide range of different textural and sometime sculptural aesthetics. Depending on budget and the desired look, options usually include: Luxury Loop Pile, Textured Loop Pile, Level Loop Pile, Multi-level Loop Pile and Tip-Sheared.

Carpet materials and construction

Backing

While the carpet backing is something you cannot see, once installed it is a component that can significantly affect the performance and longevity of the carpet. For carpet tiles there are typically three main types of secondary backing:

Hardback – these tiles are tufted into a thin layer of bitumen or PVC. While this provides good dimensional stability, keeping the tiles flat and square, the carpet fibres take all the impact of foot traffic and associated wear and tear. This means that hardback tiles rarely last as long as cushion backed tiles.

Closed cell cushion backing – available in various material types, this is a layer of cushion attached to the back of the carpet that helps to extend the life of carpet tiles. It absorbs some of the impact of foot traffic, instead of the carpet fibres. Over time however, the efficacy of the closed cell cushioning deteriorates, as it compresses underfoot.

Open cell cushion backing - this type of carpet tile backing 're-inflates' after compression, meaning it offers unparalleled protection against wear and tear. Open cell cushion backing can prolong the life expectancy of carpet tiles by 40-50% compared with hardback products.

03. ENSURE YOUR CARPET WILL PERFORM

Foot Traffic

The longevity of your carpet tiles, and the need for maintenance, will vary according to their end use. Foot traffic density levels are usually concentrated within certain locations and wear from heavy foot traffic can result in changes to the texture and appearance of your carpet. It is essential to choose tiles designed to cope with the expected level of foot traffic in your intended location.

Carpet tiles typically fall into one of three usage categories: moderate, heavy and severe. Each category is designed to reflect a different level of traffic and use. As a general rule, the higher end use rating of your chosen tile, the longer the appearance retention, and the lower the costs of maintenance and replacement.

Appearance Retention Standards

EN1307 is the European standard for long-term appearance retention in textile floorcoverings. To achieve certification carpets must go through an extensive program of testing to determine identification and performance characteristics. For carpet tiles, performance characteristics including, amongst others:

- Colour fastness
- Castor chair suitability
- Electrical properties
- Thermal resistance
- Fraying behaviour
- Dimensional stability
- Size variation

For commercial use, pass classifications vary from Class 31 for moderate uses in areas of light traffic such as storage areas or conference rooms to Class 33 for heavy usage areas such as office corridor or airports.



03. ENSURE YOUR CARPET WILL PERFORM

Soiling and staining

Carpet colour and patterning

The colour and design of your chosen carpet tile is your first defence against stains and soiling. Different types of patterning and colour choice will be more effective at concealing stains; with light, solid colors proving less effective at hiding stains than darker, patterned carpet tiles. If stains and soiling are a serious concern a patterned, multi-coloured carpet is the best choice. More information about carpet patterning can be found in the [How to create a winning carpet design](#) section of this guide.

Soil and stain protection

In addition to the wear caused by foot traffic, carpet tiles will be subject to staining and soiling. Particularly in large facilities, it isn't always possible to immediately identify and act upon these new stains. In these instances, it is important to find a carpet that can resist staining and soiling, and be cleaned quickly and effectively.

Carpet fibre treatments such as Milliken StainSmart® can facilitate effective cleaning by incorporating soil release which stops dirt adhering to the carpet's surface.

Carpets with Solution Dyed Nylon (SDN) yarns are inherently stain resistant. Milliken's [Major Frequency](#) design features Thrive®, a recycled nylon yarn which is inherently stain resistant.



03. ENSURE YOUR CARPET WILL PERFORM



Regular maintenance

As a result of different types of usage and foot traffic, and different levels of stain and soiling protection, carpet tiles will require varied levels of regular maintenance (such as vacuuming and regular stain removal). It is important to identify these requirements and ensure your chosen carpet has achievable maintenance requirements. Establishing a regular maintenance program will keep your chosen product looking good for longer.

For entryways, **entrance barrier solutions** are designed to minimise maintenance requirements by trapping dirt and moisture before it enters the building. The most robust barrier systems cover three zones, to initially remove grit and heavy dirt particles at the building access points and then two further levels of recessed matting to scrape off dirt and absorb moisture.

“Establishing a regular maintenance program will keep your chosen product looking good for longer.”



03. ENSURE YOUR CARPET WILL PERFORM

Light reflectance values (LRV)

LRV is a measurement that indicates how much light a surface reflects and how much it absorbs. Values are measured on a 0-100 scale, where 0 = perfectly absorbing black and 100 = perfectly reflecting brilliant white.

Understanding LRVs is important where inclusive design legislation requires that buildings are equally accessible to all, regardless of disability, age and gender. For visually impaired people, this means there must be good visual contrast between particular elements of the building such as doorways, fixtures and fittings. For flooring the requirement is a 30-point difference in LRV in colour contrast between floors and walls or stair edgings and other surfaces.

As the floor is typically one of the largest surfaces in a room, the type and colour of a floor covering can have a significant impact on the amount of light reflected or absorbed. Understanding the LRV of the floor can also help to optimise interior lighting levels and ultimately reduce a building's energy consumption.

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Milliken carpet products are made only with Nylon carpet fibres, a large proportion of which also now include Econyl® 100% regenerated Nylon for maximum performance and minimal environmental footprint. In carpet construction types, we offer a wide variety of tufted carpet and plank products to meet a range of aesthetic and budget requirements, including all of those listed above. Milliken also provides light reflectance values for all its products in accordance with BS8300.



CHAPTER 04

HOW TO CREATE A WINNING CARPET TILE DESIGN

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04. HOW TO CREATE A WINNING CARPET TILE DESIGN

When considering your flooring design, it is useful to first understand the range of different carpet design technologies available and what can be achieved with carpet tiles.





Carpet design technologies

Pre-dyed yarns

Yarn Dyeing is where each fibre of a white yarn is dyed in a single colour before being tufted into carpet. To achieve multi-coloured patterns, yarn dyed fibres are often mixed with another type of pre-dyed yarn. Where the yarn dyeing process typically adds a single colour to each fibre, another process known as space dyeing can be used to add several colours down the length of the fibre. Tufted into a carpet backing materials, this method can be used to create a horizontal stripe effect of different colours.

Solution Dyed Nylon (SDN) is where the yarn is dyed as it is extruded. Carpet created this way can resist bleach solutions of up to 10% concentration – a property that other processes can only achieve with the application of a topical treatment. Availability of SDN carpet products usually depends on the size of inventory held by the manufacturer for colours. For custom colours, lead times can often be longer.

Digital dye injection

Digital dye injection uses the same dyes and fixing processes as yarn dyeing. Unlike yarn dyeing however, the dye is injected after the carpet has been constructed, with the dye penetrating directly into the fibre. This makes it possible to create extremely accurate, high-definition patterns and colour gradations, in very specific locations on the fibre.

Continuous dyeing

Continuous dyeing runs fabric through a ‘waterfall’ of dye. By using multiple applicators and different dyes, it is possible to create a wide range of different colours and shades of carpet.



04. HOW TO CREATE A WINNING CARPET TILE DESIGN

The impact of different design technologies

Patterning

With pre-dyeing processes, where coloured fibres are tufted into the carpet backing, designs are limited by the mechanical process of tufting yarn. Patterns are created by alternating layers of different coloured fibres, and changing which of the colours is visible. This means that colours can be changed only where the fibres allow.

With post-dyed processes, colour is applied directly to the carpet, and typically offers greater design freedom than pre-dyed processes. Processes like continuous dyeing apply colour before the finished textile is cut into tiles. However, the act of patterning the textiles before cutting prevents patterns from properly repeating, limiting design possibilities to 'random' patterns that don't match from tile to tile.

Digital dye injection, such as Milliken's Millitron® digital colour placement, makes it possible to add colour directly onto finished carpet tiles, and in doing so, offers the greatest design flexibility of any technology. It becomes possible to create elaborate patterns that match from tile to tile, and vary hugely in size. Anything from high-resolution intricate designs, to patterns as large as your floor plan can be achieved. Each tile can be made to repeat, match from tile to tile, or even be completely unique.



The impact of different design technologies

Solid colours

Though digital dye injection is excellent for creating accurate, high-resolution patterns, other types of dyeing technology are better at creating subtle, near-solid colours.

Pre-dyed yarns work great for low patterned looks, as they are capable of seamlessly blending different colours of fibre together into one yarn. Continuous dyeing also offers great colour flexibility. Multi-coloured patterns can be created by applying different dyes, and by varying the 'strength' of dye applied to the carpet fabric, different shades of the same colour can be created quickly and effectively.

Lead times & order minimums

Carpets that use pre-dyed yarns rely on manufacturers holding an inventory of coloured yarn, and often necessitate higher minimums than other products. If that inventory runs low, or your manufacturer doesn't have your chosen colours in stock, lead times can be delayed by having to replenish inventory.

In comparison, both digital dye injection and continuous dyeing create carpet designs on blank textiles. Manufacturers have no need to keep an inventory of different colours and types of yarn, and unique patterns and colours can be created quickly and efficiently - keeping lead times down in the process.

"Unique patterns and colours can be created quickly and efficiently - keeping lead times down in the process."



04. HOW TO CREATE A WINNING CARPET TILE DESIGN



Create a design that enhances your space

Using the flexibility of modular design

The availability of different shapes and sizes of carpet tile opens up a whole new range of possibilities for creating a floor with different installation formats such as brick, ashlar, herringbone styles.

Optimising the use of carpet tiles to zone different spaces according to their different functions can be extremely effective. Using contrasting or complimentary colours, different textures and even different materials such as carpet and LVT (Luxury Vinyl Tile) offer opportunities to subtly break a space up into functional zones.





Create a design that enhances your space

Customisation and visualisation

With digital dye injection, the possibilities for creating your own custom design are enormous. State-of-the-art visualisation tools now allow you to view your proposed interior design scheme before making a final specification decision.

Biophilic designs

As detailed further in the **Consider the Importance of Well-being** section of this guide, biophilic design is a growing design trend which has been shown to improve the overall mood and ambiance of a workplace. Today's highly sophisticated digital design technologies allow the tones, textures and patterns of nature to be recreated in carpet to great effect.

“With digital dye injection, the possibilities for creating your own custom design are enormous.”

04. HOW TO CREATE A WINNING CARPET TILE DESIGN



Create a design that enhances your space

Creating a unique brand statement for your client

The canvas of the floor is an ideal place to express a client's corporate message. Today's custom design capabilities for modular carpet can go beyond the design of logos and corporate colours. More subtle and creative expressions of a company's values can be achieved, for example, its environmental stance, its commitment to employee well-being, the nature of its product offering or its brand personality.

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Milliken's Millitron® digital colour placement is a high-resolution digital patterning technology developed by our in-house R&D team that enables complex pattern effects and colour combinations, not possible with another other carpet manufacturing technology. This allows designers to work with our design team to create their own signature design or colour concept that is bespoke for a designer's own interior scheme.



CHAPTER 05

CONSIDER THE IMPORTANCE OF WELL-BEING

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05. CONSIDER THE IMPORTANCE OF WELLBEING

Research shows that we spend 90% of our time indoors¹. As a result, health and well-being is becoming increasingly influential for interior design in the built environment, particularly for the workplace. As the floor is the one surface with which we are in constant contact, the choice of floor covering plays an important role in how users interact and engage with a space both physically and visually. In this section we explain how choosing the right carpet tiles can positively impact the health and well-being of an interior.



Use healthy materials

Indoor air quality

It is estimated that around 80% of soil entering a building is walked in through the front door on people's shoes and clothing. This dust and debris once inside the building lowers the quality of the air that people breathe and, particularly if poorly ventilated, can lead to health problems. In the workplace, this has been shown to not only have a negative effect on employees' health and well-being, but also on their productivity².

Compared to hard flooring, carpet is a three-dimensional structure that actively traps dirt, fine dust and allergens preventing it from circulating in a room. While regular maintenance is of course required to remove the particulates, carpet inherently has a significant impact on improving indoor air quality. In addition, by using a well-designed entry-flooring solution you can greatly reduce any dirt and moisture from entering the building in the first instance.



We have indicated in this section where choosing the right carpet can contribute towards achieving WELL certification from the International WELL Building Institute (IWBI).





05. CONSIDER THE IMPORTANCE OF WELLBEING

Managing moisture and mould

The ability of a floor covering to deal with moisture is also a key contributor to a building’s indoor air quality, particularly if there is a concrete slab or sub-floor moisture. In this case, it is important to consider if your choice of carpet tile will be able to withstand high vapour emissions.

Milliken’s WellBAC® cushion backing is permeable, which means any water vapour molecules can pass through your carpet and evaporate away. This helps prevent mould and mildew, and eliminates the need to carry out extensive moisture mitigation before installation.

Emissions control

It is vital to ensure that your choice of carpet is manufactured from materials that are free from hazardous VOCs (Volatile Organic Compounds) that can be harmful to health. Globally, there are many testing methods, standards and certifications that modular carpets can be assessed by to ensure complete material transparency. These are detailed further in the Specify for Sustainability section of this guide.

“The ability of a floor covering to deal with moisture is also a key contributor to a building’s indoor air quality.”

WELL Building Certification

- AIR:**
A09 Pollution Infiltration Management
Design Healthy Envelope and Entryways
- WATER:**
W07 Moisture Management
Condensation Management
Isolate Moisture Sensitive Materials
- MATERIALS:**
X06 VOC Restrictions
Restrict VOC Emissions from Furniture, Architectural and Interior Products
- X07 Material Transparency**
Select Products with Disclosed Ingredients, Enhanced Ingredient Disclosure and Third-Party Verified Ingredients
- X08 Material Optimisation**
Select Optimised Material



Consider the physical impact of the floor

The performance characteristics of a floor covering can have a profound physical effect on how people are able to use and importantly, move around a space.

Underfoot Comfort

It is well understood that prolonged sedentary time, particularly at work, is bad for your health. Encouraging employees to stand and increase their mobility during the working day is something that is now becoming central to many companies' health and well-being strategies. As sit/stand work-stations are increasingly used in workspaces as a solution to this challenge, ergonomic flooring is becoming equally important in helping to maximise the benefit of sit/stand desks by improving underfoot comfort and helping to prolong standing.

Studies have shown that muscle strain decreases when this cushion backed carpet is used instead of hardback options³. Musculoskeletal benefits aside, more comfort can enhance overall mood — and happier people tend to become more productive. In addition, from an economic point of view, companies may be able to decrease their spending on individual anti-fatigue mats.



05. CONSIDER THE IMPORTANCE OF WELLBEING



Managing acoustics

Unwanted noise is a significant contributor to stress, fatigue, illness and absenteeism in the workplace. Research shows that distracting noise in the workplace can result in a 66% decline in performance⁴. The choice of flooring is clearly critical to the acoustics of a space. Sound mapping and implementing an acoustical plan for your design scheme will help to identify zones where different levels of noise management are required.

Compared to hard flooring, carpet tiles inherently absorb more sound by reducing noise reverberation time and as a result reduces echoing. The addition of cushion backing however will significantly increase this effect, improving speech quality and allowing for better communication, particularly important for collaborative work environments.

Impact sound relates to structural vibration, such as footsteps hitting the floor. This can be generated within a space or transmitted between spaces, through a wall or floor. Spaced fitted with cushion backed carpet tiles will significantly reduce the generation of impact noise allowing for much calmer environments and improved concentration.

WELL Building Certification

MOVEMENT:

V02 Ergonomic Workstation Design

Provide Support at Standing Workstations

SOUND:

S01 Sound Mapping

Provide Acoustic Design Plan

S02 Maximum Noise Levels

Limit Background Noise Levels

SO4 Reverberation Time

Achieve Reverberation Time Thresholds

SO7 Impact Noise Management

Specify Impact Noise Reducing Flooring

Meet Thresholds for Impact Noise Rating



The influence of visual aesthetics

As the largest canvas in any space, the floor can be used to great effect to help stimulate the senses, influence mood and even evoke a sense of culture and community.

Biophilic design & mental health

Research has shown compelling evidence that Biophilic design in interior spaces can have a highly beneficial effect on well-being⁵. By mimicking the colours, patterns and forms found in nature, biophilic influenced design can help to reduce stress levels, enhance creativity and clarity of thought and even expedite healing.

Today's advanced patterning technologies for carpet tile are now able to recreate these natural effects.



05. CONSIDER THE IMPORTANCE OF WELLBEING

Encouraging movement

On a broader visual scale, creative choice of flooring can help encourage people to move more frequently around a building by creating circulation networks that almost invite you to move through and between spaces.

Improving wayfinding

On a practical level, good wayfinding can be an important success factor for a building by helping with spatial familiarity, which in turn, reduces anxiety and helps users to engage more effectively with a space. Considered use of different colours, patterns and even textures of carpet can be used effectively to help define spaces and indicate how people can navigate around a building.

“Creative choice of flooring can help encourage people to move more frequently around a building.”



05. CONSIDER THE IMPORTANCE OF WELLBEING



WELL Building Certification

MOVEMENT:

V02 Ergonomic Workstation Design

Provide Support at Standing Workstations

MIND:

M02 Nature and Place

Provide Connection to Nature

Provide Connection to Place

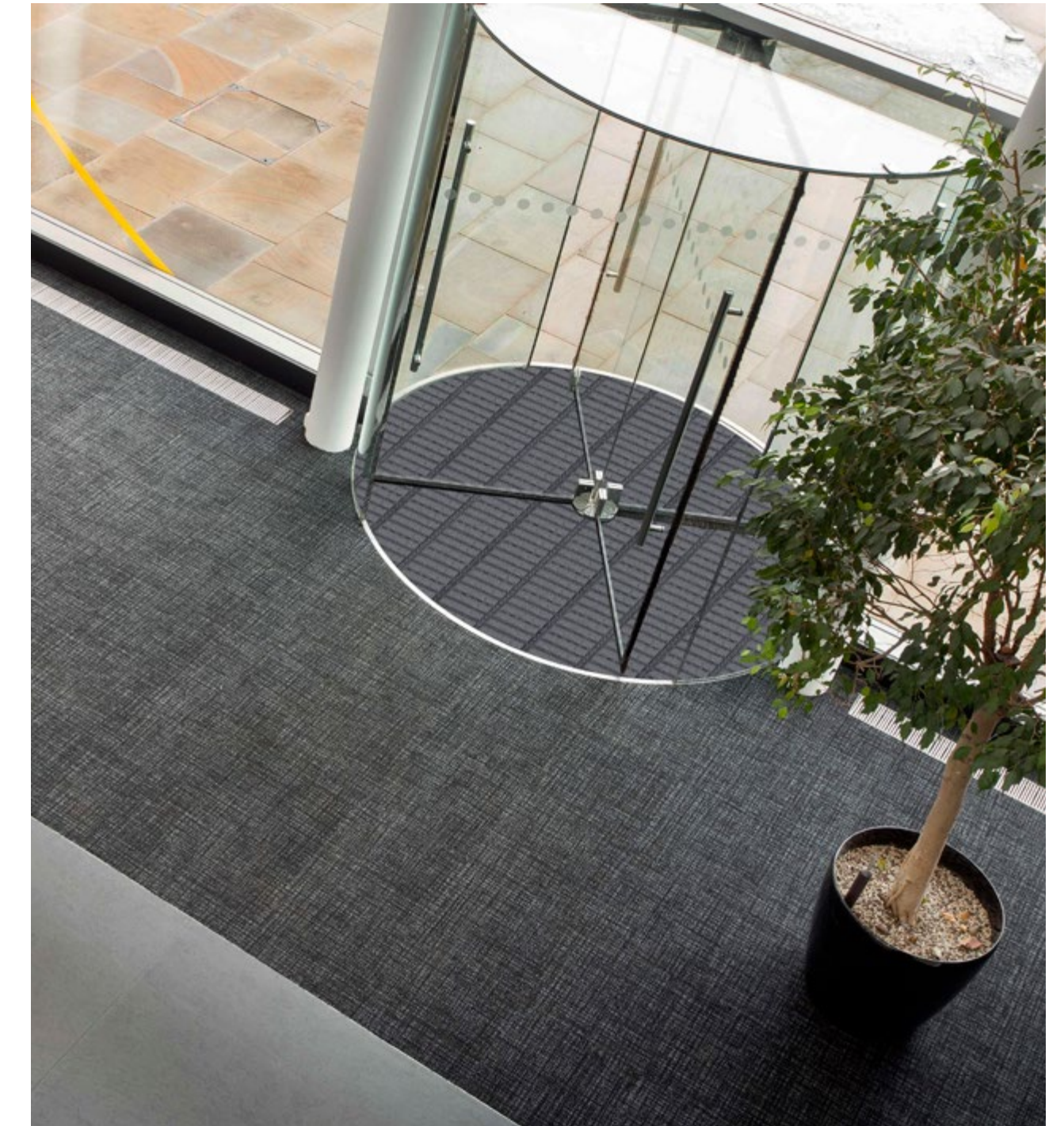
M07 Restorative Spaces

Provide Restorative Space

COMMUNITY:

C13 Accessibility and Universal Design

Integrate Universal Design



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Milliken Protective Flooring offers solutions that scrape dirt and capture it, reducing maintenance costs and improving indoor air quality.

Our WellBAC® cushion backing has been shown to reduce leg muscle fatigue by up to 24% and absorbs up to 60% more noise than hardback carpet.

Milliken's Millitron® digital colour placement technology is uniquely capable of creating free-flowing patterns with smooth transitions and thousands of shades of colour that blend seamlessly, as found in nature.

CHAPTER 06

SPECIFY FOR
SUSTAINABILITY

Milliken™



06. SPECIFY FOR SUSTAINABILITY

As referenced in the introduction, the modularity of carpet tiles is inherently advantageous to the circular economy. Specifying modular carpet not only minimises waste in production and installation but it is also easier to recycle and reuse. With sustainability in mind, there are however a number of other important factors to consider when choosing which particular carpet tiles to specify.



Material components

Many carpet tile components today are manufactured using recycled or regenerated materials that do not compromise the performance of the product. These include:

Regenerated or Recycled yarns

Regenerated Nylon yarns, such as Econyl®, are manufactured from post-industrial and post-consumer recycled fibres that retain the same purity and characteristics of virgin Nylon.

Recycled backing materials

There are a range of environmentally friendly primary and secondary carpet tile backings that are now made from varying percentages of post-consumer, pre-consumer recycled content and bio-based content. This helps reduce the amount of waste going to landfill as well as reducing dependence on petroleum.

Adhesive-free installation systems

There are a range of solutions now available designed to **avoid or minimise the need to use glue** with potentially harmful VOCs (Volatile Organic Compounds). This not only eliminates wasteful adhesive materials but also helps to improve indoor air quality.



Manufacturing practices and processes

The way products are manufactured also has a significant impact on their environmental footprint. By considering a manufacturer's energy and water consumption, emissions, waste and pollution, you can establish the impact its production processes are having on the environment.

There are environmental standards and ratings, such as ISO 14001 and ISO14006, that will provide some guidance on these measures and ultimately a manufacturer's environmental integrity. Other standards are detailed on the following pages.

Carbon neutral carpet

The climate change emergency has now focused the construction industry on reducing its carbon footprint. Floor covering initiatives such as **Milliken's M/PACT Programme** provides specifiers with the assurance that their carpet products are fully carbon neutral.

Product longevity and recyclability

Keeping unnecessary waste out of landfill is an important and fundamental sustainability goal. Minimising wasteful production processes and maximising a carpet's useful life will make a significant contribution to achieving this goal. For carpet tiles with long wear guarantees, it is possible for them to be re-used for social housing or charitable refurbishment programmes.

When a carpet does come to the end of its useful life however, the challenge of its disposal will then need to be addressed. A number of carpet tile manufacturers now offer various programs where carpet can be reprocessed and recycled into other material components or products.

Certifications and accreditations

There are a host of third-party industry groups and certification organisations that help to ensure full disclosure and complete transparency around modular carpet products and their components. The main bodies include:

LEED (Leadership in Energy and Environmental Design) is probably one of the most popular green building certification programs used globally. LEED provides a framework to create healthy, highly efficient and cost-saving green buildings. Carpet manufacturers can gain environmental credits for elements such as material components and Indoor Air Quality.

CRI (Carpet & Rug Institute) Green Label Plus was established to certify products with low emissions of Volatile Organic Compounds through independent testing. This certification is important for standards of Indoor Air Quality.

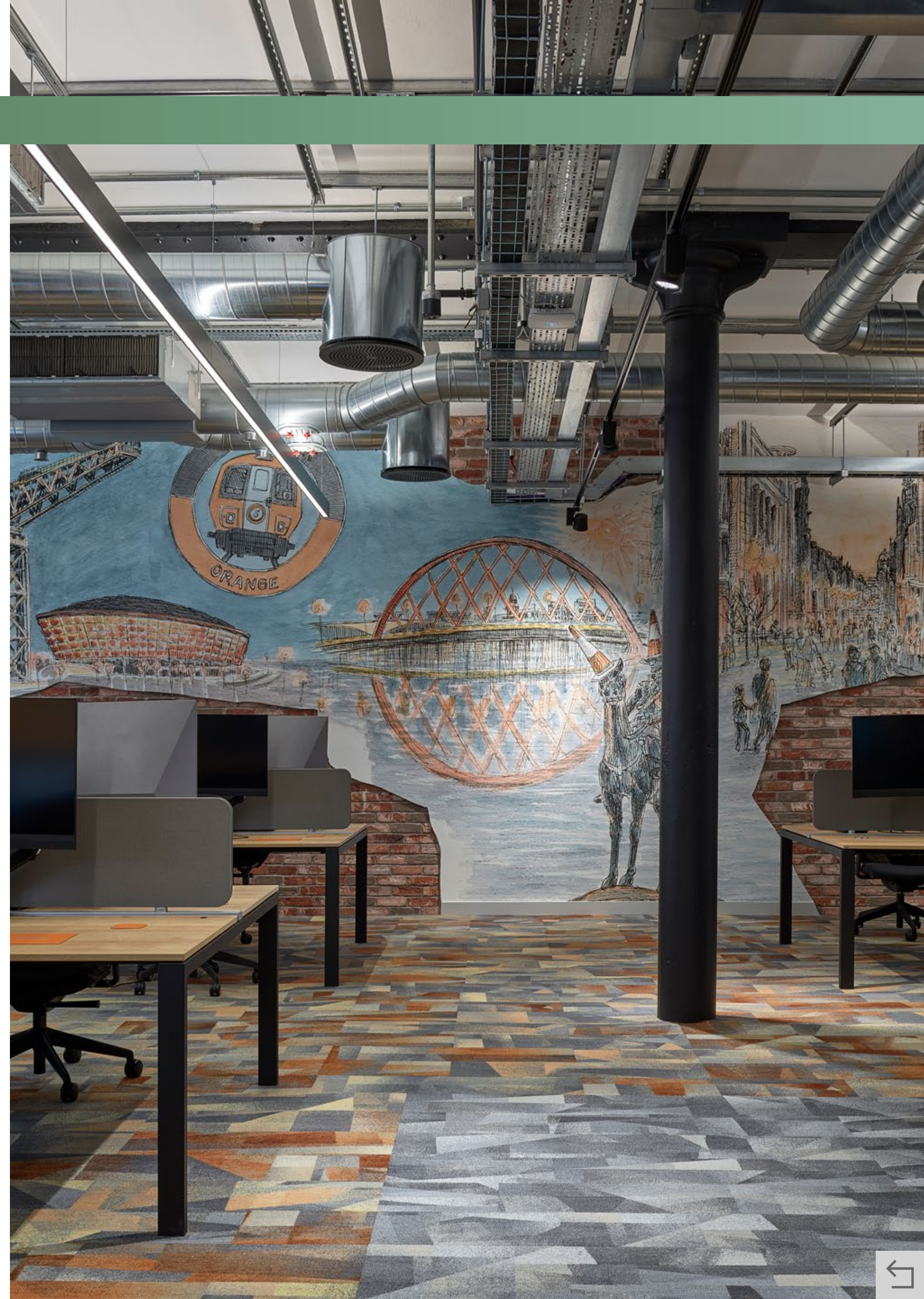
EPD (Environmental Product Declaration) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products.

BREEAM® (Building Research Establishment Environmental Assessment) evaluates the procurement, design, construction and operation of a building. Modular carpet products should aim to achieve A/A+ certifications.

Ska Rating is a Royal Institute of Chartered Surveyors (RICS) environmental assessment method, benchmark and standard for office and retail fit-out projects.

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Milliken now offers almost 1000 design options using 100% regenerated nylon and is a partner in the Healthy Seas Initiative which aims to recover discarded fishing nets from the seas regenerating them into high-quality ECONYL® yarn. Our innovative WELLBAC® open-cell cushion backing (including 90% recycled polyurethane) and TractionBack® installation systems minimise the need for using adhesives for installation.



Source references

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