



# Simple solutions for poor acoustics

Shane Cryer - Concept Developer - Education -  
Saint Gobain

Sponsored by



# What makes Ecophon

SAINT-GOBAIN

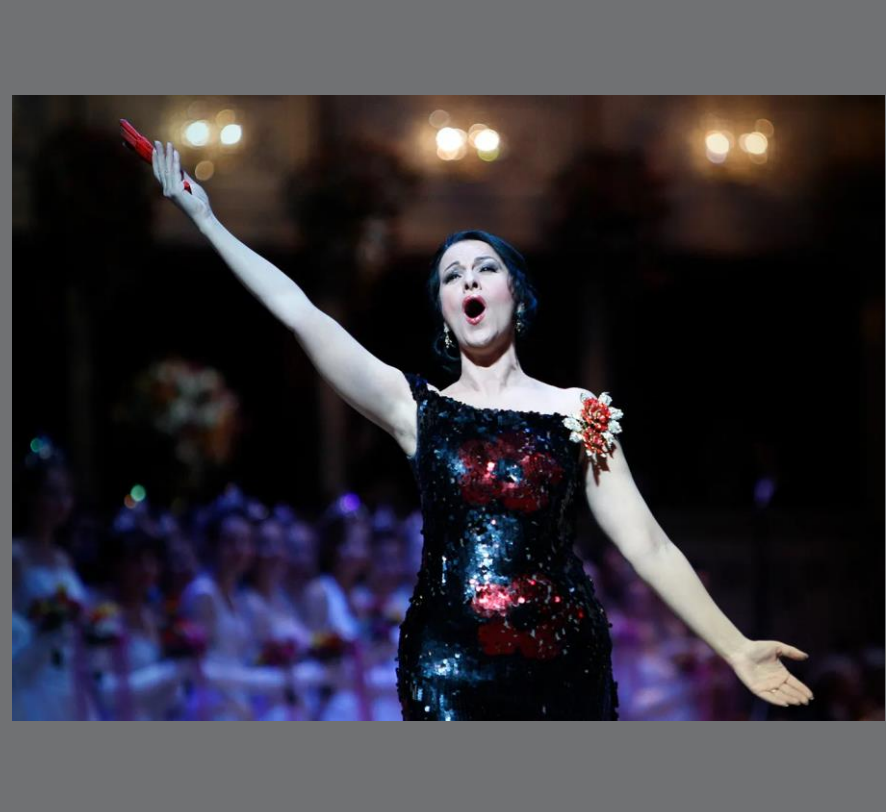
the  
sustainable  
choice?

[shane.cryer@ecophon.co.uk](mailto:shane.cryer@ecophon.co.uk)

SPACES

# Why not a soprano opera singer?

Shane Cryer





Department  
for Education



Education  
Funding  
Agency

# Acoustic design of schools: performance standards

Building bulletin 93

February 2015

**Ecophon**<sup>®</sup>  
SAINT-GOBAIN

A SOUND EFFECT ON PEOPLE

# New SEN reverberation time (RT) criteria

- Tmf superceded by 125Hz to 4000Hz.

Teaching space intended specifically for students with special hearing or communication needs (See Section 0.4)	$T \leq 0.4$ averaged from 125 Hz to 4kHz octave band centre frequencies and $T \leq 0.6$ s in every octave band in this range. <sup>2</sup>	$\leq 0.4$ . <sup>2</sup>
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# New SEN provision

**“For the purposes of this document, children with special hearing or communication needs may include children with...” (0.4)**

- Permanent hearing impairment
- Fluctuating hearing impairments caused by conductive hearing loss
- An auditory processing disorder or difficulty
- Speech, language and communication difficulties
- Visual impairments
- Attention deficit hyperactivity disorders (ADHD)
- Being on the autistic spectrum
- Recommendation: where English is not first language
- Autoimmune disease

# The Learning Environment

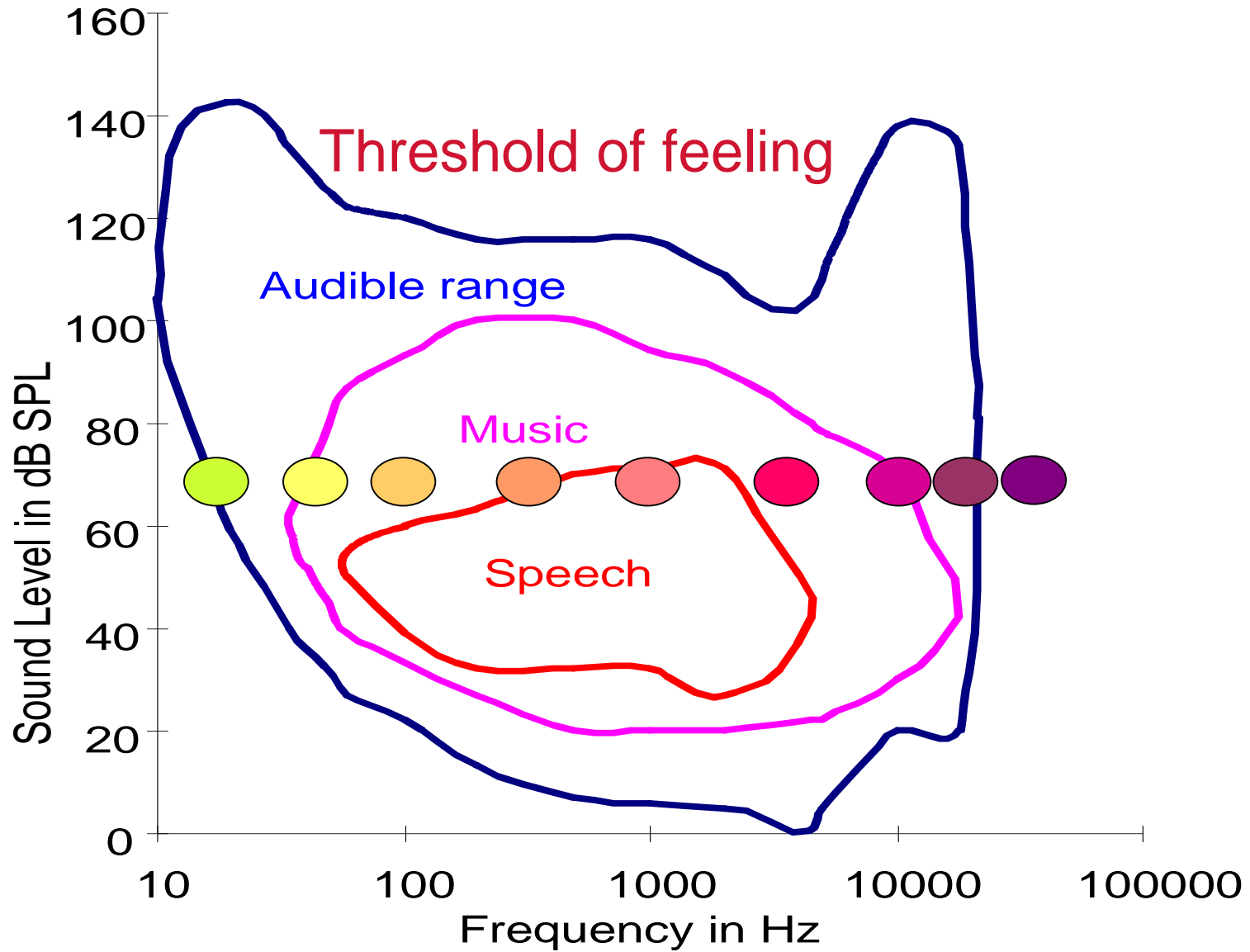
There are 5 fundamental factors for a good learning environment...



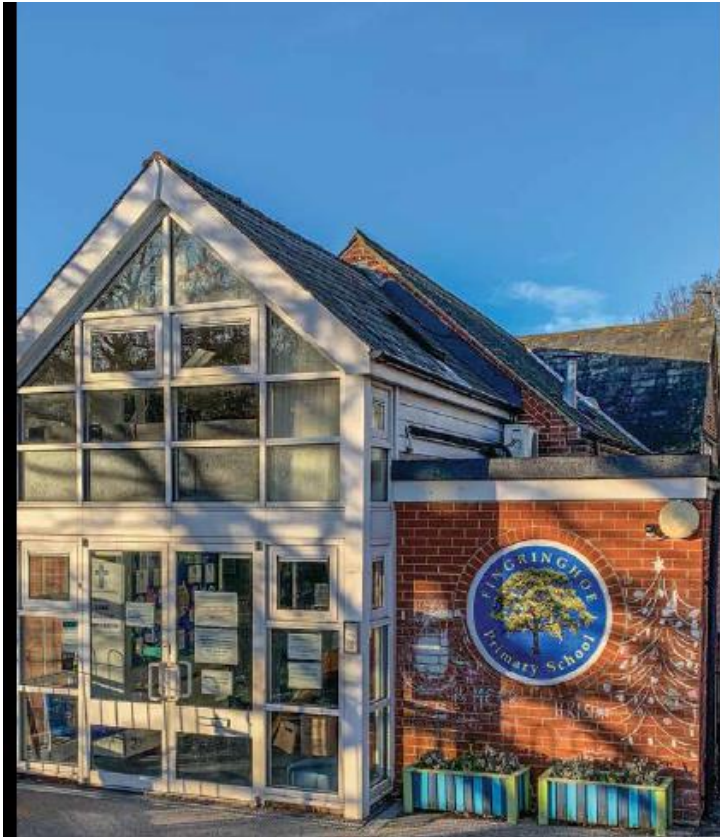


95% of people with ASD struggle to process information from several senses at once which can be manifested at either hypo or hyper sensitivity to **sound** smell, sight, taste and touch.





# Case study with Prof. Stephen Heppell & Essex CC.



SPACES FOR  
**learning**

SPRING 2021

**FINGRINGHOE  
PRIMARY SCHOOL**  
HOW A MODERN  
MAKEOVER BREATHED  
NEW LIFE AND  
LEARNING INTO A  
VICTORIAN SCHOOL



**Ecophon**<sup>®</sup>  
SAINT-GOBAIN


A SOUND EFFECT ON PEOPLE

# THE SOUND OF SWEDEN






**BBC**

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Home

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Costing the Earth

# The Sound of Nature

# ENVIRONMENTAL IMPACTS OF ACOUSTICS: EMBODIED CARBON



**LCA stages A1-A5:** product & construction phases (raw materials, manufacturing, transport)

Greenhouse Gas Emissions (GHG): **CO<sub>2</sub> equivalents**

Measured & reported in an **Environmental Product Declaration (EPD)**

# #1 Recycled and Recyclable Waste Materials

Our glass fibre range is fully recyclable

Class A acoustics with high-percentage recycled content



We have been recycling since 1990, sourcing our raw materials from glass wool made from recycled bottles and jars.

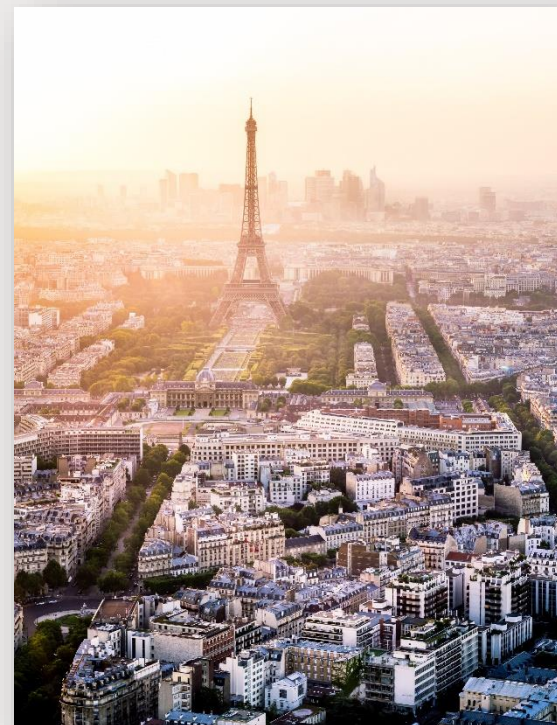
Ecophon recycling facts:

- Our baseboard core is made from a minimum of 70% recycled content sourced from waste materials (glass bottles & jars)
- **One 750ml wine bottle = 1.5 600x600 Ecophon panels**
- Our final product mixes average 50% recycled materials (range 34-65%)

# THE ENVIRONMENTAL COSTS OF CONSTRUCTION

40%

of global CO<sub>2</sub> emissions\*  
Construction



\*2021 Global Status Report for Buildings and Construction

\* \*UN press release, <https://www.unep.org/news-and-stories/press-release/co2-emissions-buildings-and-construction-hit-new-high-leaving-sector>

# THE ENVIRONMENTAL COSTS OF BUILDING PRODUCTS

10%

of global CO<sub>2</sub> emissions\*  
Construction products



\*2021 Global Status Report for Buildings and Construction

\* \*UN press release, <https://www.unep.org/news-and-stories/press-release/co2-emissions-buildings-and-construction-hit-new-high-leaving-sector>



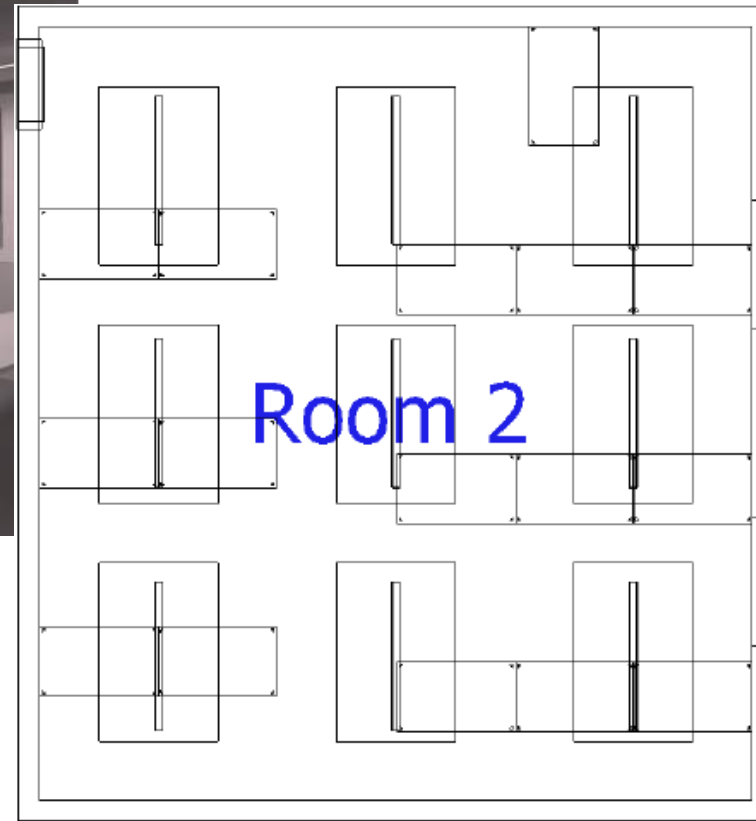
# WHAT DOES AN ACOUSTIC PRODUCT CONSIST OF?



- 1 Baseboard (sound absorption): density, thickness, binder
- 2 Surfaces: paint, textile
- 3 Edges, grid system, frames, accessories, etc.
- 4 Packaging.

Functional characteristics vs aesthetics  
vs environmental costs

# Exposed soffit design with Cundalls / DfE





LightYX a game changer!!

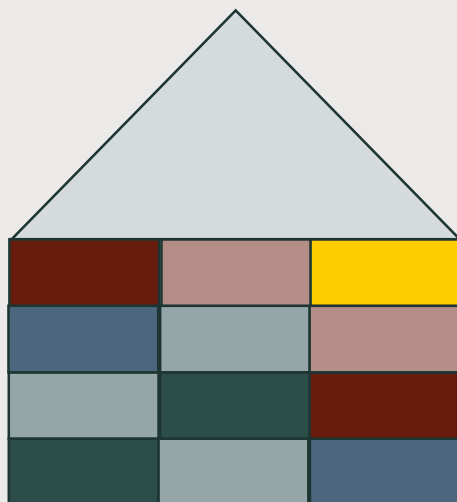


# Building Design Journey

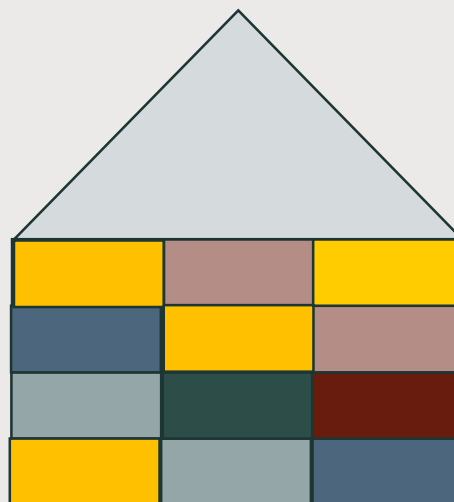
BS EN15804 – product level  
 BS EN15978 – building level

RIBA stage 2-3

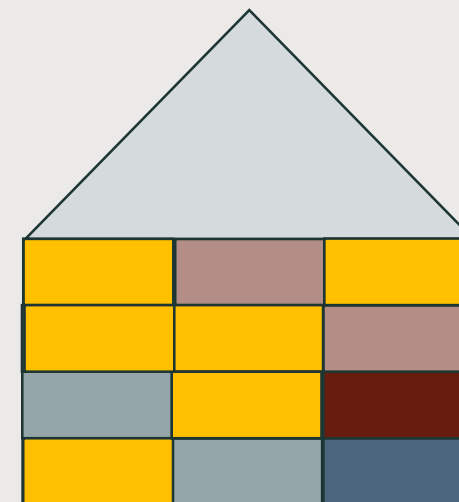
Early design stage  
 Generic data  
 ICE database



Product focus = generic data  
 replaced with manufacturer's  
 specific data



Later design stage =  
 more manufacturer's specific data





# ENVIRONMENTAL PRODUCT DECLARATIONS

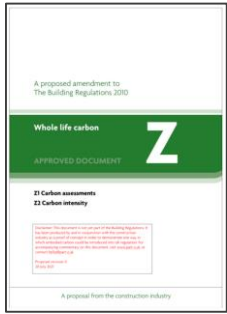
## WHAT IS AN EPD?

*'EPDs (environmental product declarations) are documents which transparently communicate the environmental performance or impact of any product or material over its lifetime. – WGBC*

An environmental product declaration (EPD) is a standardised report of a product – often produced by manufacturers and valid for five years – which fully discloses its environmental impacts, including its global warming potential, acidification, eutrophication, and depletion of strategic ozone, among others. – RIBA

*An environmental product declaration (EPD) transparently reports objective, comparable and third-party verified data about products and services' environmental performances from a lifecycle perspective. - **Environdec***

# Drivers



legislation.gov.uk

## Legislation & Governance



## Green Building



### Willmott Dixon's Now or Never

- All new buildings and major refurbishments to achieve net zero operational carbon by 2030.
- All buildings and major refurbishments to be net zero embodied carbon by 2040.

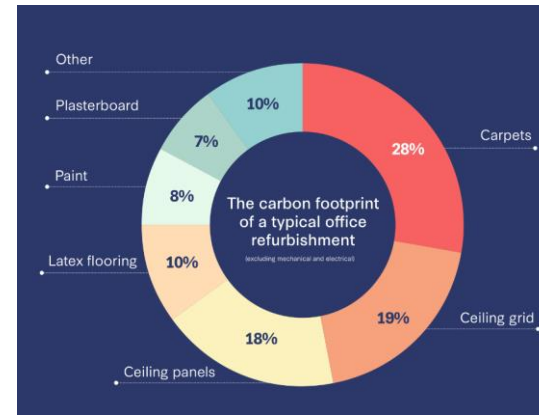


Net zero carbon in operation by 2030 and to take a whole-life view of carbon in the projects they deliver

Main Contractors



Client / Developers



'Whole life carbon' is the total amount of emissions over a building's lifespan. At the outset of all of our new development and major refurbishment projects, we undertake a whole life carbon assessment (WLC).



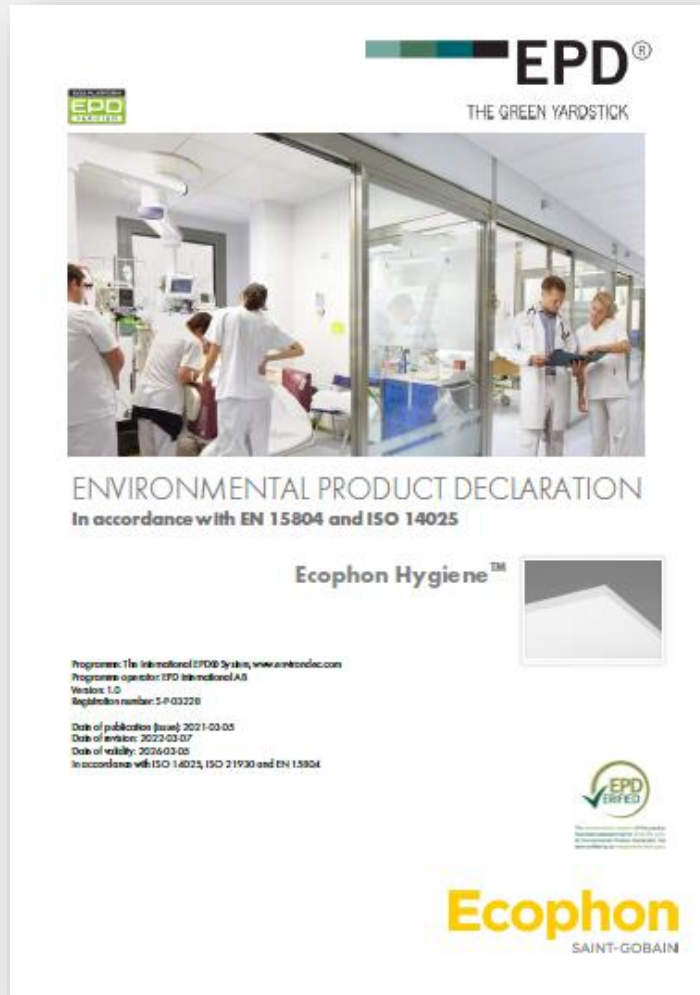
Ceilings and ceiling tiles	ROUTE 1: Responsibly sourced within the EU/UK Environment Product Declarations (EPDs) to be used where possible
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Manufacturers



# REDUCING EMISSIONS

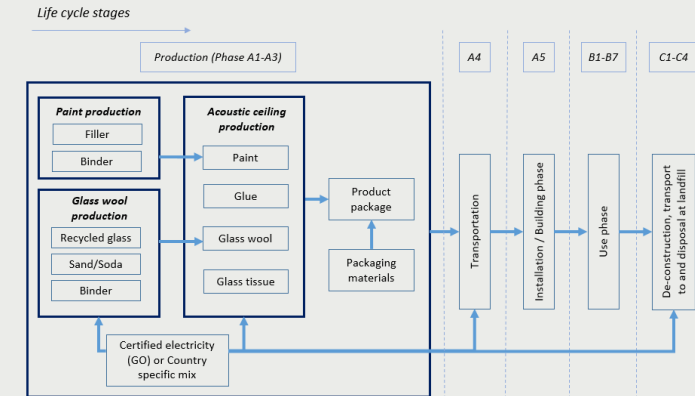
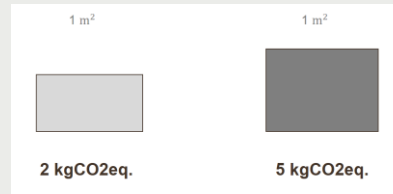


- Measuring emissions >> **first step to reduction**
  - Reported LCA results in 3<sup>rd</sup>-party verified **Environmental Product Declarations**
  - Minimum **generic data**
- Empowers the customer's decision making >> comparison**



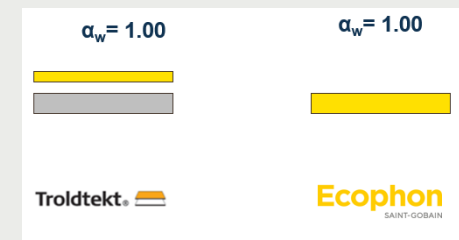
# WHAT TO EXPECT OF A PROPER EPD

1. It's for one product only  
- please, no family EPD!
2. It includes the full lifecycle  
- cradle to grave (A1 to C4)
3. It uses data from credible sources  
- the higher share of specific data the better
4. It doesn't compromise technical performance  
- compare carbon footprint of class A absorbers!



	Product phase			Construction process phase		Use phase							End of life phase				Resource recovery phase	
	Raw material and supply	Transport to the manufacturer	Manufacturing	Transport to the building site	Installation in the building	Use	Maintenance	Repair	Replacement	Relubrication	Operational energy use	Operational water use	De-construction, demolition	Transport to waste processing	Waste processing	Disposal	Reuse/Recovery/Recycling potential	
Module declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	D
Geography	SE, NL, FR, DK, PL, DE, FI, GB, EU, GLO	SE, NL, FR, DK, PL, DE, FI, GB, EU, GLO	SE, DK, PL, FI	GB, EU, GLO	EU, GLO								GB, EU, GLO	GB, EU, GLO	GB, EU, GLO	GB, EU, GLO		MND
Specific data	> 90 %																	

In conclusion: Ecophon publishes cradle-to-grave EPD with one single LCA result for each product per functional unit. The EPD includes **declaration of specific data**.



# Drivers



## Mat 02 - Environmental impacts from construction products – Environmental Product Declarations (EPD)

Recognised types of EPD	EPD points
EPD applicable to more than one product in the same product category, and more than one manufacturer.	0.5
EPD applicable to more than one product in the same product category, and a single manufacturer.	0.75
EPD applicable to a single product*, and a single manufacturer (the product may be manufactured in more than one location) *Or variations of a single product that only differ in terms of colour or pattern.	1.5

# The challenge: reducing emissions to Net Zero



The **construction industry** is a major source of **greenhouse gas emissions**

Every week a surface the size of Paris (100 km<sup>2</sup>) is covered in buildings.

This contributes

**40%**

of global CO<sub>2</sub> emissions\*



**Building materials** make a significant contribution to **global warming**

Embodied carbon in construction materials contributes

**9%**

of global CO<sub>2</sub> emissions\*\*



**No regulations for manufacturers** to measure or lower their **CO<sub>2</sub> emissions**

Ultimately,

**you**

determine if the products used in your building project are the lowest CO<sub>2</sub> option ... or not

\*2021 Global Status Report for Buildings and Construction

\*\*UN press release, <https://www.unep.org/news-and-stories/press-release/co2-emissions-buildings-and-construction-hit-new-high-leaving-sector>

# JOURNEY TO NET ZERO CARBON BY 2050



# ON THE ROAD TO NET ZERO CARBON BY 2050



**2024**

15%

Achieve technical approval of 15% recycled content at all sites (in plasterboard range)

100%

Launch of Low CO<sub>2</sub> metal into the market

10%

Reduction in CO<sub>2</sub> emissions across Scope 1 to 3

100%

Of our packaging recyclable



**OUR 2023 ACHIEVEMENTS**

30%

✓ Minimum recycled content in all primary plastic packaging complete

100%

✓ Logistics fleet now 100% Hydrotreated Vegetable Oil (HVO) capable



**SAINT-GOBAIN 2030 OBJECTIVES**

By 2030, Saint-Gobain Group is committed to:

<b>-50%</b> Water withdrawal	<b>-33%</b> In Scope 1 and 2 CO <sub>2</sub> emissions	<b>-80%</b> Non recovered production residue	<b>100%</b> Recyclable packaging with 30% recycled or bio-sourced content
<b>0%</b> Zero water discharge in areas with extremely high water risk	<b>-16%</b> In Scope 3 CO <sub>2</sub> emissions	<b>+30%</b> Virgin raw materials avoided	<b>100%</b> LCA for all product ranges



**2050**

NET ZERO CARBON

Net Zero Carbon

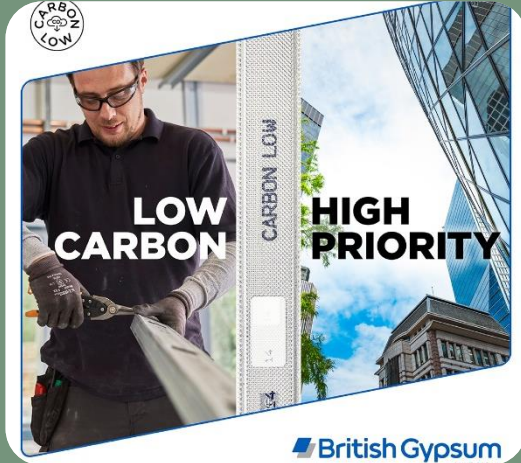
Vs 2017 data

For more information about our plans to achieve net zero carbon, please visit: [british-gypsum.com/sustainability](https://british-gypsum.com/sustainability) or [insulation-uk.com/sustainability](https://insulation-uk.com/sustainability)

# WHAT HAVE WE DONE SO FAR

## Low Carbon High Priority

Our new Gypframe® Carbon Low metal profiles are here to help you reduce your carbon footprint. Versus our standard metal, a change in the steel manufacturing process means up to 58% less embodied carbon over the whole product life cycle, which also helps you earn more BREEAM and LEED points for your projects.



## New Board Lengths to Minimise Waste

Offcuts generated on site through board length significant. Subcontractor Technical Forum Identified need for 2800mm plasterboards as standard. National housebuilders identified the requirement for 2300mm plasterboard lengths as standard. We have introduced these into 5 products in lengths as standard.



## Confidence with Certifications

Among the first to be awarded BES 6001 responsible sourcing and we continue to roll this out to all of our brands. We achieved ISO 14001 at the earliest opportunity, with our environmental management system compliant to international standards.

Our range is covered by EPD's available on our websites.



# Net Zero by 2050 is our guiding star

*“We aim to become the first net-zero carbon acoustic solutions manufacturer through transparency and innovation.”*

Our strategy is focused around three main pillars:

**CIRCULARITY  
&  
INNOVATION**



**TRANSPARENCY**



**STAKEHOLDERS**



# What have we done so far?

## Ecodesigning materials

- 230 tons of CO2 saved by reducing material thickness

## Reducing production waste

- 58% less sent to landfill since 2019

## Renewable energy

- Nordic sites 100% renewable.
- Propane → electric forklifts: 59 tons CO2
- Natural gas → 50% biogas in manufacturing raw materials





## #2 SoundCircularity Recycling Service

Offcuts from our glass fibre range can be recycled through our award-winning recycling service.

A full service offer including bags to collect in, transport and recycling.

High service levels, providing additional value to customers by making recycling of Ecophon's products **easy**.

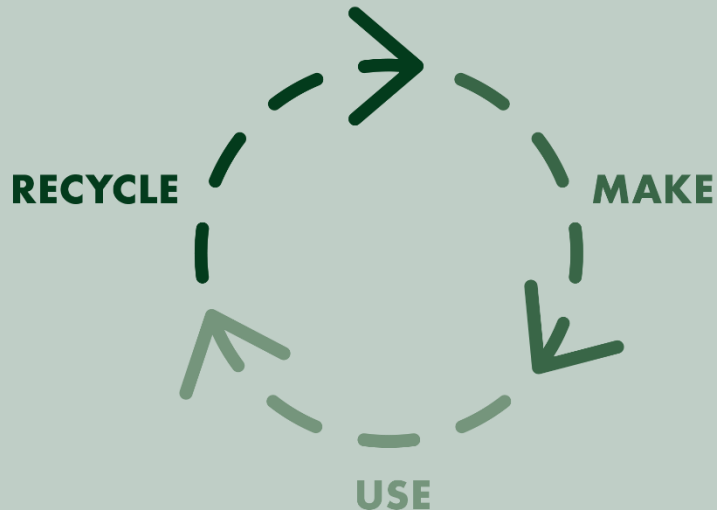
At Leca, the recycled material is used in the composition of their expanded clay solutions. At Isover, the Ecophon tiles are reintroduced as a secondary raw-material and transformed into a new insulation material.

Current service availability: Sweden, Finland, Denmark, France, Germany

 SoundCircularity



# #4 Reusability and ReUse



*One third of the waste stream in Europe comes from building materials!\**

Our long lifecycle products (40-50 years) guarantees high potential for reuse as the function of a building changes, subject to proper maintenance, storage.

Piloting ReUse service 2023. Planned launch of service in 2024. Main challenges:

- Sourcing reusable panels
- Identification
- Logistics, warehousing
- Quality control

\*Hollins, O. (2018). Towards a circular economy: waste management in the EU.

# #5 Social sustainability



## Sustainability is not only about CO<sub>2</sub>

Our environmental certifications provide evidence that customers get the best indoor air quality along with low-carbon solutions.

For health and wellbeing that extends *beyond the acoustics*.

**Health Product Declarations (HPDs)** ensure our products that are extremely low in harmful chemicals (<0.01%)

Certificates for **indoor air quality** ensure sound environments free of off-gassing pollutants that affect health and performance (Eurofins, French VOC, Finnish M1)



# Summary

## Better solutions for offsite

- Reduce waste onsite
- Reduce time onsite
- Improve IEQs
- Achieving inclusion
- Support biophillic design
- BREEAM Good/ Excellent





# SAINT-GOBAIN ECOPHON

EPD GAME



**Alex Krasnic** (He/Him) • 1st 2mon ...  
Principal Acoustics Consultant (BEng(Hons)...

It was a fun and informative session! Many thanks go to Team S-G E for the warm hospitality at the S-G Innovation Centre.

Like • 2 | Reply • 1 reply



**flavie lowres** (She/Her) • 1st 2mon ...  
Director at Green Thinking Limited

I am impressed, I never thought I would ever say that learning about EPD could be fun. But it was! It was really good. Thanks [Martin Keogh](#)

## GAME PLAY

1. Create two teams with a maximum of three players and select a counter.

2. Roll the dice to decide who goes first (highest wins).

3. The first team rolls and moves their counter.

4. The game master reads a question from the corresponding colour, and the team must answer within 1 minute.

5. If the team answers correctly within the time, they get to have another turn up to a maximum of 3 turns.

All answers can be found in the EPD documents provided.

You will need a calculator!



Your games master will be able to help if needed.

Great engagement with our EPD game this afternoon. #netzeroacoustics



You and 27 others 9 comments



# Where can we get more information on sustainable acoustics?

The image shows a screenshot of the Ecophon website. At the top, the navigation menu includes 'Ecophon SAINT-GOBAIN', 'Products', 'Inspiration & Knowledge', 'Contact', 'About Ecophon', and 'Sustainability'. The 'Sustainability' link is circled in red. To the right is a search bar with a magnifying glass icon and the word 'Search', and a globe icon. Below the navigation is a large banner image of a man in a suit standing in a forest next to a wooden door. The text 'Towards net-zero acoustics' is overlaid on the image. A yellow arrow points down to the door, and a yellow circle highlights the man and the door. A QR code is positioned on the right side of the banner. Below the banner, a white box contains the text: 'Ecophon sustainability is driven by our ambition to achieve the lowest emission products and production. A commitment to report'. A small globe icon is visible in the bottom right corner of the banner area.