

# Microplastics in our homes Our carpets' hidden secret

Why it's time for the  
carpet industry to act

# The microplastics problem...

Microplastics are everywhere in our lives, in the food we eat and the air we breathe. As research on the impacts of microplastics on human health gathers pace, it is becoming apparent that microplastics may impact human health and we need to understand how to limit our exposure.

There are currently many projects and policies looking at how to reduce plastic use in packaging and reduce its contribution to microplastic numbers. Many large clothing companies now have microplastics policies in place, aiming to reduce the release of microplastics from fabrics, many as part of the Microfibre Consortium.

However, there are no equivalent microplastics reduction policies in the carpet industry. This is of particular concern, as carpets have been estimated to double the number of microplastics fibres in the home (Soltani et al. 2021).

It would be unrealistic to think we could just remove all carpets to solve the problem. However, the flooring industry needs to play its part and consider new ways to reduce the release of microplastics from carpets.

# Introduction

## What are microplastics?

Microplastics are pieces of plastic between 1 micrometre and 5 millimetres in size, i.e. from approximately one hundredth of the width of a human hair, up to the size of an eraser at the end of your pencil. This means that they can vary from small, all the way down to being invisible to the naked eye.

Unfortunately, microplastics are now found everywhere in the environment – our waters, our air, our soils and our homes. This is because plastic is used in almost every part of our lives, and larger pieces of plastics break up with wear and tear, releasing lots of little plastics – microplastics – into the environment. Some plastics are designed this small to begin with (such as nurdles and spheres in personal care products), but most microplastics are from the break-up of larger plastic pieces.

## Are they a problem?

Microplastics have been shown to have serious negative impacts on many species, including reduced growth, intestinal damage, aberrant development and reduced population growth/survival (Kögel et al., 2020).

Recent studies have shown microplastics have now entered human bodies, with plastic found in blood, liver, lungs and the placenta. Although the number of studies on human toxicity is low, most are summed up by Blackburn and Green (2022) who suggest that there may be impacts on humans. It is therefore sensible to begin taking steps to limit our exposure where possible.



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The University of Portsmouth works with teams of scientists, business leaders, campaigners and citizens on a programme focused on driving changes in the plastic sector, called Revolution Plastics. It has the ambition to transform the way in which this polluting material is made, used and disposed of.

## SB+CO

SB+CO collaborated on the research, evaluating the leading companies' approaches. The analysis was carried out from January to July 2022.

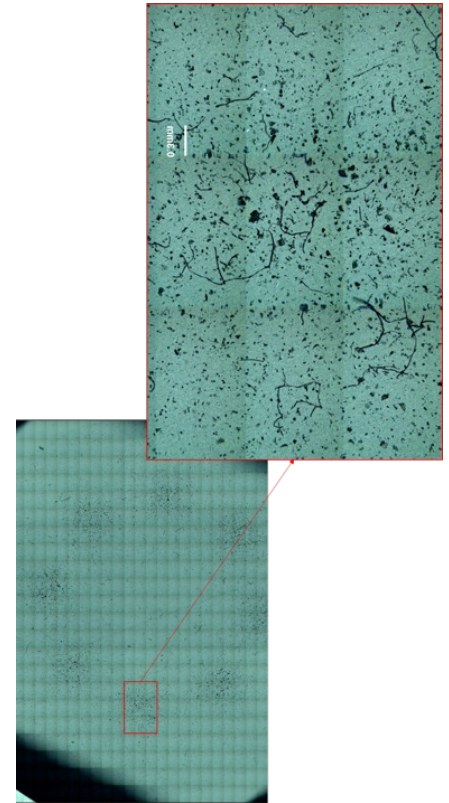


# How are they getting into humans?

Microplastics can be ingested (eaten) or inhaled (breathed in). They have been found in many foods and drinks tested, usually as a result of processing or packaging or, occasionally, absorbed within fruits and vegetables as they grow.

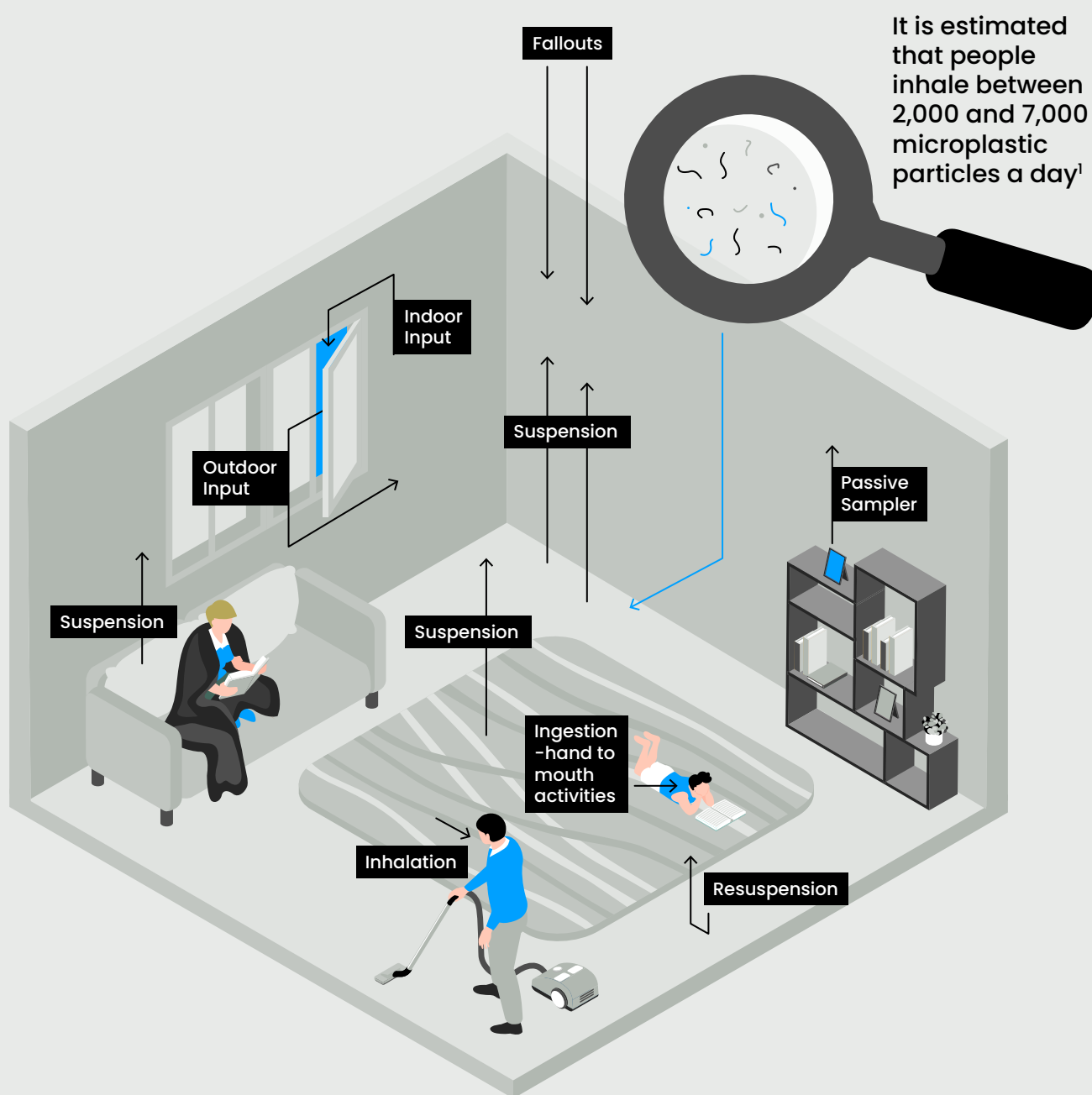
Smaller microplastics can often be found in the air. Microplastics have been found in pristine environments (high mountains and Antarctica) deposited there by air currents, so we are breathing them in when outside.

However, we spend up to 90% of our lives indoors, and microplastics can concentrate here, as many of the objects in our homes, schools and workplaces are plastic. These objects can release microplastics into a semi-closed environment where they are not diluted by large amounts of water or air, as would be the case outside. Objects that release microplastics in our homes include films (e.g. food wraps and bags), rigid plastics (e.g. food trays and toys), and fabrics (e.g. carpets and clothing). When these microplastics break up small enough, they can then lift into the air as dust to be breathed in, or to later land on food and be eaten.



Microscope image of particles captured from the air in a London home after just 28 minutes at average breathing speed. A small subsection has been enlarged to show the number of particles present.

Fibres are of particular concern regarding inhalation as they can cause serious problems with lung health. A recent study<sup>1</sup> showed that having carpet in your house can double the number of microfibre plastics in your air.



<sup>1</sup> Soltani et al. 2021

# Key conclusions from our research

- In the 24 European companies we researched, no carpet manufacturers or retailers currently have policies or information available on microplastics.
- Apparel companies are now starting to acknowledge the problem. New initiatives are being formed, targeting zero impact from microplastics.
- Carpet companies are heavily promoting the shift to using recycled plastics as a more environmental and sustainable solution, but are not yet considering the impacts of microplastics. Instead, durability, cleanability and low prices are the key selling points for plastic carpets! No information on possible health impacts is made available to consumers.
- Human health is only noted in relation to chemical usage in carpet production, and even then, only a few companies focus on the issue.

# Scope and methodology

## Scope

First phase: An analysis of 51 companies from the apparel and carpet industries to evaluate the presence of microplastics policies and communication.

Second phase: More in-depth analysis of carpet retailers to understand customer communication, product portfolio, and the presence of sustainability claims.

## Methodology

We looked at: the materials used in the product portfolio; the presence of a sustainability strategy; the presence of a material policy; any other public communication available.

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### Apparel Industry

- Adidas AG
- Burberry
- Chanel
- Christian Dior SE
- Columbia Sportswear Co.
- Gap Inc.
- G-III Apparel Group Ltd.
- Gildan Brands
- Hanes Brands
- H&M
- Hermes
- Hugo Boss
- Industria de Diseño Textil SA
- Kering
- Kontoor Brands
- Levi Strauss & Co
- Lululemon
- LVMH Moët Hennessy Louis Vuitton SE
- NIKE, Inc.
- Prada Group
- PVH
- Richemont
- Ross Stores
- Tapestry
- TJX Companies
- Under Armour
- VF Corp

### Carpet Industry

- Associated Weavers
- Axminster Carpets Limited
- Balta Group
- B&Q
- Brintons Carpets Limited
- Burmatex
- Carpetright
- Carpet and Flooring Store
- Cavalier Carpet
- Cormar Carpet Company
- Ege Carpet
- Fluffy Luxury flooring
- Heckmondwike FB
- IKEA
- Maisons du Monde
- Online Carpets
- Paragon
- Penthouse Carpets
- SCS
- Sisal & Seagrass
- Tapi
- Ulster Carpets
- Victoria
- Westex

(The list includes manufacturers and retailers)

# Apparel industry considers microplastics

The apparel companies analysed openly communicate on microplastics, with active commitments to reduce their impact.

## Cross-industry Initiatives

**The Microfibre Consortium:** Collaborative cross-industry working group committed to working towards zero impact from microfibres by 2030, and aims to publish a standard in 2025. 6 of 30 companies are members.

**The Outdoor Industry Association:** Members collaborated to create a cross-industry roadmap with project timelines to coordinate efforts.

**Adidas** communicates on the microplastics issue and collaborates closely with research institutes and industry initiatives to minimise the release of microplastics.

**Kering** aims to reduce and eliminate unnecessary plastics through policy and standards. It introduces a specific policy for suppliers and sets a standard to achieve zero microfibre leakage by 2030.

**H&M** is developing a Microfibres Roadmap. It investigates the risks of microplastics across product lifecycles and is committed to addressing the issue through design, innovation and testing.



# The carpet industry is neglecting the problem

## No communication on microplastics

None of the 24 carpet companies we reviewed had a publicly-stated position on microplastics. Yet all 24 companies sold carpets made with plastics.

Almost 86% of the manufacturing companies analysed have a sustainability strategy or commitments, but microplastics are not included in the strategy.

Consumers are unaware of the potential health issues associated with microplastics. Retailers only offer guidelines to highlight carpet qualities such as durability and cleanability.

## Synthetic fibres now dominate

Polypropylene (PP) is the fibre most commonly used in carpets. Other materials used include Nylon, PVC, Polyester and Polyethylene Terephthalate (PET) from recycled materials, usually derived from plastic bottles.

All companies that use natural materials as part of their core business also offer carpets made with plastic.

– Information not available.

Company	Manufacturer/ Retailer	Policy on Microplastics	Sustainability Narrative/ Strategy
Axminster Carpets Limited	M/R	–	yes
Associated Weavers	M/R	–	yes
Balta Group	M	–	yes
B&Q	R	–	yes
Brintons Carpets Limited	M/R	–	yes
Burmatex	M	–	yes
Carpetright	R	–	–
Carpet and Flooring Store	R	–	–
Cavalier Carpets	M	–	yes
Cormar Carpet Company	M	–	–
Ege Carpet	M	–	yes
Fluffy Luxury flooring	M/R	–	–
Heckmondwike FB	M	–	yes

– Information not available.

Company	Manufacturer/ Retailer	Policy on Microplastics	Sustainability Narrative/ Strategy
IKEA	M/R	Commitment, see page 12	yes
Maisons du Monde	M/R	–	yes
Online Carpets	R	–	–
Paragon	M	–	yes
Penthouse Carpets	M	–	yes
SCS	R	–	yes
Sisal & Seagrass	M/R	–	yes
Tapi	R	–	yes
Ulster Carpets	M/R	–	yes
Victoria	M	–	yes
Westex	M	–	yes

– Information not available.

### Companies are making a major feature of the shift to recycled plastics

Almost 80% of the carpet manufacturing companies analysed have joined internationally recognised initiatives for plastic recycling fibres, or include recycled plastic fibres in their products through specific strategies:

- They define the percentage of recycled material that goes into the product. On average 60 – 70% of the fibres in the product are recycled.
- They act at the product design phase and make carpets easy to be recycled for the future.
- They invest in in-house recycling hubs.

But none acknowledge microplastics shedding from carpets or the potential impacts. Their main concerns are for the environment and chemical usage. Products made with recycled material are valued highly, but they are not focusing on microplastics.

**Retailers are marketing carpets made with synthetic fibres as stain-resistant, more convenient and family-friendly!**

**Cavalier Carpet includes Polyester, Polypropylene, Wool and Nylon in its products, and it specifies the quality of a polypropylene carpet.**

Source: [www.cavaliercarpets.co.uk/pages/why-polypropylene](http://www.cavaliercarpets.co.uk/pages/why-polypropylene)

### Why Polypropylene

Carpet that is tough enough to deal with everyday life!  
What is so special about polypropylene?

Roll over or press the graphic for information.




Synthetic fibres made for the manufacture of carpet have come a long way, what was once perceived as a mere budget fibre has now become a state of the art material with its own desirable qualities.


Stain Warranty

**Tapi highlights the quality of a synthetic fibre carpet when purchasing, but has no mention of microplastic consideration.**


Source: [www.tapi.co.uk/carpet/dovedale](http://www.tapi.co.uk/carpet/dovedale)



**100% Polypropylene Fibres**



**Moth Resistant**



**Stain Resistant**

**ScS offers synthetic carpets that are easy to clean.**

Source: [www.scs.co.uk](http://www.scs.co.uk)

**This carpet is made from 100% polypropylene and bleach cleanable, offering extra durability and ensuring that you can clean your carpet with ease whilst retaining its colour.**

## Companies are making strong environmental claims on their products and the use of recycled plastics.

**Products made from 90% of post-consumer waste recycled plastic are considered to have a Higher Sustainability Attribute according to the group assessment policy.**

**Source:** [www.kingfisher.com/content/dam/kingfisher/Corporate/Documents/1910226\\_Kingfisher\\_Sustainability-Guidelines-Book\\_V6.pdf](http://www.kingfisher.com/content/dam/kingfisher/Corporate/Documents/1910226_Kingfisher_Sustainability-Guidelines-Book_V6.pdf)

Level	Description	Example
<b>Sustainable A</b>	Products that meet the highest levels in the Sustainable Home Product Guidelines. These have 2 or more Sustainability Attributes.	Water butt that is made from 90% post-consumer waste recycled plastic. Window made from FSC certified timber with full chain of custody that meets thermal efficiency criteria.

**Using recycled materials is one of the 3 sustainability objectives for the Maison Du Monde sustainable collection.**

**Source:** [www.maisonsdumonde.com/UK/en/e/criteria-good-is-beautiful-collection](http://www.maisonsdumonde.com/UK/en/e/criteria-good-is-beautiful-collection)

### Reduce the environmental impact of our products

By carefully selecting the raw materials we use from around the world, we strive to limit the impact of our products on the environment. To be part of the Good is beautiful selection, our products can be:

- Made from recycled materials to avoid further extraction of natural resources and limit CO2 emissions.

**IKEA is the only company with a commitment to increase recycled materials, but to shift from virgin fossil-based to bioplastics.**

**Source:** [www.ikea.com/sa/en/this-is-ikea/sustainable-everyday/only-recycled-or-renewable-based-plastic-in-ikea-products-by-2030-pubcb607171](http://www.ikea.com/sa/en/this-is-ikea/sustainable-everyday/only-recycled-or-renewable-based-plastic-in-ikea-products-by-2030-pubcb607171)



### A recyclable plastic to feel good about

We want to make more sustainable plastic products our customers can enjoy and love. Made from renewable sources like corn, sugar beet and sugar cane instead of virgin fossil based, PLA is an example of a plastic which makes this possible.

**Natural and sustainable materials are part of the Sisal & Seagrass Eco Mission. But a new plastic-based product line has been introduced. The company argues that it 'still rides the wave of their sustainable and eco-friendly model'.**

**Ocean Clear Carpet is created with the aim to reduce plastic pollution in the ocean, and products are made from 100% recycled plastic fishing nets and from 100% recycled PET plastic bottles.**

Source: [www.sisalandseagrass.co.uk/](http://www.sisalandseagrass.co.uk/)

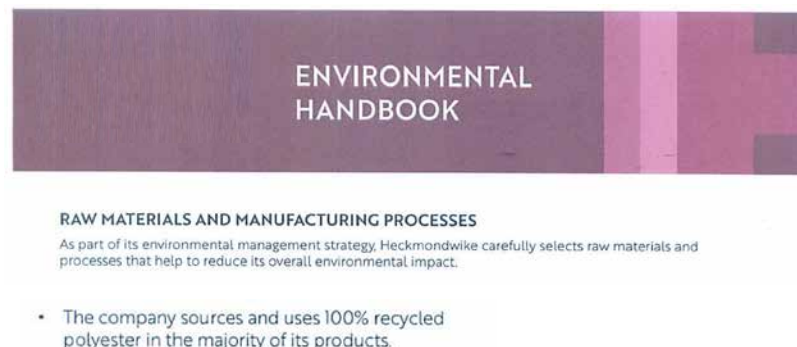
## OUR ECO MISSION

Sustainability is the driving force at Sisal & Seagrass, and is one of the core reasons that the company was brought into existence to begin with. As an online flooring retailer, solely focused on natural and sustainable materials we are always looking into new ways to reduce our impact on the planet including using recycled and recyclable wrapping and labelling materials, even our printing inks are vegetable dyes and our business premises runs off solar panels. We are always looking at ways to help the environment and cause as little impact on our planet as possible.

**Although this range drifts from our usual natural product, it still rides the wave of our sustainable, eco-friendly model. Helping to clear the oceans of plastic waste one square metre at a time.**

**Heckmondwike FB communicates the raw material policy in its environmental company handbook.**

Source: [heckmondwike-fb.co.uk/wp-content/uploads/2021/03/Heckmondwike-Environmental-Handbook-March-2021.pdf](http://heckmondwike-fb.co.uk/wp-content/uploads/2021/03/Heckmondwike-Environmental-Handbook-March-2021.pdf)



**ENVIRONMENTAL HANDBOOK**

**RAW MATERIALS AND MANUFACTURING PROCESSES**

As part of its environmental management strategy, Heckmondwike carefully selects raw materials and processes that help to reduce its overall environmental impact.

- The company sources and uses 100% recycled polyester in the majority of its products.

**Burmatex uses a specific quantity of recycled material.**

Source: <https://www.burmatex.co.uk/environmental-ethos/burmatex-environmental-ethos/>

**All burmatex® carpet tiles & planks are manufactured using 100% renewable electricity containing over 60% recycled materials including yarn and fibre, and a unique Accummen™ backing system with over 75% reclaimed, locally sourced content.**



Large manufacturing carpet groups use Econyl recycled fibres in their products.

ECONYL is the brand name for Aquafil's recycled fishing net products, made using plastic waste rescued from oceans and landfill sites across the world.

Source: [www.econyl.com/](http://www.econyl.com/)

## SUPER SOFT CARPET SAVING SEA LIFE

Sedna® carpet is **soft, luxurious and durable**. It is made with ECONYL® **regenerated nylon**, a yarn made from recycled waste material such as old carpets and **abandoned fishing nets** collected from the bottom of the sea. Sedna® thus helps to **save thousands of beautiful sea creatures** like sea turtles, dolphins and seals that no longer can get stuck in this life-threatening waste.

Moreover, Sedna® carpet has an ECO FusionBac textile back, made from **100% recycled PET plastic bottles**.

ECONYL® regenerated nylon opens up endless possibilities for architects, designers and carpet producers.

Carpet Recycling UK is a non-profit, working with manufacturers, distributors, contractors, retailers, fitters and the waste sector to divert carpet waste from landfill.

Source: [carpetrecyclinguk.com](http://carpetrecyclinguk.com)



Promoting the use of textile flooring as a sustainable resource

# Conclusions

- No carpet manufacturer or retailer is flagging the issue of microplastics.
- Lessons should be learned from the apparel industry, which has started to take action.
- Consumers are unaware of the problem of microplastics release from carpets.
- Carpet companies are making positive steps through the use of recycled plastics – but these carpets still shed microplastics.

# A possible pathway forwards

The carpet industry has the opportunity to work with researchers and the government to highlight the microplastics issue and start the discussion.

In the same way the apparel industry has developed a roadmap, targets, and studies after acknowledging the issue, the carpet industry should start prioritising research to determine which products are producing the most microplastics, and in which environments. Part of this could include which polymer types and weaves are the best performing, and how different coatings can impact microplastic numbers and their toxicity.

Insights from this research would then inform actions such as the removal of some products, leading to improvements, and ultimately designing a better outcome for customers.

Researchers, industry and government need to work together to solve the problem.

**It is time for the carpet industry to evaluate the impact of their product on human health.**

**Collaborations such as those in the apparel industry need to address the issue in carpets (and indeed in furnishings).**

**Carpet companies should still promote and act for the sustainability credentials of their products, but need to consider their potential impacts too.**

**More work is needed to make consumers aware of the abundance of microplastics in our indoor spaces.**

**Is it time for more transparency and collaboration – and potentially a labelling and information system?**

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