



ecological
BUILDING SYSTEMS

Naturally Better



Niall Crosson

Director & Group Technical Manager

EXPERIENCE:

- Certified European Passivhaus Consultant
- Member of the Board of Directors of the Irish Green Building Council & provides input to a number of national standard committees including the NSAI and UKCMB
- Provided technical guidance on many award winning low energy projects in Ireland & the UK

MISSION STATEMENT

"To **support** the construction sector in the creation of a better built environment through the **supply** of innovative, sustainable, ecological building materials and solutions to **deliver** quality, affordable products and training"

- 1906** Our parent company MacCann & Byrne founded. MacCann & Byrne successfully traded as an independent retail hardware merchant supplying hardware and timber products
- 2000** Ecological Building Systems launched
- 2002** pro clima wins the first of many awards at PLAN EXPO, SOLITEX PLUS breathable roofing underlay named Best Roofing Product
- 2006** Ecological Building Systems becomes the largest distributor of pro clima in Europe
Thermo Hemp Natural Insulation awarded Best Eco Product at the *Grand Designs Magazine Awards*
- 2007** Ecological Building Systems UK Ltd is established, based near Carlisle in Cumbria
- 2009** Centre of Knowledge training centre officially opened
- 2017** Diasen Thermal Plaster wins Best Energy Efficient Product at the SEAI Energy Show
- 2018** Pro clima INTELLO PLUS airtight system certified as a Passivhaus component achieves the best airtightness test results ever by any airtightness membrane system

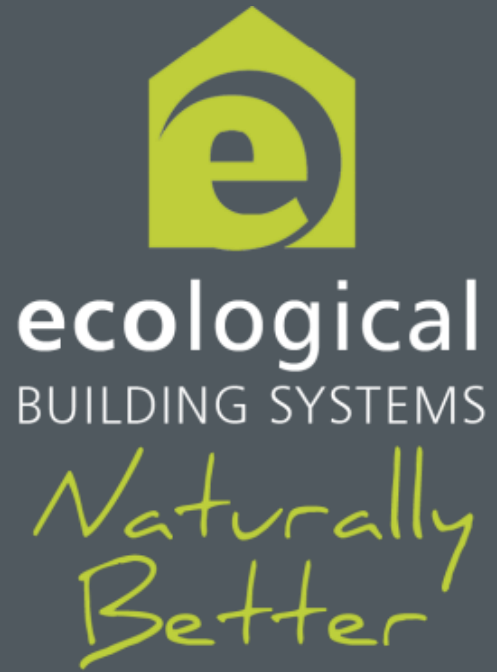
One-day intensive nZEB course commended in the Best Services Provider category at the SEAI Energy Show



Bringing Carbon Upfront

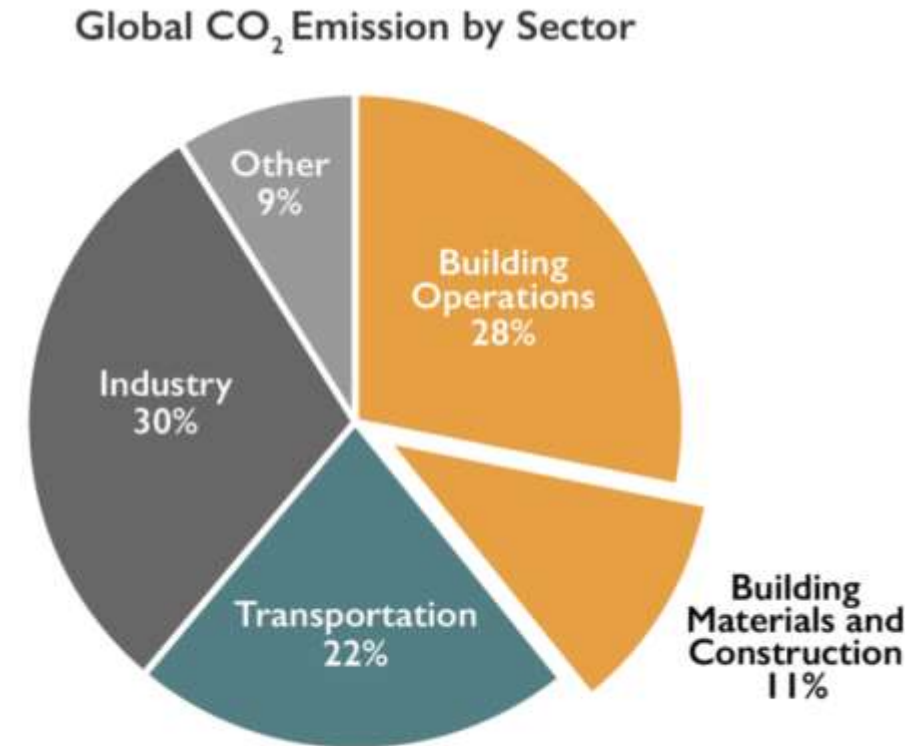
Biological Materials and Circular Products

November 2nd 2022

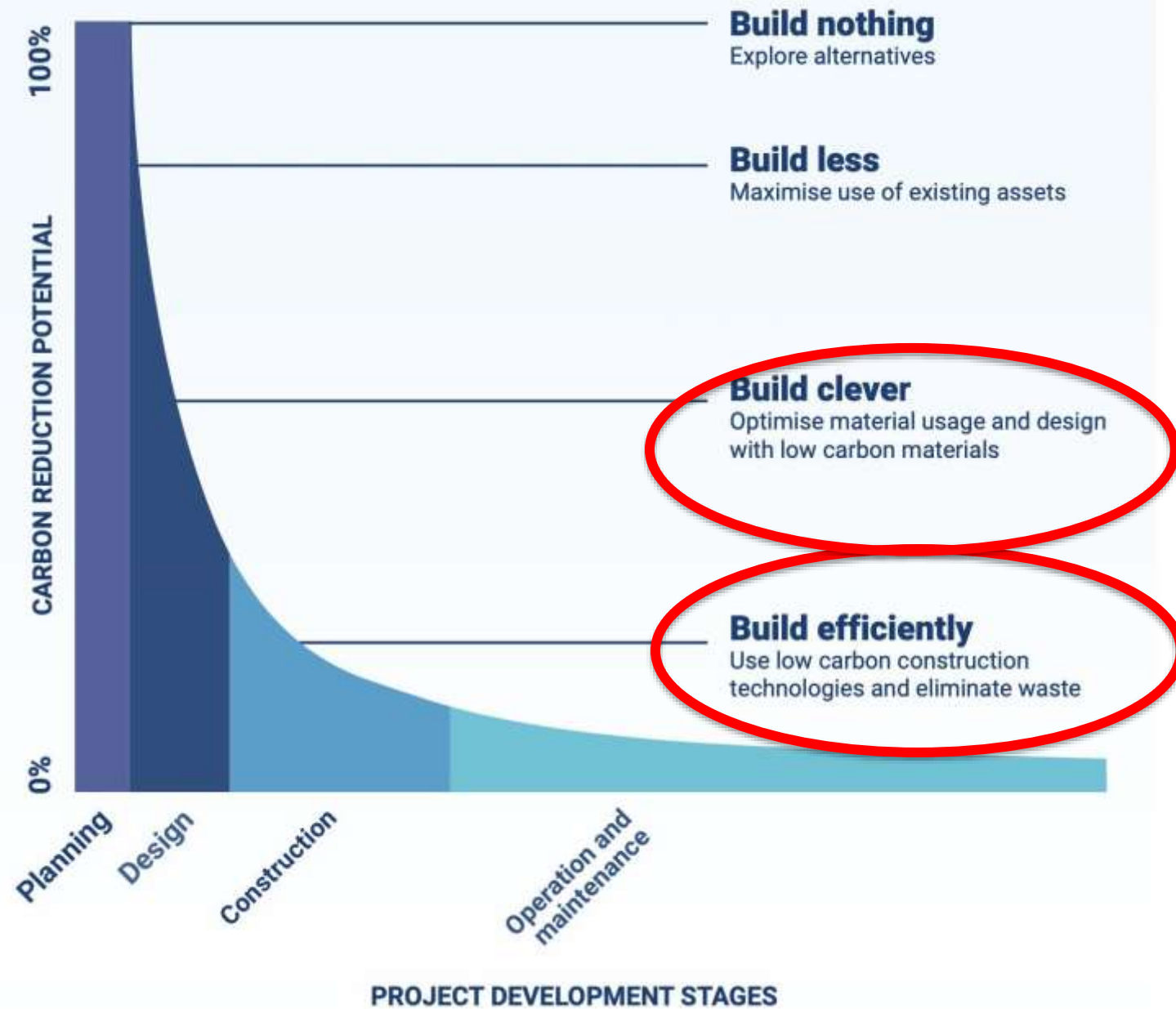


Embodied Carbon, The Blindspot of the Construction Industry

- Between now and 2060, the buildings industry is poised to add 230 billion m2 of new construction worldwide.
- That means we will **double** the amount of buildings we currently have on the planet over the next four decades.
- To put this into perspective, we are constructing the equivalent of an entire New York City every month for the next 40 years.
- *"Embodied carbon will be responsible for **almost half** of total new construction emissions between now and 2050."* – (Architecture 2030)



Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017



World Green Building Council

- We don't need to wait until 2030 or 2050 to design low carbon buildings
- This tool gives a good quick overview of impact of different construction materials

<https://www.materialepyramiden.dk/>



Stored Carbon in new housing
development Bridport House



REF: <http://www.woodforgood.com/sustainability/build-with-carbon>

Teach Spruis – Eden Architects Dublin – John Barry Lowe





Building with wood and straw



Building with wood and straw – Clare Ireland

- 400mm straw panels finished with woodfibre outside & clay plaster inside
- 0.12 W/m²K & not a steel in sight



PUSH THE FABRIC AS FAR AS POSSIBLE AND DON'T IGNORE UPFRONT CARBON

RESOURCE EFFICIENT PRINCIPLES MEANS LOWER OPERATIONAL AND EMBODIED CO₂



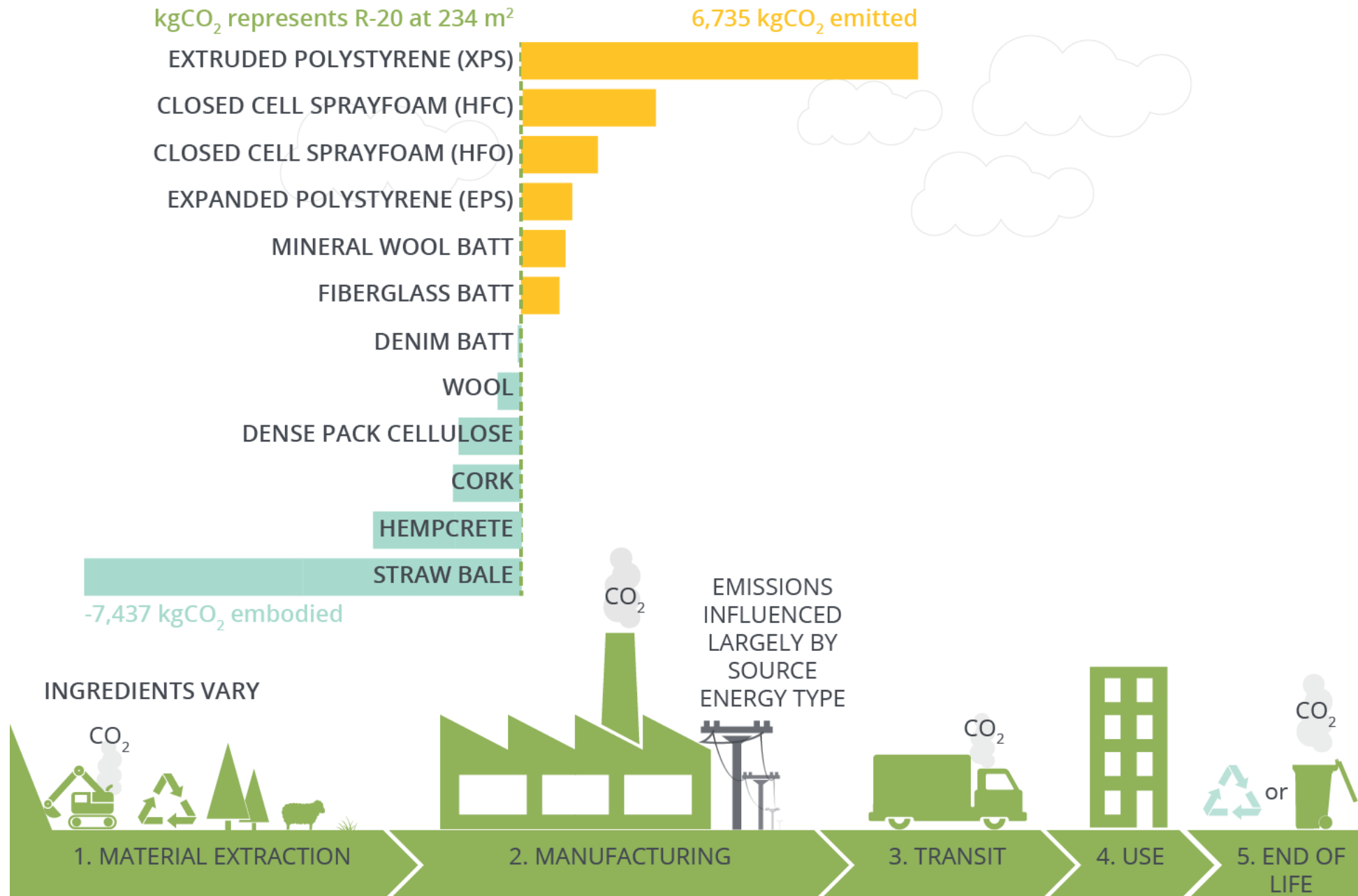
Passive House

- ✓ FABRIC FIRST
- ✓ CAREFUL MATERIAL SELECTION & PLANNING
- ✓ BUILD QUALITY & ENERGY EFFICIENCY
- ✓ HEALTHY BUILDINGS
- ✓ LOW ECOLOGICAL IMPACT
- ✓ ULTRA LOW ENERGY DEMAND
- ✓ MODELLED CARBON INTENSITY



Source: WWW.IGBC.IE

CARBON IMPACTS OF INSULATION



Insulation Does Many Things

- Reduces Heat Loss
- Improves acoustics
- Helps balance moisture and humidity
- Reduces summertime overheating
- Improves indoor air quality
- Impacts sustainability
- Determines fire behaviour
- Influences buildability

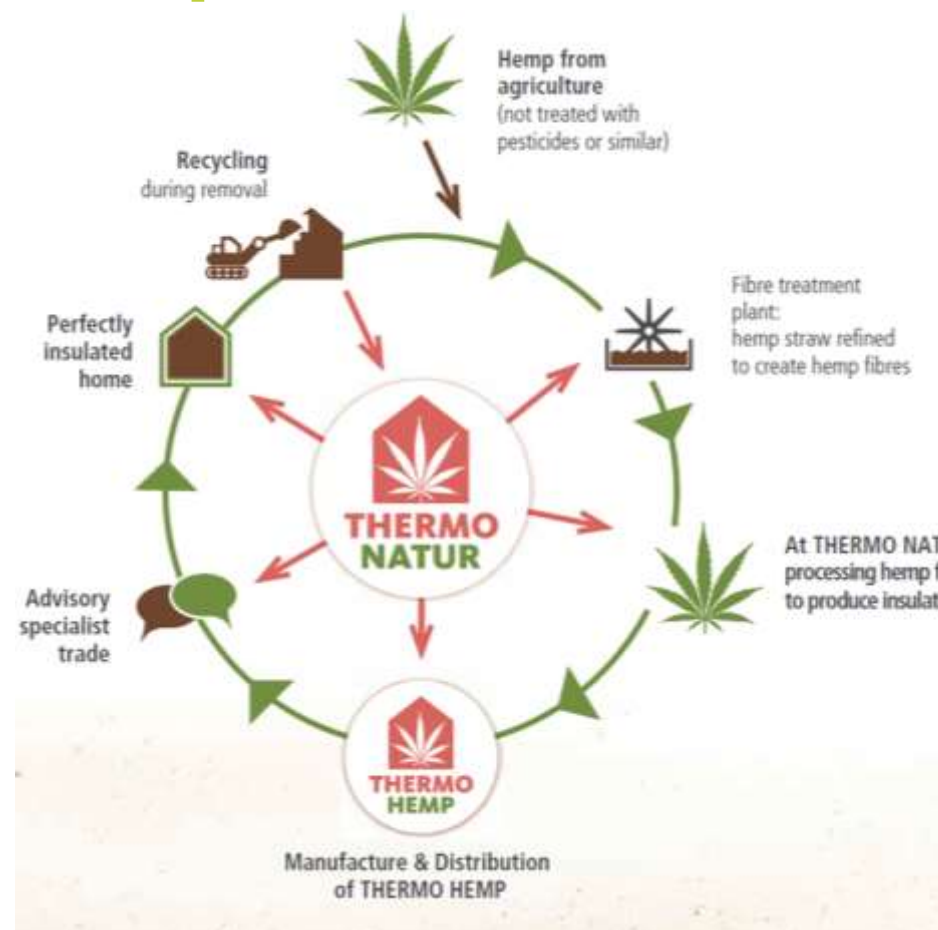




- HempFlax founded in 1993 by Ben Dronkers with the aim of restoring the age-old crop to its former glory.
- In the process, HempFlax has grown from 140 hectares of industrial hemp fibre in 1994 to 2500 hectares in 2017, and they expect to cultivate no less than 2500 hectares in 2021.

Combi Jute combines hemp with upcycled jute from discarded coffee and cocoa bean backs and processed using 100% renewable energy

Hempflax Combi Jute





SHEEPSWOOL INSULATION



About Sheep's Wool

- Wool is made from the fibrous protein keratin.
- Keratin is extremely durable, very breathable and makes wool naturally resistant to fire.
- Wool can absorb more than 30% of its own weight in water and still be completely dry.
- Wool will absorb and bind water in high relative humidities and release it when the RH drops helping regulate internal moisture levels.
- Wool is chemically very complex enabling it to readily bind and fix many airborne chemicals that can be harmful to our health, e.g. formaldehyde.
- Wool contains 50% non-fossil carbon that comes from the grass sheep graze on.

Cork Insulation



Cork: a unique, renewable, recyclable, sustainable, circular, light and strong material, resistant and pure, used since ancient times to protect homes from the cold, but also from the heat.

Contrary to what many think, **the harvest process does not cause any damage to the cork oak:** every 10 years or so, the extraction allows the skin of the ***Quercus Suber*** to be extracted and then to generate a new bark.

Much more than a simple bark, **cork has a range of properties**, impossible to find in other materials, which make it the most adaptable natural material in the world.

Liège
Kork
Corcho
Sughero
Cork
Cortiça
Suro
Pluta



Significant research, experience and craft goes behind Diasen's products: they recycle the best cork that is not used in the production of wine corks, they refine it, they transform it into ***grains to the optimum dimensions*** that they then mix with clay, lime and diatomaceous earth



DIATHONITE: THE NEWEST SOLUTIONS TO IMPROVE THE COMFORT

Diasen has been developing cork-based renders for more than 25 years, having reached the most important certification and awards in Europe



From the very first Diathonite, which was not a premixed material, to the lightest thermal plaster on the market, the **Diathonite brand** is nowadays a pioneering thermal plaster with the optimum combination and thermal performance and breathability using sustainably sourced raw materials.

DIATHONITE: FULL TECHNICAL AND ENVIROEMENTAL CERTIFICATION

The perfect mixing of natural raw materials turns Diathonite materials into the most certified ones in the market



Diathonite plasters respect the procedures, properties and values of the **EPD (Environmental Product Declaration)** certification, which allows the identification and choice of products with low environmental impact and verifying the sustainability of the product in all phases of the life cycle.



Diathonite plasters are formulated with non-hazardous materials for the environment and safe for humans, both in the application phase and at full maturity. Their use allows to obtain LEED credits in the certification protocols of the **Green Building Council**.



The properties and performance characteristics of the products comply with European standards and comply with the construction standards provided in Europe. The **CE** markings (according to EN 998-1 and EN 998-2) recognize in **Diathonite** plasters requirements for safety, quality and uniqueness that are decisive for customer satisfaction. Since 2021, Diasen has obtained the **UKCA** marks for the United Kingdom market, as a consequence of the Brexit and the change in the regulations of the country.

DIATHONITE: FULL TECHNICAL AND ENVIROEMENTAL CERTIFICATION

The perfect mixing of natural raw materials turns Diathonite materials into the most certified ones in the market



Diathonite Thermactive.037 has been recently tested by the prestigious British Board of Agrement (BBA), achieving the important result of thermal conductivity value of **0,035 W/mK**.



Diathonite plasters are also tested in respect to the indoor air quality and Diasen obtained the certification of **low VOC emissions** which means that the materials are absolutely safe if used indoors and, of course, are safe for the environment is used outdoors.

DIATHONITE: FULL TECHNICAL AND ENVIROEMENTAL CERTIFICATION

The perfect mixing of natural raw materials turns Diathonite renders into the most certified ones in the market



Diathonite renders have obtained the best and most important certifications regarding the indoor air quality and they contribute to BREEAM credits.



Thatched cottage in Dunlavin






Woodfibre Insulation



- only german producer of woodfibre boards in wet-, and dryprocess
- location: 79761 Gutenberg near Waldshut-Tiengen in south Blackforest
- family business since 1920 in fourth generation
- 1932 first production of woodfibre boards in Europe

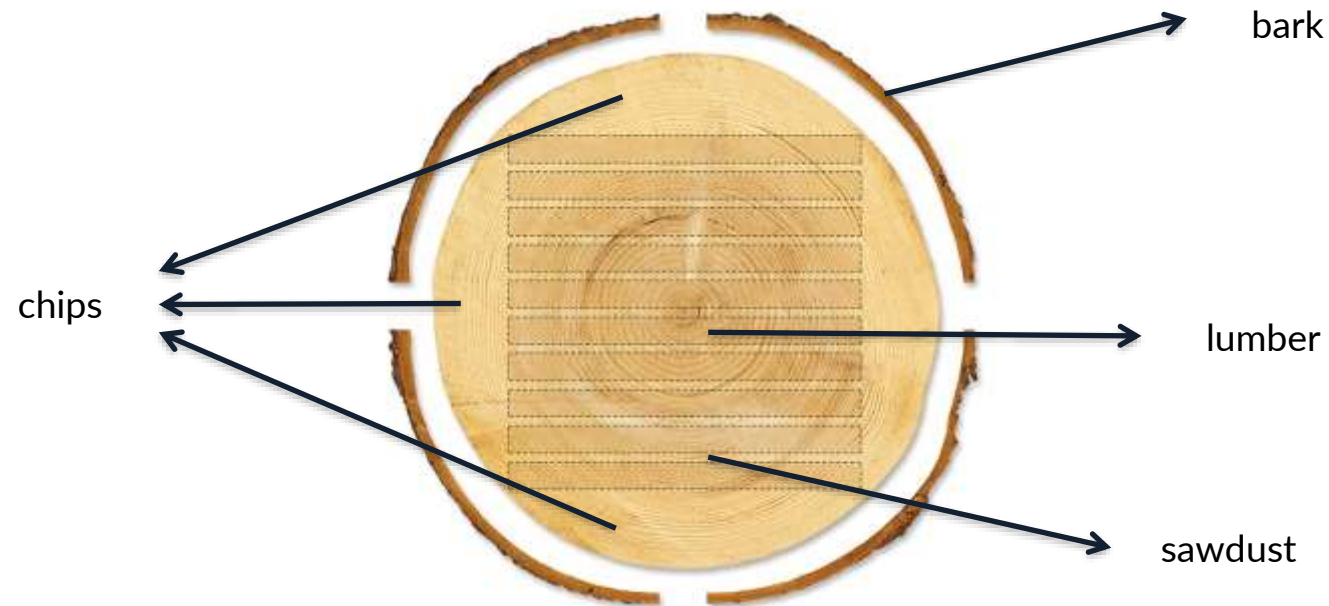


- ca 150 employees; 4-shift work, 7 days a week
- ca 12 million m² woodfibre boards/-insulations a year (400.000 m³)

- 
- Wood is renewable, resource-efficient and climate-friendly
 - Wood is available on site and creates value
 - Wood promotes a healthy living climate
 - 100% recyclable
 - Disposal in wooden container - untreated wood
 - Sheets can be burned - high calorific value
 - Sheets can be composted in accordance with DIN EN 13432
 - Woodfibre insulation can be recycled and reused

Raw Materials

- Using high-quality spruce and fir, source
 - chips as TMP* and / or pulp quality with and without bark
 - Log wood which is debarked in the factory and processed to chips
- Sources are sawmills and forestry

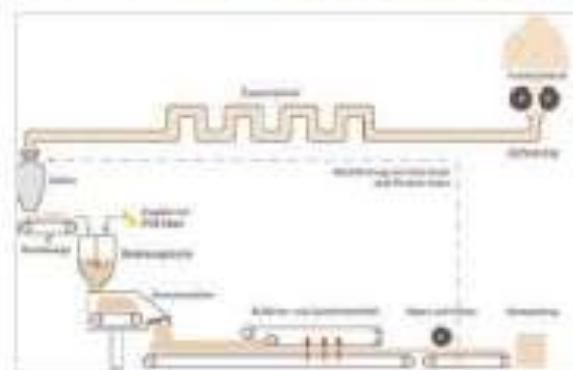


*Thermo-Mechanical-Pulping

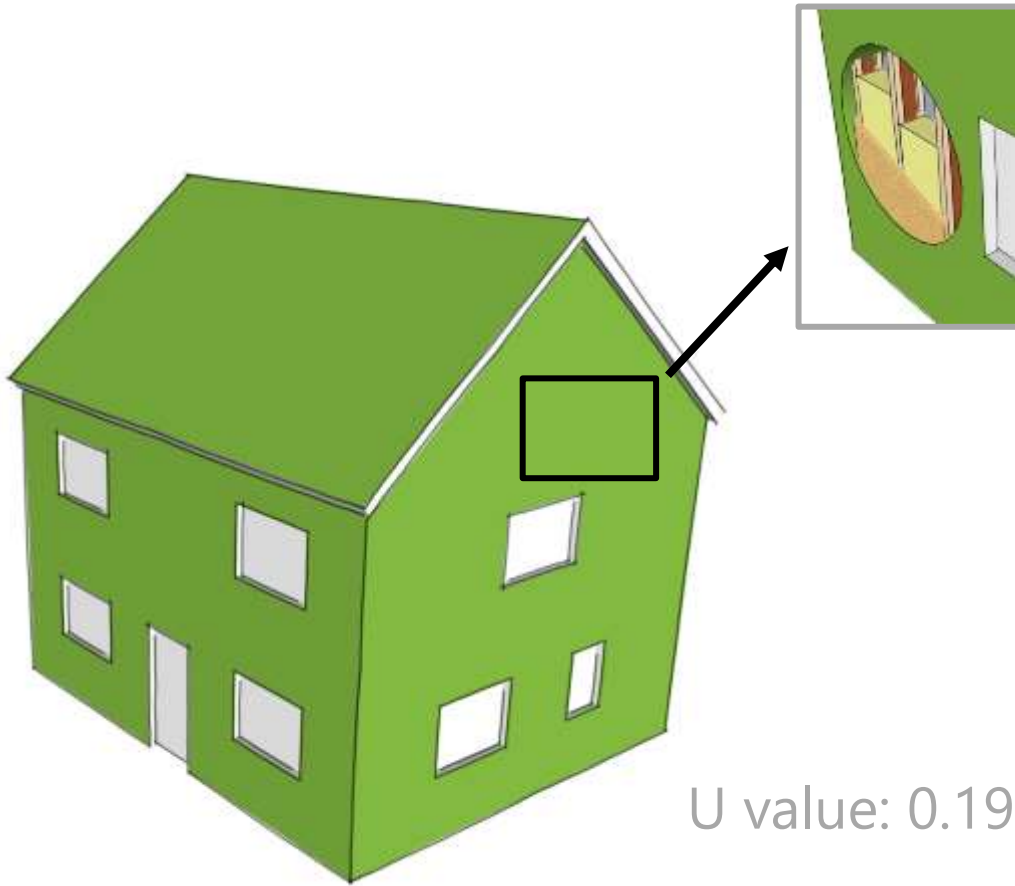
Gutex Certification



Recycling: WF-Dämmplatten



Phase Shift Comparison – Wood Fibre & PIR

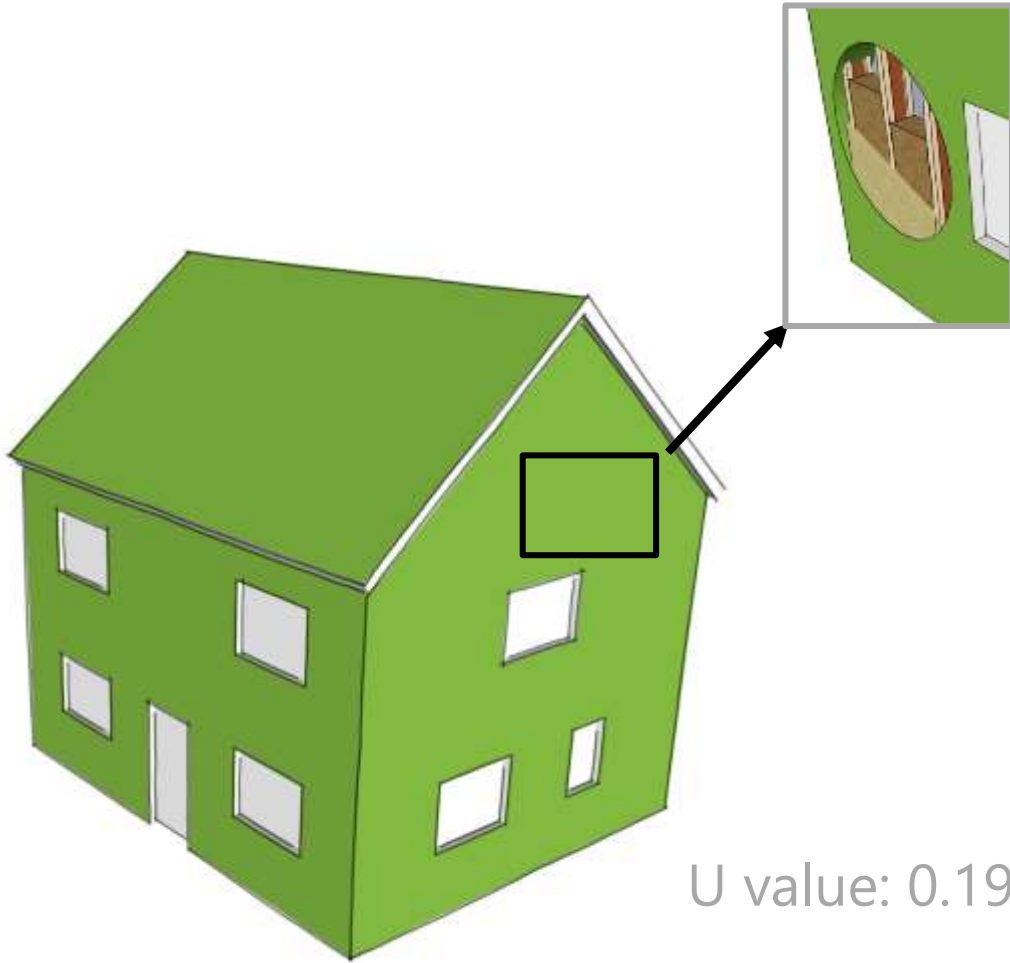


Conventional Wall build up:

- ▶ 12.5mm Plasterboard
- ▶ Vapour control layer
- ▶ 140mm PIR
- ▶ 11mm OSB
- ▶ Breather membrane
- ▶ Cavity / Brickwork

U value: 0.19 W/m²K. Phase Shift: 6.8 hours

Phase Shift Comparison – Wood Fibre & PIR



Reverse Wall build up:

- ▶ 12.5mm Plasterboard
- ▶ 15mm OSB
- ▶ 140mm flexible wood fibre
- ▶ 60mm wood fibreboard
- ▶ Cavity / Brickwork

U value: 0.19 W/m²K. Phase Shift: 12 hours



Rubric Building – Trinity College Dublin





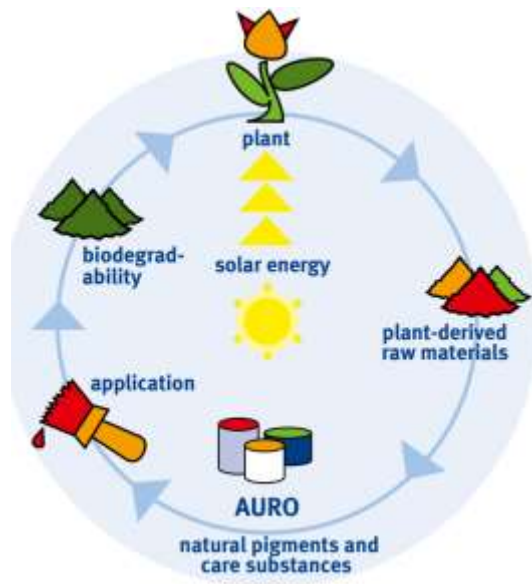
Even the most
sensitive old buildings
can be thermally
improved



 **GUTEX**[®]
NATURALLY MADE FROM WOOD



Natural Paints & finishes



SUSTAINABILITY

Paint Is The Largest Source Of Microplastics In The Ocean, Study Finds

Jamie Hailstone Contributor @*I write about air quality and the environment.*[Follow](#)

Feb 9, 2022, 03:41am EST

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PLASTIC PAINTS THE ENVIRONMENT

A global assessment of
paint's contribution to
plastic leakage to Land
Ocean & Waterways

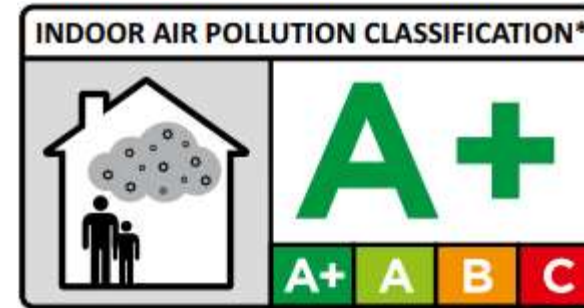


EA - 2022



- According to the WHO, 30 Tonnes of toxic waste is produced for every tonne of paint manufactured.
- The Chemicals and plastic in the paint don't break down ending up in our environment and waters
- 180,000 Tonnes of micro plastics are reported to be washed into rivers and oceans annually from the paint industry
- Approximately 17% of microplastics generated worldwide originate from the abrasion of paints and lacquers on exterior surfaces that were produced with plastic-based binders





EU Ecolabel



- Carbon Neutral
- Solar Panels
- Rainwater
- Ocean Plastic Buckets
- Own Waste Water Treatment
- Compostable Residue



EPD's are moving mainstream

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

DIATHONITE Family: Diathonite Evolution, Diathonite Acoustix, Diathonite Acoustix*, Diathonite Deumix*, Diathonite Massetto, Diathonite Thermactive.037, Diathonite Sismactive

From **DIASEN SRL**



Programme:	The International EPD® System, www.epdint.org
Programme operator:	EPD International AB
EPD registration number:	S-P-03316
Publication date:	2021-04-12
Valid until:	2026-04-09



Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Thermafleece Cosywool, Ultrawool

from
Eden Renewable Innovations Limited

therma fleece
Eden Renewable Innovations Limited

Programme:	The International EPD® System, www.epdint.org
Programme operator:	EPD International AB
EPD registration number:	S-P-04438
Publication date:	2021-11-01
Valid until:	2026-10-31

An EPD should provide current information and may be updated if conditions change. The validity is therefore subject to the current registration and publication of www.epdint.org



www.epdireland.org



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HOME

EPD IRELAND PROGRAMME

WHAT IS AN EPD?

EPD SEARCH

EPD UPLOAD

PROGRAMME FEES

Ireland's EPD Platform

Transparent, Responsible and Healthy

What is EPD Ireland?

The EPD Ireland programme allows manufacturers of construction products to provide 3rd party verified transparent information on the environmental impacts of their products. It provides a platform for specifiers to source products with Environmental Product Declarations and other information such as responsible procurement or declaration of healthy ingredients.

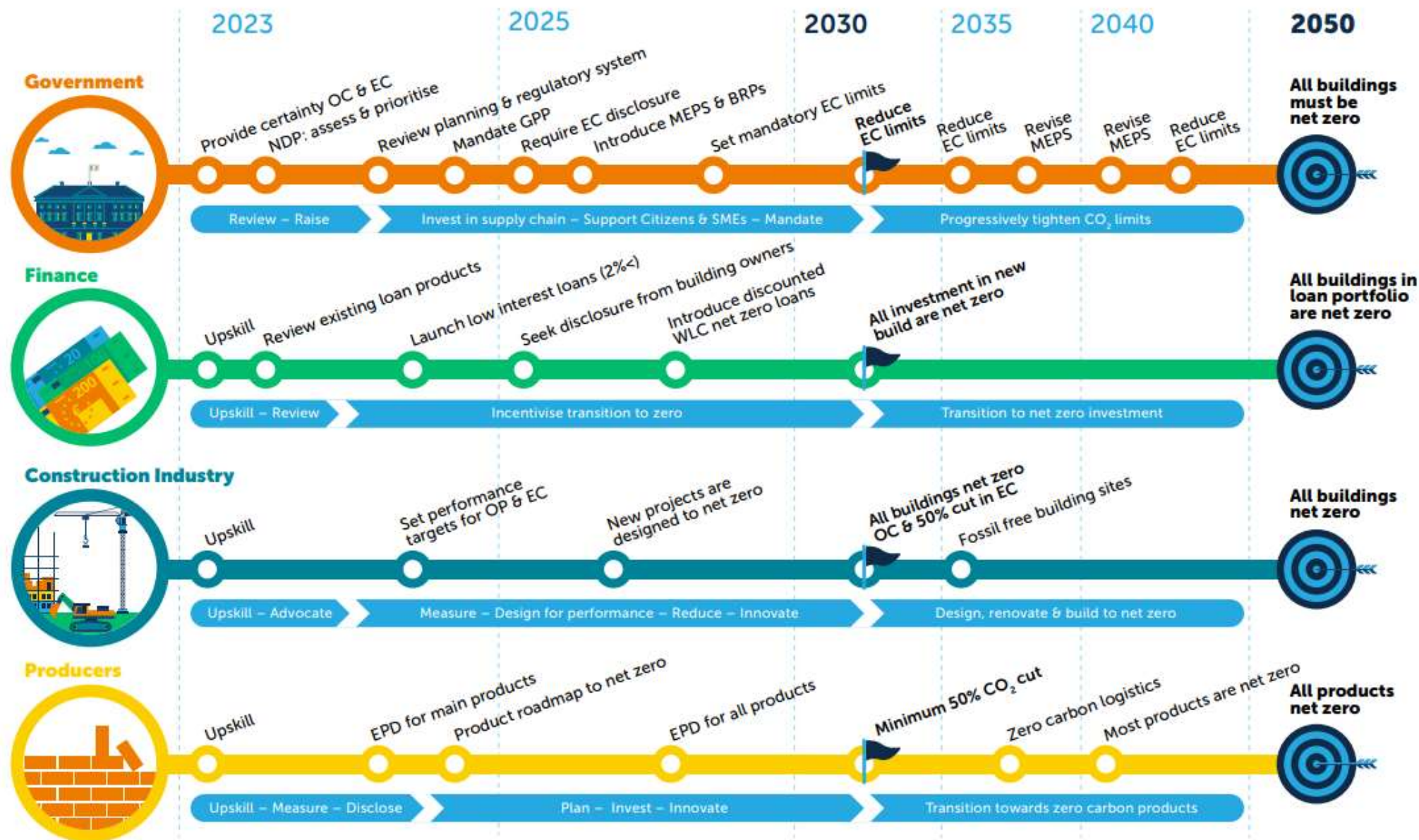
BUILDING A ZERO CARBON IRELAND

A Roadmap to decarbonise Ireland's
Built Environment across its Whole Life Cycle



#BUILDINGLIFE

 **IGBC**
IRISH GREEN BUILDING COUNCIL



BRPs: Building Renovation Passports
EC: Embodied Carbon
EPD: Environmental Product Declaration

GPP: Green Public Procurement
MEPS: Minimum Energy Performance Standards
NDP: National Development Plan

OC: Operational Carbon
WLC: Whole Life Carbon



SUMMARY

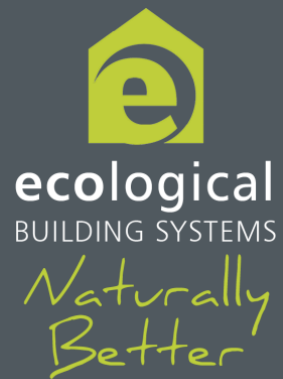
- Specifiers/Designers have a key role to play in selecting building methods with lower upfront emissions
- EPD's provide complete and fully transparent information to reduce "green washing". Material choices have significant impact on upfront carbon emissions in buildings
- Insulation choices greatly affect the carbon footprint of the building in terms of embodied carbon and operational carbon emissions.
- Insulation can be either a significant contributor to the embodied carbon footprint of the building, or a carbon sink, depending on the choice of materials used.
- Materials such as wood, straw, clay-straw, hemp, cork, and sheep's wool naturally sequester carbon and store it over their useful life. Using these materials can reduce the carbon footprint of a building.
- Natural insulation materials often not only outperform synthetic equivalents from a sustainability aspect but also from a performance basis when all characteristics are accounted for



"If you want to know the future, look at the past"
Albert Einstein



With over 2 decades of experience we can help you



- Bespoke hands on training for our products and systems in our Centre of Knowledge in Athboy, Ireland and in Carlisle in the UK
- U-value calculations and Dew point calculations
- Thermal bridge assessments and WUFI hygrothermal modelling
- Advice on achieving Building Regulations
- Tool Box Talks on site
- Airtightness specification clauses and installation videos
- In-house training – CPDs
- Virtual webinars and CPDs
- Virtual project meetings and specification reviews

We are currently unable to deliver orders in Ireland due to the Corona Virus situation and suggest you don't place orders with us for the time being. Our technical service is still available, please feel free to [contact us](#). Read our [full statement here](#). We appreciate your patience at this difficult time, many apologies.



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- [Project Gallery](#)
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Your region is: **Ireland** Not right? [Change](#)



Discover our solutions

Naturally Better

Our leading range of ecological building products support healthy, low energy sustainable buildings.



Healthy Living



Damp & Mould Prevention



Renovation & Retrofit



Soundproofing



Heat/Cold Protection





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THANK YOU

www.ecologicalbuildingsystems.com

info@ecologicalbuildingsystems.com

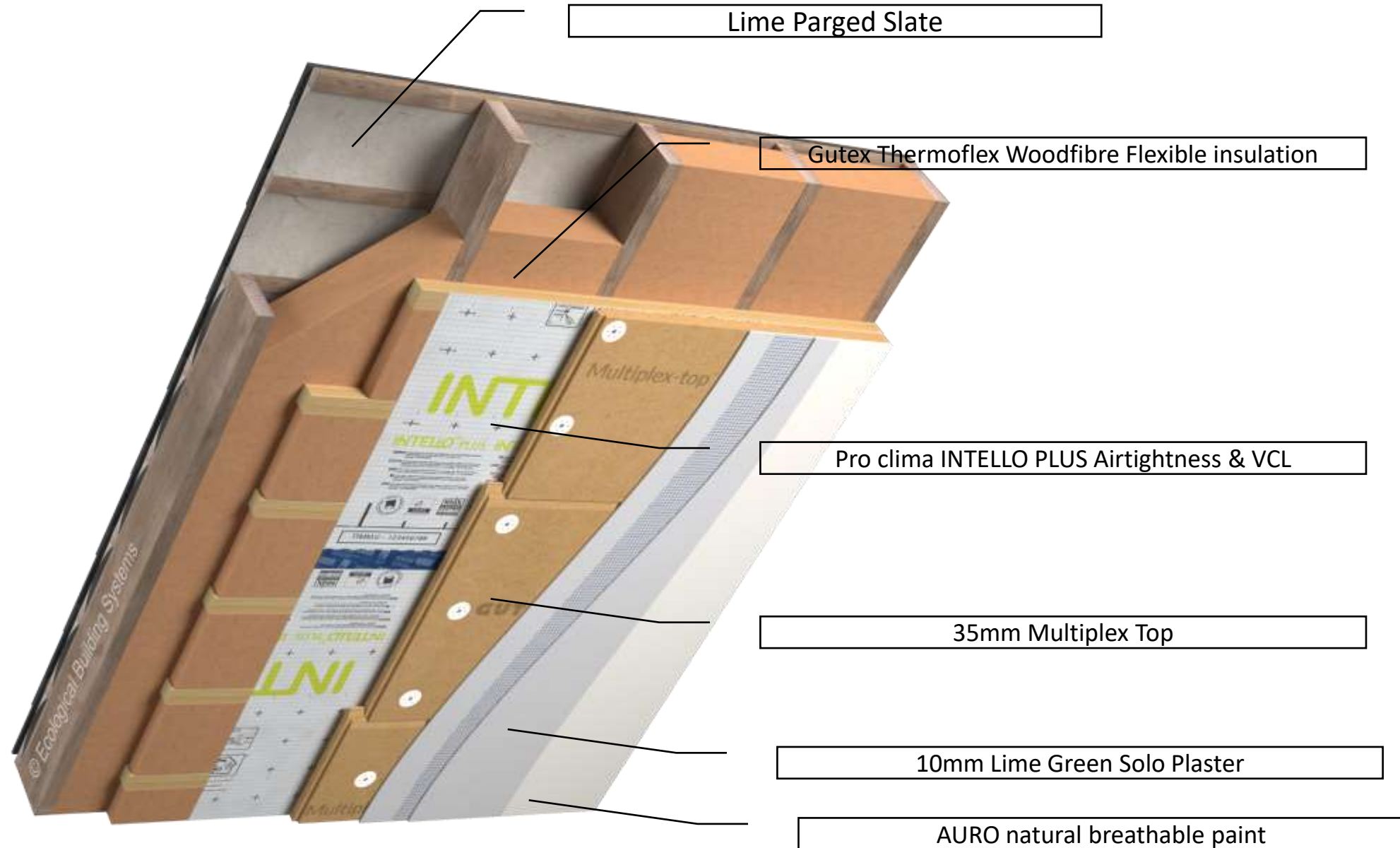
UK: 0044 1228 711511

Irl: 00353 46 9432104

Upgrading Suspended Floors



Upgrading Pitched Roofs



Upgrading Attics with natural fibre insulation



Upgrading Walls Internally



Typical U-values for solid brick or stone walls.

Wall Type	Diathonite Levelling Plaster (mm)	Wood Fibre Thickness (mm)	U-value (W/m ² K)
220mm (brick)	--	--	2.19*
220mm (brick)	20mm	40	0.49
220mm (brick)	20mm	60	0.39
220mm (brick)	20mm	80	0.32
220mm (brick)	20mm	100	0.28
500mm (stone)	--	--	2.38*
500mm (stone)	30mm	40	0.44
500mm (stone)	30mm	60	0.36
500mm (stone)	30mm	80	0.30
500mm (stone)	30mm	100	0.26

* uninsulated wall

If standard lime plaster is used (instead of Diathonite) with 60mm of Thermoroom, the U-value is 0.49W/m²K. With Diathonite, it is 0.36W/m²K.