Design Challenge

*Redesign a commercial carpet tile that is safe and circular.*

Choose a commercial application for a carpet tile. Ask yourself, or interview one of the workshop participants on what value a commercial carpet tile brings.

- What are the needs of the user?
- How is it used?
- What features do users value, and which are essential?
Context

Studies indicate that people spend 87% of their time indoors.

The products we use for indoor spaces can have massive effects on indoor air quality, and on the people involved at every stage: from producing, installing, using, deinstalling, and recovery. Therefore, making products with safer materials can have positive repercussions across the value chain.

Carpet tiles are a trend in commercial floor covering which now accounts for 60% of commercial carpet sales.
Exercise Overview

1. Split into groups
2. Explore your application
3. Screen two selected materials
4. Redesign using the Safe & Circular Strategy Cards
5. Reflect on the role of the designer
Safe & Circular Product Redesign Workshop

EXPLORE (5 MINS)

CHOOSE A COMMERCIAL APPLICATION

WHAT ARE THE FUNCTIONAL NEEDS AND REQUIREMENTS OF A CARPET TILE?
For example, the underlying functional need of a car is to get from one place to another.

INTERVIEW A USER

DEFINE THE CHEMICALS OF CONCERN (15 MINS)
PICK & SCREEN TWO CHEMICALS THAT ARE IN THE PRODUCT
This is a summary of all the chemicals that can be found in a product like this, and not a complete list. Screen the different chemicals using MaterialWise.app.

WHICH CHEMICALS SHOULD BE DESIGNED OUT?
Highlight the chemicals of concern that should be designed out in the next phase.

- YARN FACE - POLYMER
  - NYLON 6 | 25038-54-4 | TOXIC: Y / N

- STAIN RESISTANCE TREATMENT
  - PEROXIDE | 7789-77-7 | TOXIC: Y / N

- PIGMENT FOR DYE
  - TITANIUM DIOXIDE | 13463-67-7 | TOXIC: Y / N

- FLAME RETARDANT
  - STABILIZER | 13463-67-7 | TOXIC: Y / N

- ANTI-MICROBIAL (DISINFECTANT)
  - ZINC PYRITHIONE | 13465-41-7 | TOXIC: Y / N

- PLASTICIZER (ENHANCES FLEXIBILITY)
  - BIS(2-ETHYLHEXYL) TEREPHTHALATE | 6422-88-2 | TOXIC: Y / N
Examples of applications

- Office building
- Retail store
- School or university
- Library
- Hospitals or care facilities
- Hotel
- Conference centres
- Restaurants
- Sport facilities
- Airports
Screening

1. Go to www.materialwise.org/screen
2. Log-in or register with your email address
3. Create a ‘Project’
4. Search for each chemical through its Chemical Abstract Service number (CAS number)
5. Add a concentration for each chemical. When you are unsure, fill in a random number.
6. Press ‘Screen’ when you are ready
7. Review the output
8. Highlight the chemicals of concern
Safe & Circular Product Redesign Workshop

REDESIGN (30 MINS)

DEVELOP 3 CONCEPTS FOR IMPROVEMENTS

Are there different or better ways to meet the needs while designing out the substances of concern? Brainstorm to come up with new ideas using the Material Health Strategy Cards.

Describe and illustrate 3 concepts for improvements by using the Material Health Strategy Cards. Try to be visual and give it a memorable name.

REFLECT (10 MINS)

WHAT NEEDS TO BE INCLUDED IN THE DESIGN PROCESS?

What data would be important to have? What infrastructure is needed?

Who would you need to collaborate with?
**Circular Strategies**

**REIMAGINE THE PROPOSITION**

What is the value proposition of this product? Design out chemicals of concern by exploring new ways to deliver the value of the product to the user. If you can’t design out the chemicals of concern in any other way, use them sparingly. In addition, offer the product as a service or design a take-back programme to keep the chemicals of concern out of the waste stream.

**STARTING POINT**

Could your product be transformed into a new and better service experience? Look at the Circular Design Guide method ‘Service For’ to explore how you might turn common products into a service model.

**REDUCE EXPOSURE TO THE CHEMICAL**

When it is not possible to design out the chemical of concern, make sure that exposure to it is reduced throughout the lifecycle. Exposure includes handling the raw material, exposure to humans during the manufacturing process, exposure of product users, and to the product’s recycling/processing.

**EXAMPLE**

Many commercial carpets that use polyvinyl chloride (PVC) as their primary backing material. PVC is classified as a hazardous substance and both the production and incineration of PVC often result in the release of toxic dioxins in effluent and into the air. To avoid the potentially hazardous impacts of PVC, one solution could be to use a material that is non-halogenated.

**REDESIGN THE PART**

Question the functionality of the component that contains the chemical of concern. Improve the component by designing out the chemical while redesigning the structure and shape to retain or improve functionality.

**EXAMPLE**

Many commercial carpets that use polyvinyl chloride (PVC) as their primary backing material. PVC is classified as a hazardous substance and both the production and incineration of PVC often result in the release of toxic dioxins in effluent and into the air. To avoid the potentially hazardous impacts of PVC, one solution could be to use a material that is non-halogenated.

**REUSE THE TACT**

Personal and emotional needs the product design requirements to achieve. What costs, materials and parts provided?

**EXAMPLE**

Many commercial carpets that use polyvinyl chloride (PVC) as their primary backing material. PVC is classified as a hazardous substance and both the production and incineration of PVC often result in the release of toxic dioxins in effluent and into the air. To avoid the potentially hazardous impacts of PVC, one solution could be to use a material that is non-halogenated.

**BREAK THE CYCLE**

Consider the chemical of concern. Question the chemical. Explore the possibility of the material or product or substitute it with similar or better features.

**EXAMPLE**

Many commercial carpets that use polyvinyl chloride (PVC) as their primary backing material. PVC is classified as a hazardous substance and both the production and incineration of PVC often result in the release of toxic dioxins in effluent and into the air. To avoid the potentially hazardous impacts of PVC, one solution could be to use a material that is non-halogenated.
Discussion

- How can you improve the safety of the materials and products you design by making material health a consideration in the design process?

- What kind of information do you need to select safe and circular materials for use in your product? How can you access this information?

- How can you work together with your team members and your supply chain to gain access to information on the chemical composition of a material?

- What information and context must be included in the design brief in order to integrate material health and safety into your design process?

- Who from your organisation needs to be involved?

- What kind of expertise is needed within your team to ensure material health considerations are fully addressed? Where and how can you access this expertise?