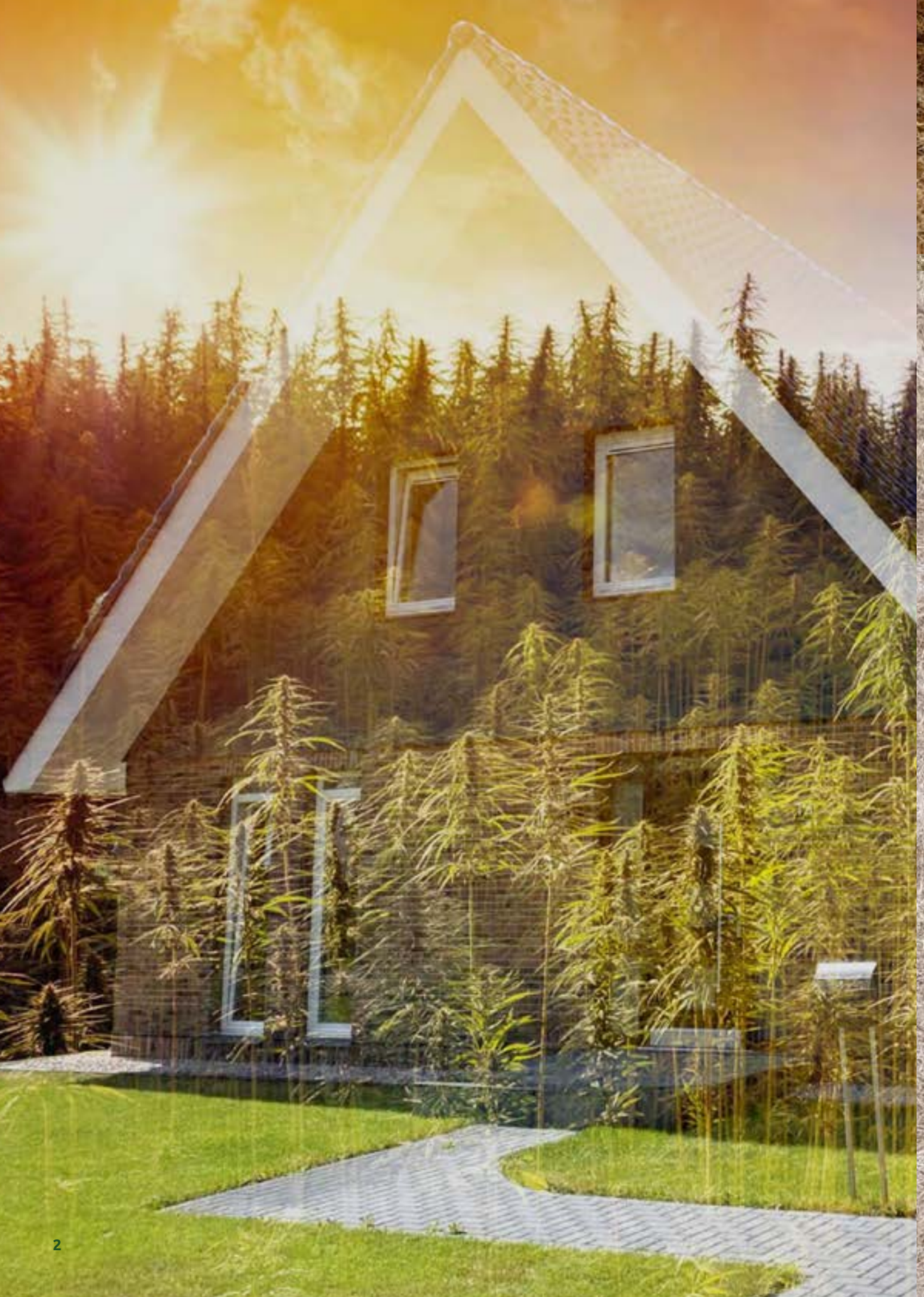
BUILD WITH HEMP

FOR PEOPLE • FOR PLANET

FLEXIBLE • LIGHT • STRONG • ECO-FRIENDLY

HEMP INSULATION MATS



BUILD WITH HEMP

FOR PEOPLE • FOR PLANET

The best ecological basis for a comfortable building

BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

The major benefits of our Build With Hemp insulation:

- ***Natural and ECO-friendly insulation for the construction industry.***
- ***100% recyclable.***
- ***Excellent thermal and acoustic isolation properties.***
- ***Retention walls in combination with cavity walls.***
- ***Material with low water vapour resistance.***
- ***Clean and responsible materials for a healthy living environment.***
- ***Easily processable, simple and easy construction, no irritation when touched or breathed in.***
- ***Easily adaptable to the most complicated methods of construction.***
- ***CO_2 negative.***
- ***No pesticides are required for the cultivation of hemp fibre.***

Applications:

Flexible and clamp-proof insulation between rafters and wooden frameworks in roofs, walls and ceilings.
Insulation of hollow spaces between partition walls, retention walls and installation spaces.

Packaging, storage and transport:

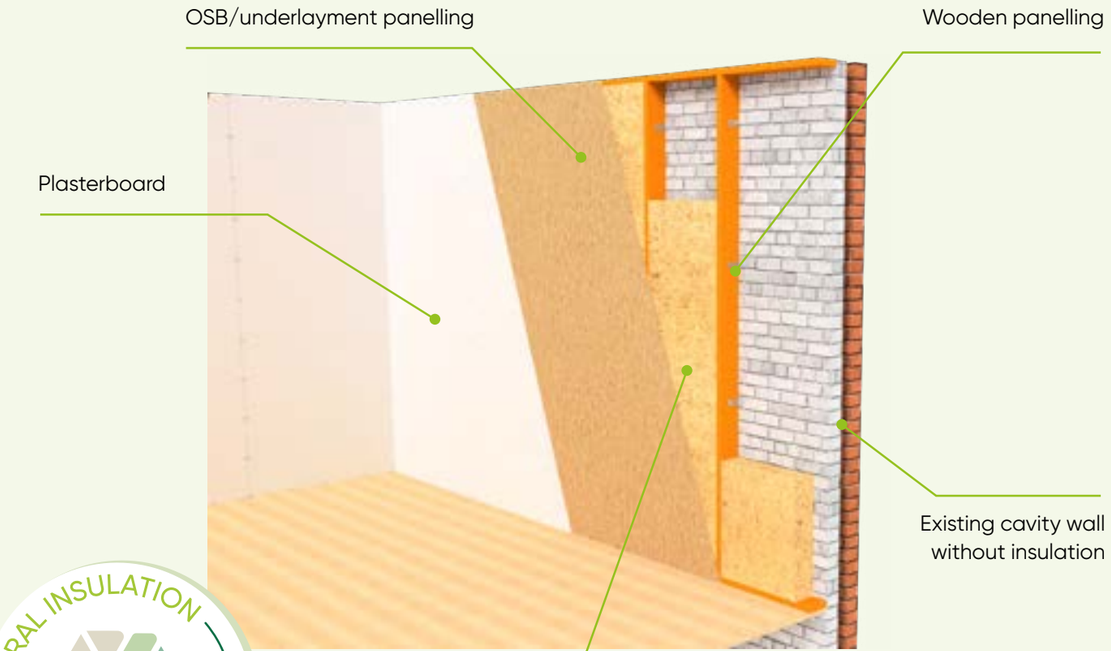
- *The mats are packaged in polyethylene bags with a maximum height of 600 mm per pack and are stored on a pallet measuring 1100(W) x 1200(D) and a maximum height of 2600 mm.*
- *Packs should be stored in a dry environment.*
- *Packs must be shipped in covered transport to protect the insulation material from moisture.*

European Assessment Document:
EAD No. 040005-00-1201/19-04-2029
View our Environmental Product Declaration (EPD)

Declaration of Performance number:
DoP-24 /67/001(according to Annex III. of Regulation (EU) No. 305/2011)

The applicability of our hemp insulation mats:

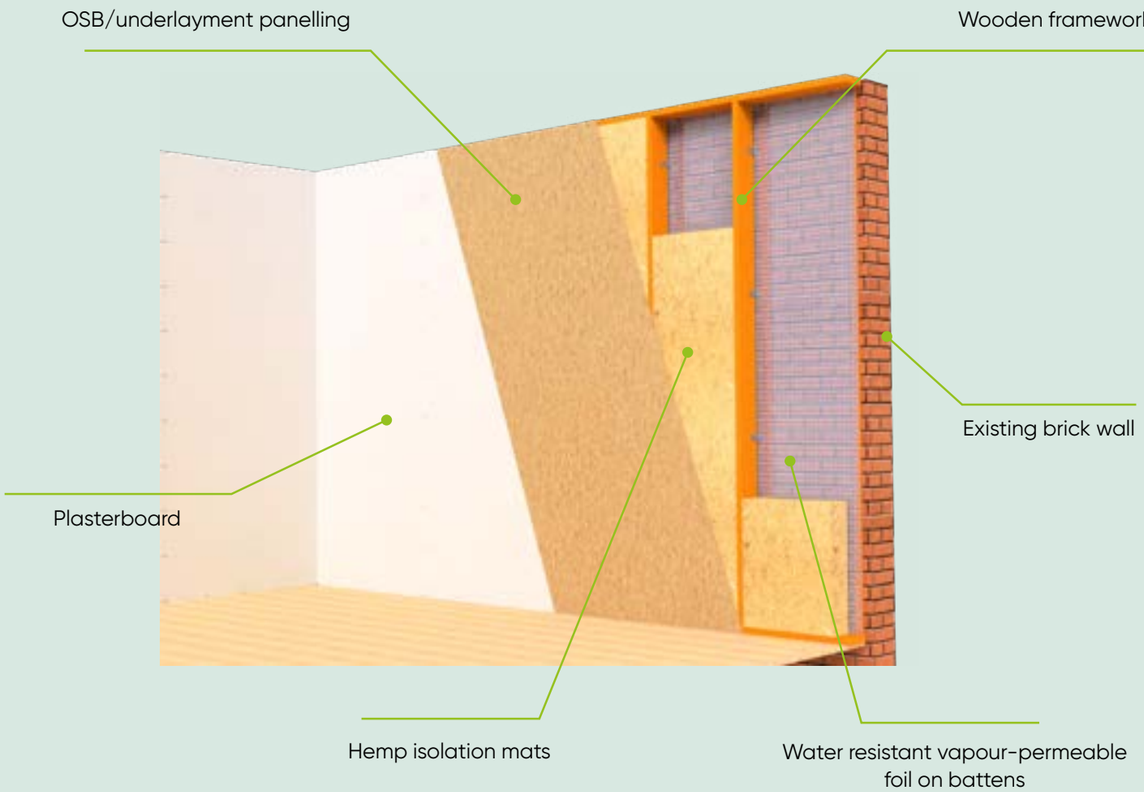
Retention walls in combination with cavity walls.



NATURAL INSULATION
BUILD WITH HEMP

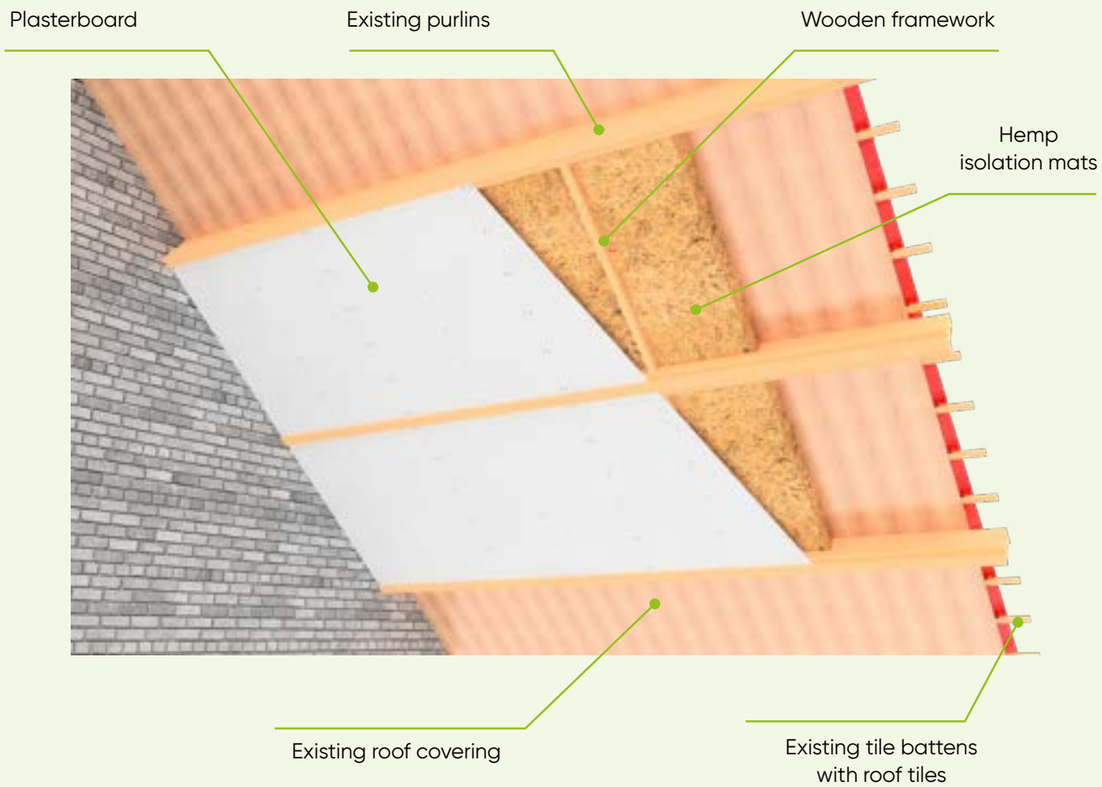
BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

Retention walls in combination with brick wall.



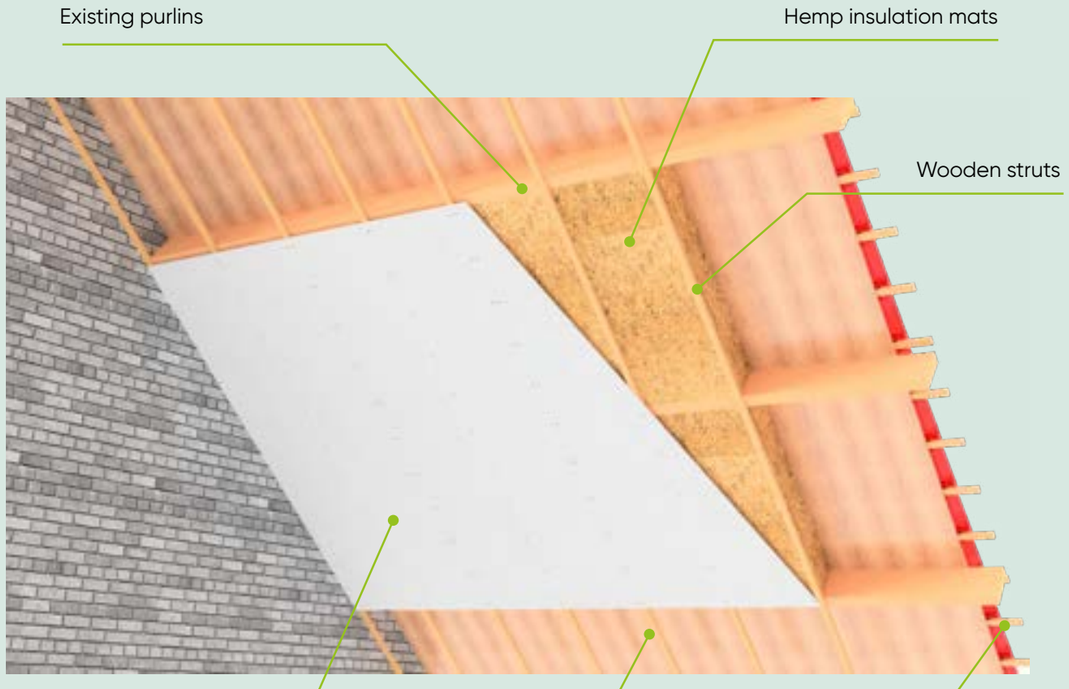
BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

Pitched roof between purlins, finishing over purlins.



BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

Pitched roof between purlins, finishing over purlins.



BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

Storey floors and /or flat roofs.

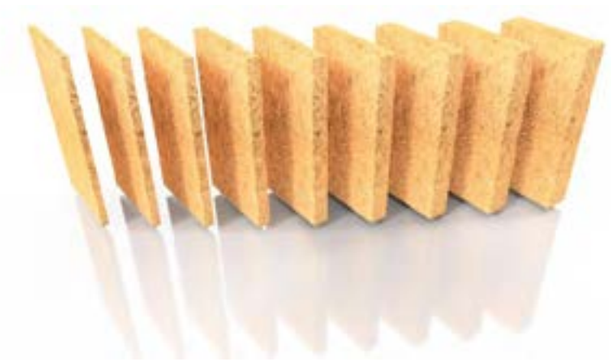
Easy and ECO-friendly construction with hemp insulation mats

BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

The hemp insulation mat is a flexible, light, sturdy and ECO-friendly insulation panel, made of industrial hemp fibre. Our product possesses excellent thermic and acoustic isolation properties and is the perfect choice for the construction industry. The mats have low water vapour resistance which makes them perfect for use in diffuse open constructions. These characteristics allow us to completely replace insulation materials such as polystyrene, glass or rockwool. The hemp insulation mats contribute to the creation of a healthy living environment. CLASS C FIRE RATING

Length	Width	Thickness	Rd- value	Panels per pack	M² per pack	Packs per pallet	M² per pallet	M² per pallet
Mm	*Mm*	*Mm*	*m²K/W*	*pieces*	*M²*	*pieces*	*M²*	*M²*
1100	600	30	0,769	16	10,56	10	105,60	3,168
1100	600	40	1,025	12	7,92	10	79,20	3,168
1100	600	50	1,282	10	6,60	10	66,00	3,300
1100	600	60	1,538	8	5,28	10	52,80	3,168
1100	600	80	2,051	6	3,96	10	39,60	3,168
1100	600	100	2,564	5	3,30	10	33,00	3,3300
1100	600	120	3,077	4	2,64	10	26,40	3,168
1100	600	140	3,590	4	2,64	8	21,12	2,9568
1100	600	160	4,103	3	1,98	10	19,80	3,168
1100	600	180	4,615	3	1,98	8	15,84	2,8512

Pallet dimensions for transport: 1100 x 1200 x 2600 mm (width x length x height).
Please contact us for the dimensions of made-to-measure insulation panes.



Best for you, your home, and our planet

Main properties:	Values:	Unit:	Harmonised technical specifications:
Bulk density	30 – 40*	Kg	EN 1602
Product composition:			
- Hemp fibre	85**	%	
- Binding fibres (PES BiCo) recycled	15	%	
Thermic properties:			
- Thermic conductivity	0,039	W/m.K	EAD 040005-00-1201 - Annex A EN ISO 10456
Fire resistance:			
- Fire rating	Class C Class B2		DIN EN 13501-1 DIN 4102-1
Reaction to vapour:			
- Resistance to water vapour μ	≤ 2		EAD 040005-00-1201 EN 12086
Sound absorption:			
- Acoustic absorption index μ	0,70		EAD 040005-00-1201
- Sound absorption class	Class C		EN ISO 354; EN ISO 11654
Dimensions:			
- Width	± 1.5		EN 822
- Length	± 2.0		EN 822
- Thickness – tolerance class	T3		EN 823; EN 13171+A1

* *the bulk density is not constant and varies with the nominal thickness of the product.*
** *the fibres are treated with fire-retardant soda.*

Manufactured by DUNAGRO HEMP GROUP.

BUILD WITH HEMP

FOR PEOPLE • FOR PLANET

Insulating with Hempcrete & Fiber Insulation

The woody pulp of the hemp plant also offers several potential applications for the sustainable building industry. About 75% of all homes in the United Kingdom rely on fibreglass insulation, a mixture of plastic and recycled glass. Unfortunately, studies have found that nine out of ten households are under-insulated.

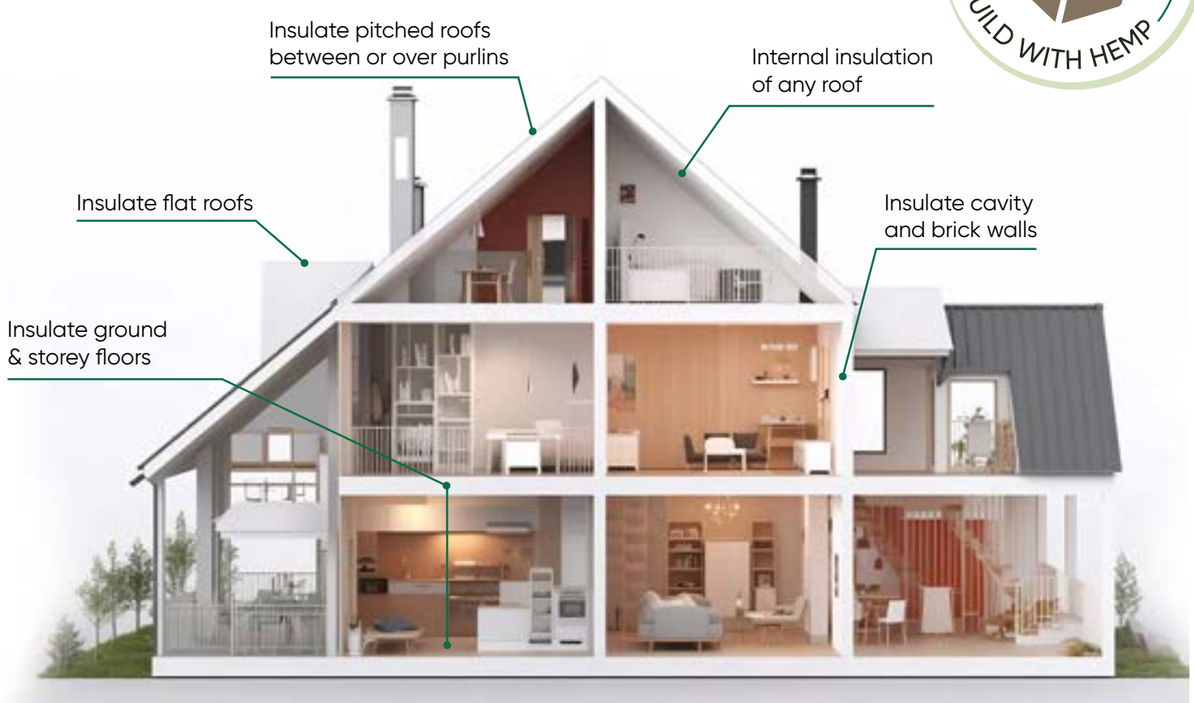
The Results

The pre-retrofit measurements showed that the house had high heat loss through the walls, consistent with a solid masonry wall construction. The retrofit measure was to install 50mm of Build with Hemp's Hemp Insulation Mats, which have a listed thermal conductivity of 0.039W/mK. The expected effect of the insulation on the wall's U-value was calculated given the measured pre-retrofit performance, resulting in a design expectation for the wall of o.56W/m-K.

The post-retrofit U-value measurement was significantly lower, demonstrating a clear thermal performance improvement. The anticipated effect of the retrofit was in fact slightly exceeded, this could be due to better than expected performance of the insulation or an unventilated air gap being introduced somewhere in the construction. The measurements, therefore, provide a successful demonstration that the manufacturer's listed performance was delivered in a real-world installation.

	Pre-Retrofit	Post-Retrofit	Comparison
Wall U-Value (W/m?K)	2.01$14%	0.40$14%	-80%
Design Expectation	n/a	0.56	-72%

The Heat3D survey of the wall found that the performance was consistent across the surface, without any cold spots of evidence of missing insulation.



Declaration of performance no.

(according to Annex III. of regulation (EU) No. 305/2011

DoP-24/67/001

1.	Unique product type identification code Unieke identificatiecode van het producttype:	Dun Agro hennep isolatie FL
2.	Intended use Beoogd gebruik	Thermal & acoustic insulation for buildings Thermische & akoestische isolatie voor gebouwen
3.	Manufacturer Fabrikant	Dun Agro B.V Raadhuisweg 11 9665 JE Oude Pekela The Netherlands info@dunagro.nl
4.	Authorised repesentive Gemachtigde	Not applicable N.v.t.
5.	System of AVCP Het systeem voor de beoordeling en verificatie van de prestatiebestendigheid	System 1 Systeem 1
6.	European Assessment Document Europees beoordelingsdocument European Technical Assessment Europese technische beoordeling Technical Assessment Body Technische beoordelingsinstantie Notified body Aangemelde instantie	EAD No. 040005-00-1201 / June 2015 24/0170 Technický a zkušební ústav stavební Praha, s.p. NB1020; NB1390; NB1516

7. **EN** Declared performances **NL** Aangegeven prestaties

EN Notes to the table:
1. Column 1 shall contain the list of essential characteristics as determined in the harmonised technical specifications for the intended use or uses indicated in point 2 above.
2. For each essential characteristic listed in column 1 and in compliance with the requirements of Article 6, column 2 shall contain the declared performance, expressed by level or class, or in a description, related to the corresponding essential characteristics. The letters 'NPD' (No Performance Determined) shall be indicated where no performance is declared.
3. For each essential characteristic listed in column 1, column 3 shall contain:
(a) dated reference of the corresponding harmonised standard and, where relevant, the reference number of the Specific or Appropriate Technical Documentation used; or
(b) dated reference of the corresponding European Assessment Document where available and reference number of the European Technical Assessment used.

NL Opmerkingen bij de tabel:
1. Kolom 1 bevat de lijst van essentiële kenmerken zoals bepaald in de geharmoniseerde technische specificaties voor het beoogde gebruik of gebruik zoals aangegeven in punt 2 hierboven.
2. Voor elk essentieel kenmerk vermeld in kolom 1 en in overeenstemming met de eisen van artikel 6, bevat kolom 2 de aangegeven prestatie, uitgedrukt per niveau of klasse, of in een beschrijving, verband houden met de overeenkomstige essentiële kenmerken. De letters 'NPD' (Geen prestatie vastgesteld) worden aangegeven als er geen prestatie wordt aangegeven.
3. Voor elk in kolom 1 vermeld essentieel kenmerk bevat kolom 3:
a) referentiedatum van de overeenkomstige geharmoniseerde norm en, indien van toepassing, het referentienummer van de gebruikte specifieke of passende technische documentatie; of
b) referentiedatum van het overeenkomstige Europese beoordelingsdocument, indien beschikbaar, en referentienummer van de gebruikte Europese technische beoordeling.

Essential characteristics (see Note 1) **Essentiële kenmerken** (zie opmerking 1)	**Performance** (see Note 2) **Prestaties** (zie opmerking 2)	**Harmonised technical spec.** (see Note 3) **Geharmoniseerde technische spec.** (zie opmerking 3)
Reaction to fire Brandklasse	Class/ Klasse C-s2,d0 (acc. To EN 13501-1:2018)	Cl. 2.2.1 EAD 040005-00-1201: test acc. To EN ISO 11925-2:2020, EN 13823:2020+A1
Biological resistance (growth of mould fungus) Biologische resistentie (schimmelgroei)	NDP	EAD 040005-00-1201; EN ISO 846
Specific airflow resistivity Specifieke luchtstroomweerstand	NDP	EAD 040005-00-1201; EN 29053 (ISO 9053)
Dynamic stiffness (sound insulation product only) Dynamische stijfheid (alleen geluidsisolatieproduct)	NDP	EAD 040005-00-1201; EN 29052-1
Impact sound reduction (sound ins. prod. only) Contactgeluidreductie (alleen geluidsisolatieproduct)	NDP	EAD 040005-00-1201; EN ISO 10140; EN ISO 717-2
Compressibility (sound insulation product only) Samendrukbaarheid (alleen geluidsisolatieproduct)	NDP	EAD 040005-00-1201; EN 12431; EN 713171
Sound absorption (relating to the thickness of 50mm) Geluidsabsorptie (m.b.t. de dikte van 50 mm) - acoustic absorption index αw akoestische absorptie-index αw - sound absorption coefficient αp calculated in 1/1 octave bands at the frequency geluidsabsorptiecoëfficiënt αp berekend in 1/1 octaafbanden bij de frequentie - 125Hz - 250Hz - 500Hz; 1000Hz - 2000Hz - 4000Hz - Class Klasse	 0,70 0,25 0,50 0,65 0,80 0,75 C	 Cl. 2.2.8 EAD 040005-00-1201; EN ISO 354:2003; EN ISO 11654:1997
Thermal conductivity Warmtegeleiding - λ10, dry,mean [W/m.K] - λD, 23,50 [W/m.K] - λD, 10,dry,90/90 [W/m.K] Moisture conversion factors Vochtomzettingsfactoren - $F_{m1(dry-23/50)}$ - $F_{m2(23/50-23/80)}$	 0,0375 0,041 0,0386 1,05 1,06	 Annex A of EAD 040005-00-1201; EN 12667:2001 EN ISO 10456:2007/AC:2009
Water vapour diffusion resistance μ Waterdampdiffusieweerstand μ	≤ 2	Cl. 2.2.10 EAD 040005-00-1201; EN 12086:2013
Water absorption Waterabsorptie	NDP	EAD 040005-00-1201; EN 1609 - method A
Density Dichtheid	± 5 %	EAD 040005-00-1201; EN 1602

Partner of the:
DUNAGRO HEMP GROUP.

Geometry Geometrie		Cl. 2.2.12 EAD 040005-00-1201
- width breedte	± 1.5 %	EN 822:2013
-thickness dikte	T3	EN 823; EN 13171: 2012 +A1:2015
-length lengte	± 2 %	EN 822:2013
- squarenes S_b vierkantheid S_b	NDP	EN 824
- flatness S_{max} vlakheid S_{max}	NDP	EN 825
Dimensional stability under specified temperature and humidity Maatvastheid onder gespecificeerde temperatuur en vochtigheid		EAD 040005-00-1201; EN 1604
a) (70±2)°C, RH (90±5)%, 48 hours		
- $\Delta\varepsilon_l$ - $\Delta\varepsilon_b$ - $\Delta\varepsilon_d$	≤ 1% ≤ 1% ≤ 1%	Note: According to EN 13171+A1 level DS(70,90)1
b) (70±2)°C, 48 hours		Note: According to EN 13171+A1 level DS(70,90)1
- $\Delta\varepsilon_l$ - $\Delta\varepsilon_b$ - $\Delta\varepsilon_d$	≤ 1% ≤ 1% ≤ 1%	
Tensile strength parallel to faces Treksterkte parallel aan vlakken		EAD 040005-00-1201; EN 1608
- longitudinally in de lengterichting	≥ 50 kPa	
- transversally in dwarsrichting	≥ 10 kPa	

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.
De prestaties van het hierboven omschreven product zijn conform de aangegeven prestaties. Deze prestatieverklaring wordt in overeenstemming met Verordening (EU) nr. 305/2011 onder de exclusieve verantwoordelijkheid van de hierboven vermelde fabrikant verstrekt.

BUILD WITH HEMP
FOR PEOPLE • FOR PLANET

BUILD WITH HEMP
Unit 1A Stroude Farm, Stroude Road, Virginia Water, Surrey, GU25 4BY

Mail:
hello@buildwithhemp.co.uk

buildwithhemp.co.uk