

# Partnering with NATURE to GROW next-gen materials

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29/10/2024





“The advances in life sciences, supported by digitalisation and artificial intelligence (AI), and the potential of solutions based on biology to solve societal issues, make **biotechnology and biomanufacturing one of the most promising technological areas of this century**. They can help the EU to modernise its agriculture, forestry, energy, food and feed sectors and industry”.

- *Building the future with nature: Boosting Biotechnology and Biomanufacturing in the EU*, EU Commission, 2024

## Vision and mission



To establish **technological standards** on a global scale, with a **positive impact** on Planet and People, building a **lasting legacy** for future generations.



**Driven by Nature's intelligence**, we disrupt the way things are made by creating **innovative technologies** and **products** which are **kinder** to the planet.



SQIM's technology strongly relies on partnering with **fungal microorganisms** and on employing their mycelium as key agent to **bind and transform** different typologies of residual substrates, turning them into fully **functional and high value materials** and products.

**Mycelium represents the ideal partner** allowing for the shift toward a generative paradigm rooted in bio-fabrication, thanks to its unique features, such as:

- Fast growth
- Growing on and converting very large amount of possible feedstocks, including low-value residues and waste substrates
- Creating custom textures and structures
- Intelligence and adaptability
- Protein synthesis through fermentation and material encapsulation
- Flexibility through different fermentation techniques (e.g. solid-state/liquid)





# Mycelium technology is the perfect match between innovation and sustainability.

- Growing materials using low-value residues as feedstock
- Fungal fermentation is a very low input process
- Vertical farming approach reduces land use
- Fast growing period (2-4 weeks vs. 3 years for animal)
- Low water consumption in the whole value chain
- Adoption of sustainable post-treatments (green chemistry)





# Biomaterials – biofabricated/bioassembled

## **BIO-BASED**

“... wholly or partly derived from biomass, such as plants, trees or animals” \*

## **BIO-FABRICATED**

“... produced by living cells (e.g. mammalian) and microorganisms such as bacteria, yeast and mycelium”

## **BIO-ASSEMBLED**

“... a macroscale structure that has been grown directly by living microorganisms such as mycelium or bacteria”

SOIM



**Green Building & Interior Design**



**Next gen alternative material**

SOIM

EPHEA

The most promising solution for Alternative Leather



# Unique, novel alternative for creators and for manufacturers

SQIM, leveraging its advanced technology-base and the unique approach associated to it, is in fact ultimately **developing entirely new materials' categories**, with their very own values and opportunities, for the related applications and markets.

A multitude of applications possible also thanks to the **many ways in which the raw materials can be processed**: Tanning / Chemical Transformation / Coating / Lamination / Sewing / Stitching / Thermal bonding / UV Printing / Embossing / Ultrasonic Cutting / Laser Cutting / Laser Etching/ Colouring / etc.





# EPHEA patented(\*) production process is based on low input process

>> from feedstock selection



fungal strain selection



mycelium growth



growing in moulds at semi-liquid state



semi-finished products



>> to final products

(\*) patent reference: IT201800010869A1

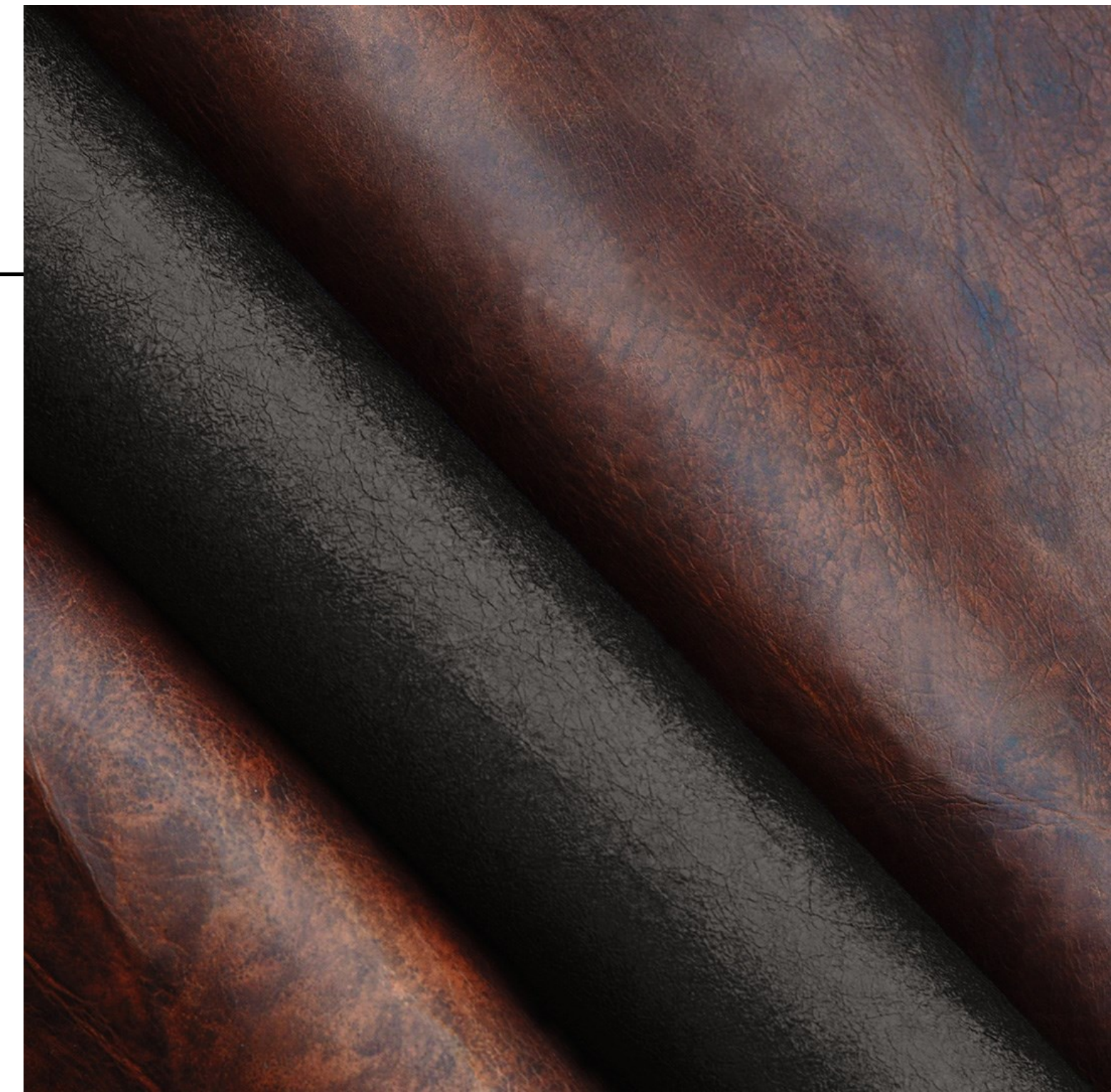


# EPHEA post-processing: endless design opportunities



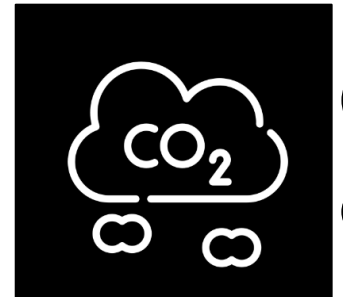
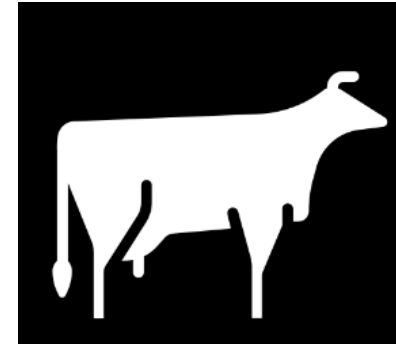
The post-processing step allows to transform, stabilize, and further functionalize the raw mycelium mat

to deliver finished materials with great aesthetics and superior performances suitable for applications in the fashion industry and beyond



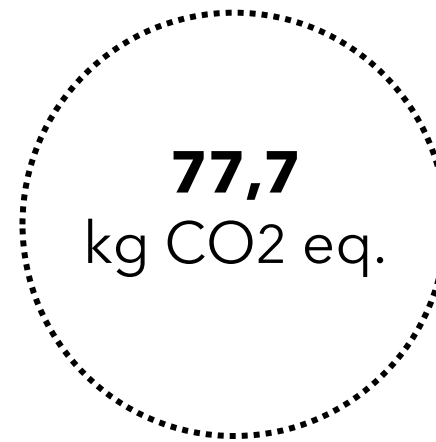


# Low environmental impact



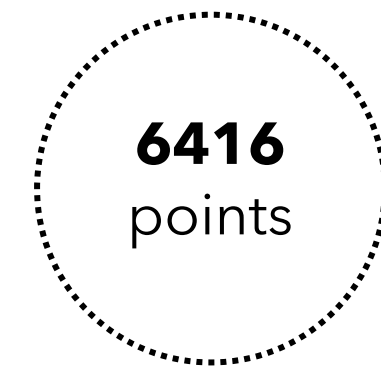
**Climate  
change**

**13,8**  
kg CO2 eq.



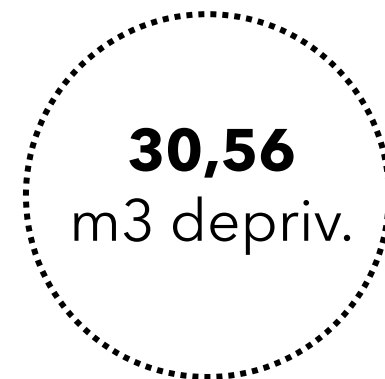
**Land  
use**

**551**  
points



**Water  
use**

**2,55**  
m3 depriv.





# SQIM's Alternative Leather is Naturally Superior

- Unique Touch & Unique Textures
- Sustainable
- Properties can be Engineered
- Three Weeks Growth Process
- Virtually any Size & Shape
- Virtually No Losses
- Easily Scalable Process
- Cost Competitive
- Locally produced
- Vegan Friendly





SQIM



Innovative Materials and Products for Interior Design  
and Green Building



# Mogu: Innovative Materials and Products for Interior Design and Green Building

Since 2015, MOGU has been developing **innovative and sustainable composite** materials, following the principle of **Circular Economy**.

Mogu is committed to run its production processes starting from **low-value, residual materials**, which cannot find any other valuable application in industry.

By feeding on the organic matters, and thanks to Mogu's design and engineering skills, we employ mycelium to convert a large range of low-value inputs into **functional and innovative products**, with high added value and unique aesthetics.





# Mogu nurtured SQIM's product and market development as well as industrialization skills

>> from feedstock selection



fungal strain selection



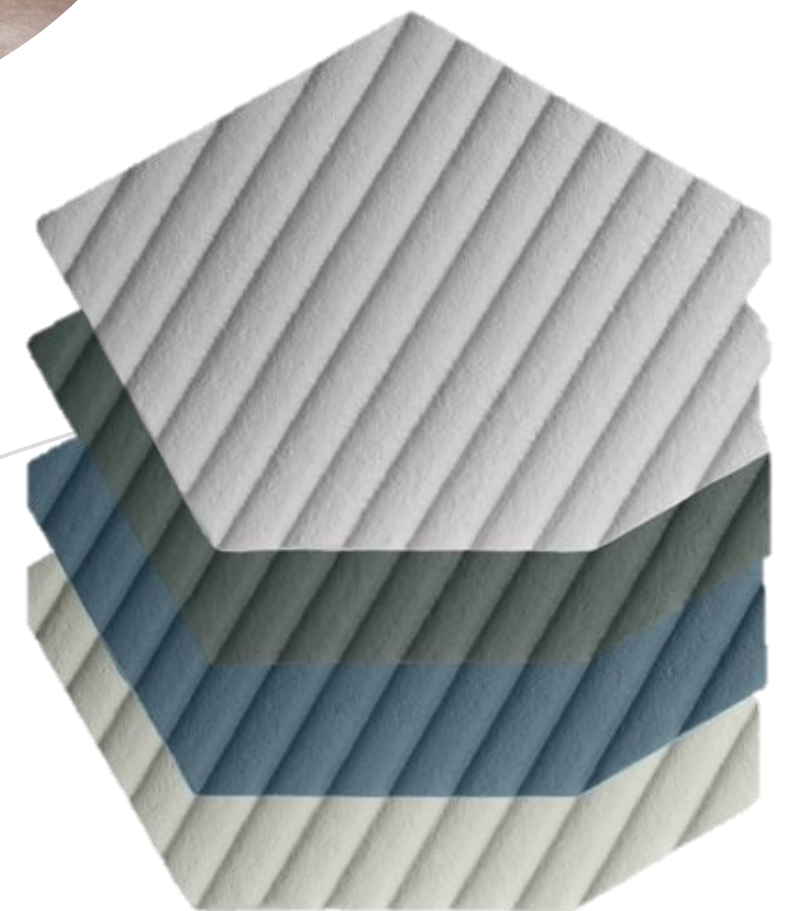
mycelium growth



growing in shape and postprocess



semi-finished products



>> to final products



SOQIM **mogu** RADICAL BY NATURE

# Mogu

## Acoustic

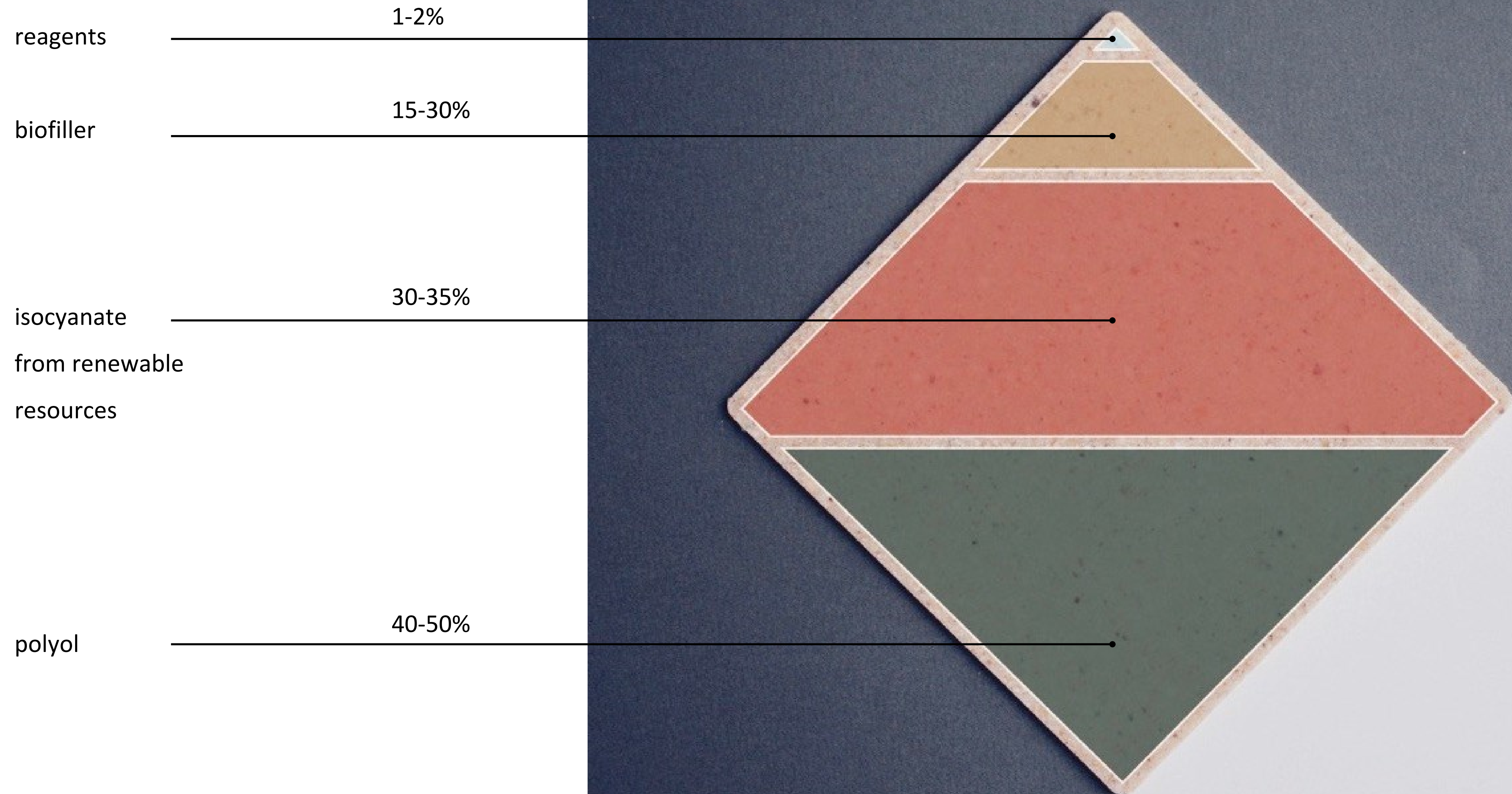
acoustic panels



FORESTA system / co-designed with **ARUP**



# Combining biofabrication with green chemistry – bio-PU resin





SOQIM **mogu** RADICAL BY NATURE

# Mogu Floor

resilient flooring tiles and floor coverings



a SMEi-phase 2 project



Horizon 2020  
European Union funding  
for Research & Innovation



SOIM



GRACE



MYLIGHT – MYco LIGHTening

ATRIUM



SQIM

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