

New Materials? The benefits of specifying organic, natural materials

Natural Fibre Insulation

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NATURAL FIBRE INSULATION GROUP

*An industry collaboration to better communicate the
benefits of natural fibre insulation products and systems*



Group activities

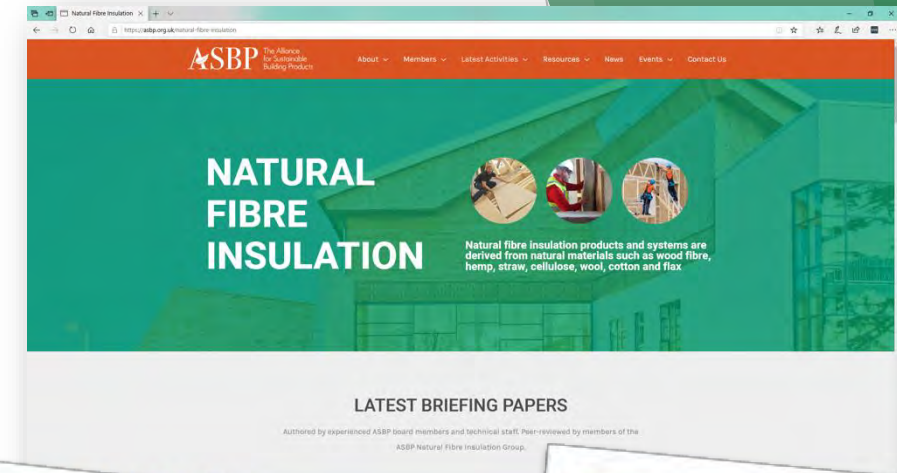
Education, training and events

CPDs/events/trade shows

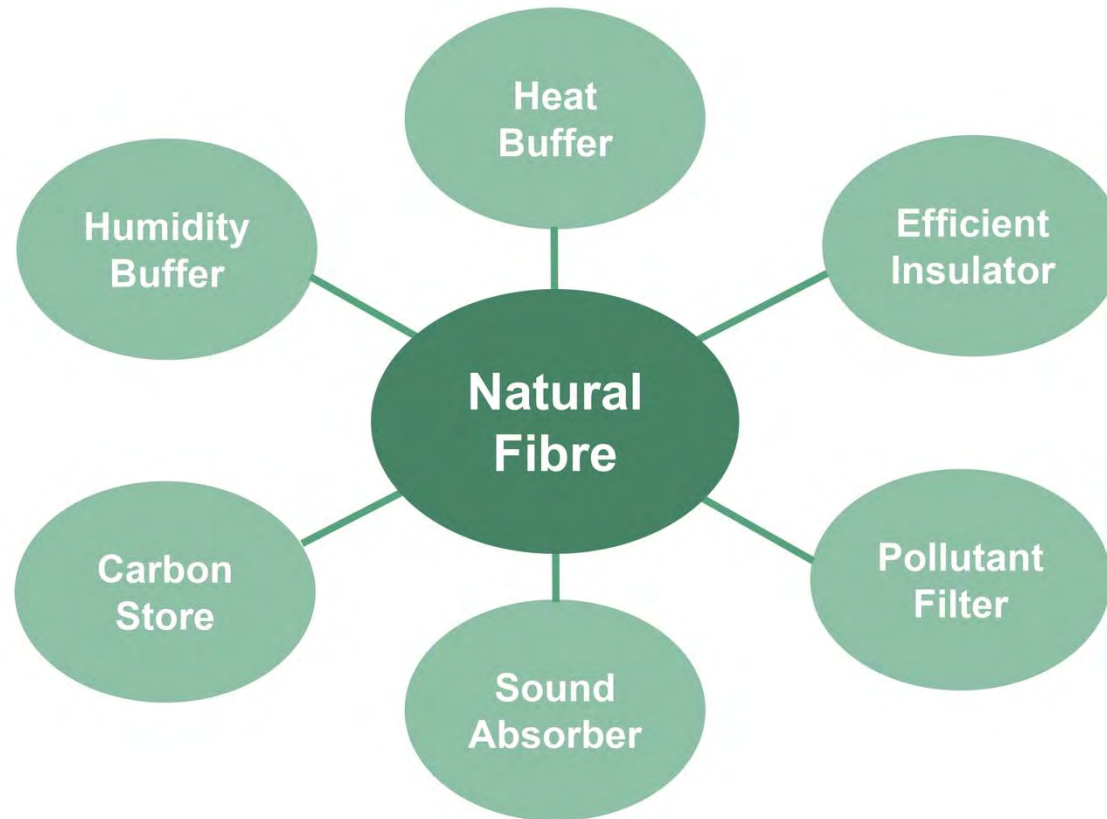
- Developed a CPD - 'An introduction to natural fibre insulation'.
- Regular appearances at trade shows such as Futurebuild, Timber Expo/UK Construction Week.

Briefing papers

- 3-part series on Environmental Product Declarations (EPDs)
- The multiple roles of insulation
- An introduction to breathability
- Health and wellbeing benefits of natural fibre insulation products and systems



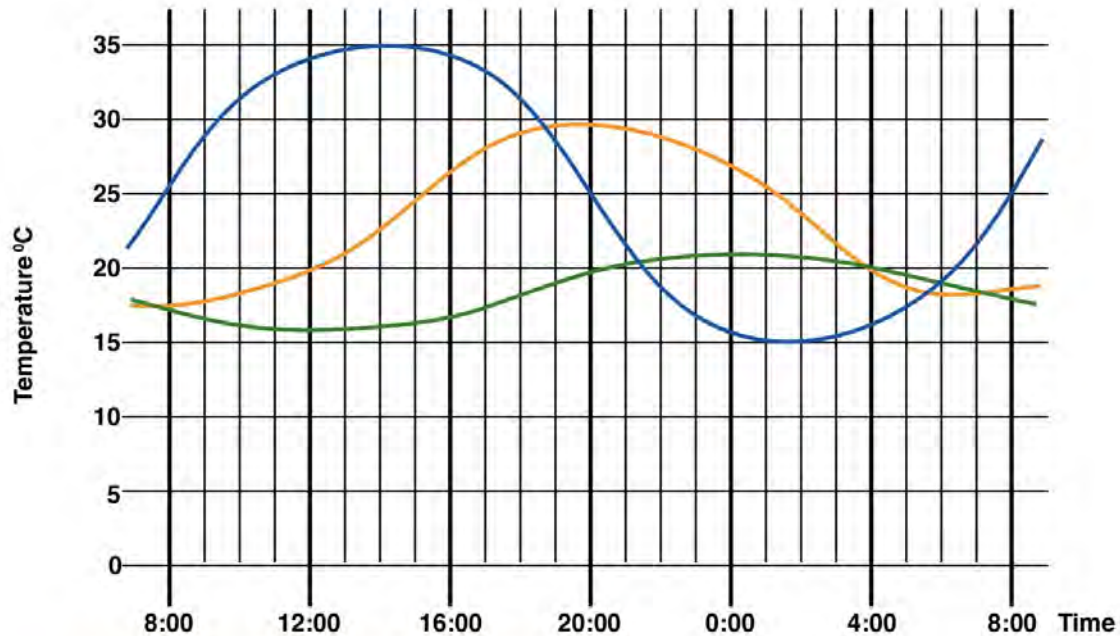
Natural fibre...



...makes ideal insulation

Heat Buffer

Daily Temperature Profile with various insulations



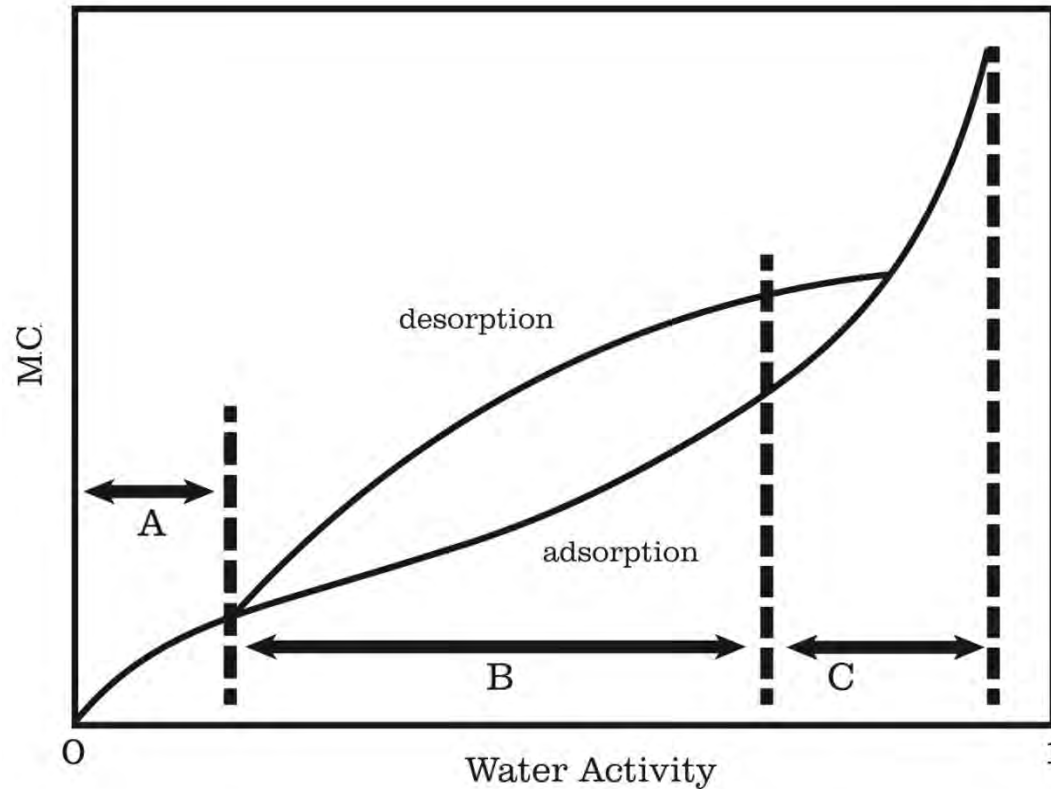
Temperature under the roof covering

Internal room temperature with mineral wool

Internal room temperature with wood fibre insulation

- ▶ Heat buffering shifts frequency of heat cycles out of phase.
- ▶ Wood fibre - heat maximums out of phase by 12hrs = **12hr phase shift**.
- ▶ Mineral wool - heat maximums out of phase by 6 hrs = **6 hr phase shift**
- ▶ Achieved by:
 - ▶ Higher density
 - ▶ Higher specific heat capacity
 - ▶ Low thermal conductivity

Moisture Buffer



A – strongly bound

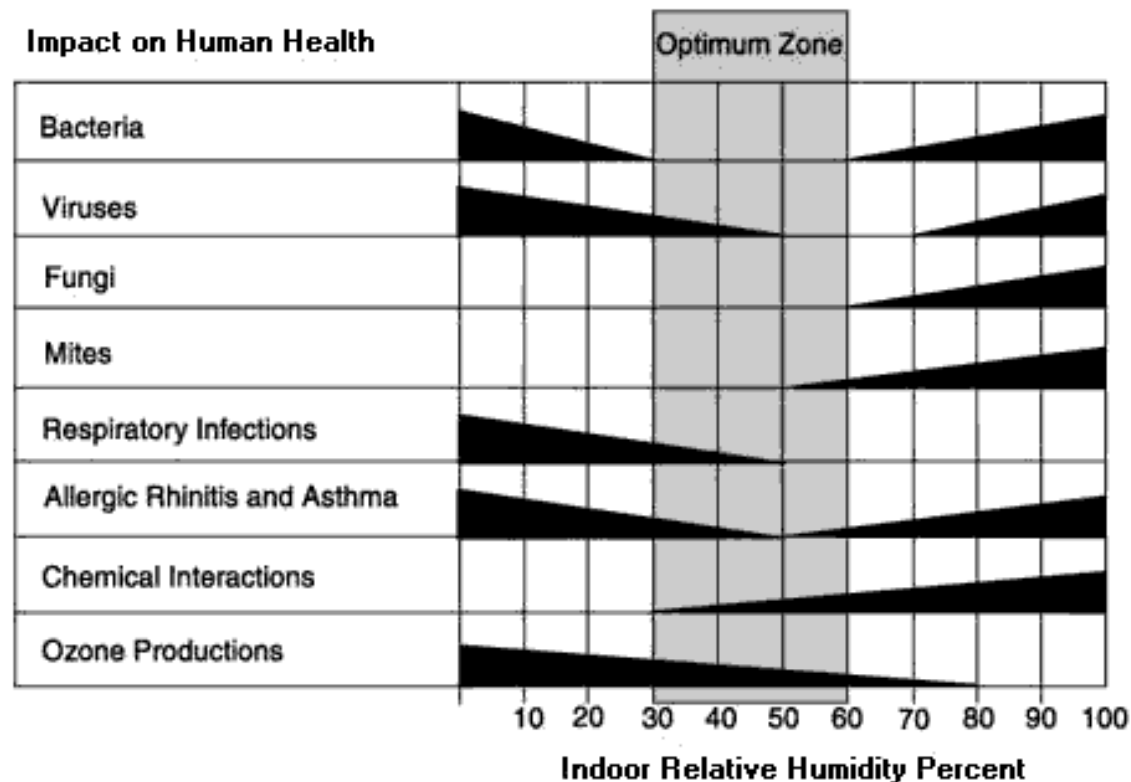
B – less strongly bound

C – free water

Zone B is the humidity buffering zone

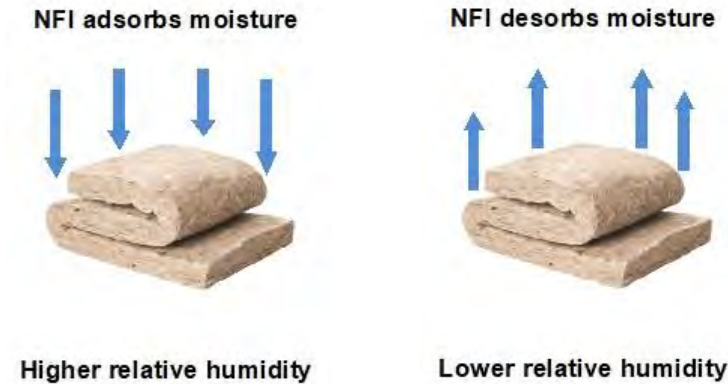
Humidity Regulation

- ▶ Moisture can cause health problems and damage the building fabric
- ▶ Breathable materials help keep humidity within the optimum zone for human health.
- ▶ Breathable materials bind moisture in a harmless way.

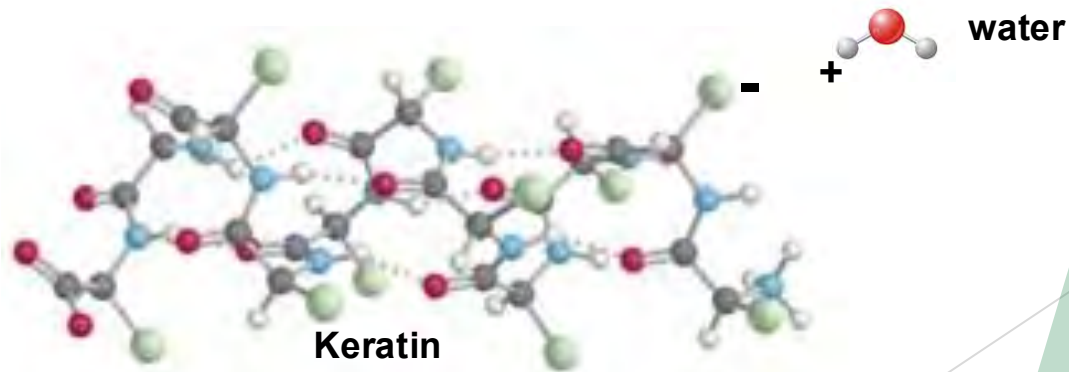


Breathable Natural Fibre Insulation

- Adjusts its moisture content to be in balance with surrounding humidity. Adjusts surrounding humidity to be in balance with its moisture content.



- Is able to bind water molecules in a harmless way.



- Is vapour open

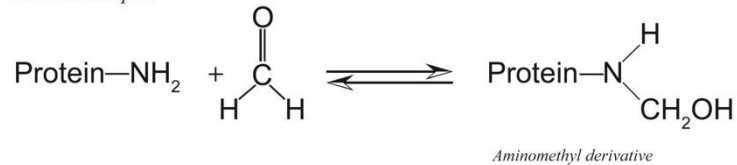
Low VOC's

Parameter	3 Day			28 Day		
	Thermally Bonded Sheep's Wool	Thermally Bonded Flexi Wood Fibre	AgBB Requirement	Thermally Bonded Sheep's Wool	Thermally Bonded Flexi Wood Fibre	AgBB Requirement
TVOC	< 0.01 mg/m ³	2.0 mg/m ³	≤ 10 mg/m ³	< 0.01 mg/m ³	2.0 mg/m ³	≤ 1 mg/m ³
CMR Substances	< 1 µg/m ³	<1 µg/m ³	≤ 10 µg/m ³	< 1 µg/m ³	<1 µg/m ³	≤ 10 µg/m ³
Formaldehyde	< 0.01 mg/m ³	< 0.01 mg/m ³	-	< 0.01 mg/m ³	0.019 mg/m ³	≤ 0.12 mg/m ³

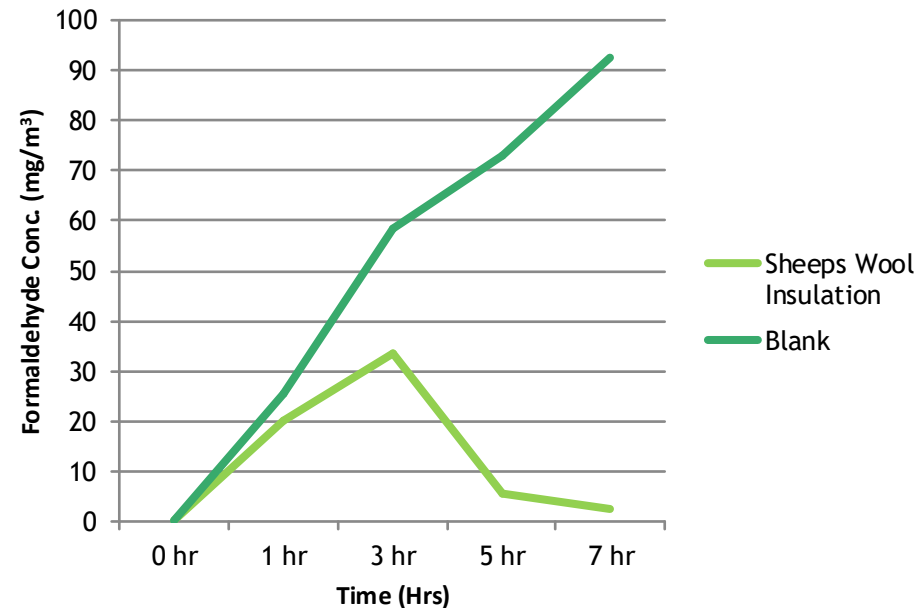
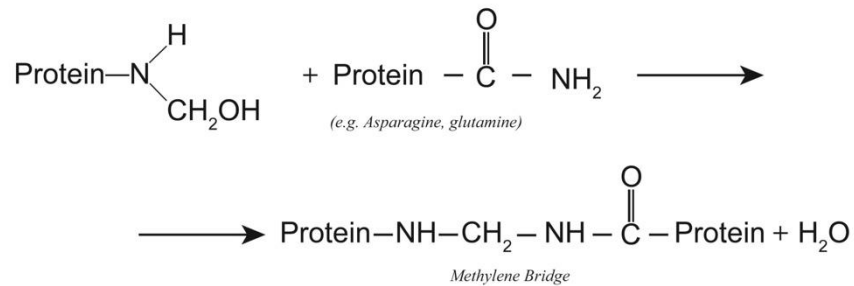
Parameter	Wood Fibreboard (under floor)			
	3Day	AgBB Requirement	28 Day	AgBB Requirement
TVOC	0.52 mg/m ³	≤ 10 mg/m ³	0.02 mg/m ³	≤ 1 mg/m ³
CMR Substances	< 1 µg/m ³	≤ 10 µg/m ³	<1 µg/m ³	≤ 10 µg/m ³
Formaldehyde	< 0.01 mg/m ³	-	0.003 mg/m ³	≤ 0.12 mg/m ³

Formaldehyde Reduction - Sheep's Wool Insulation

Reaction Step 1:



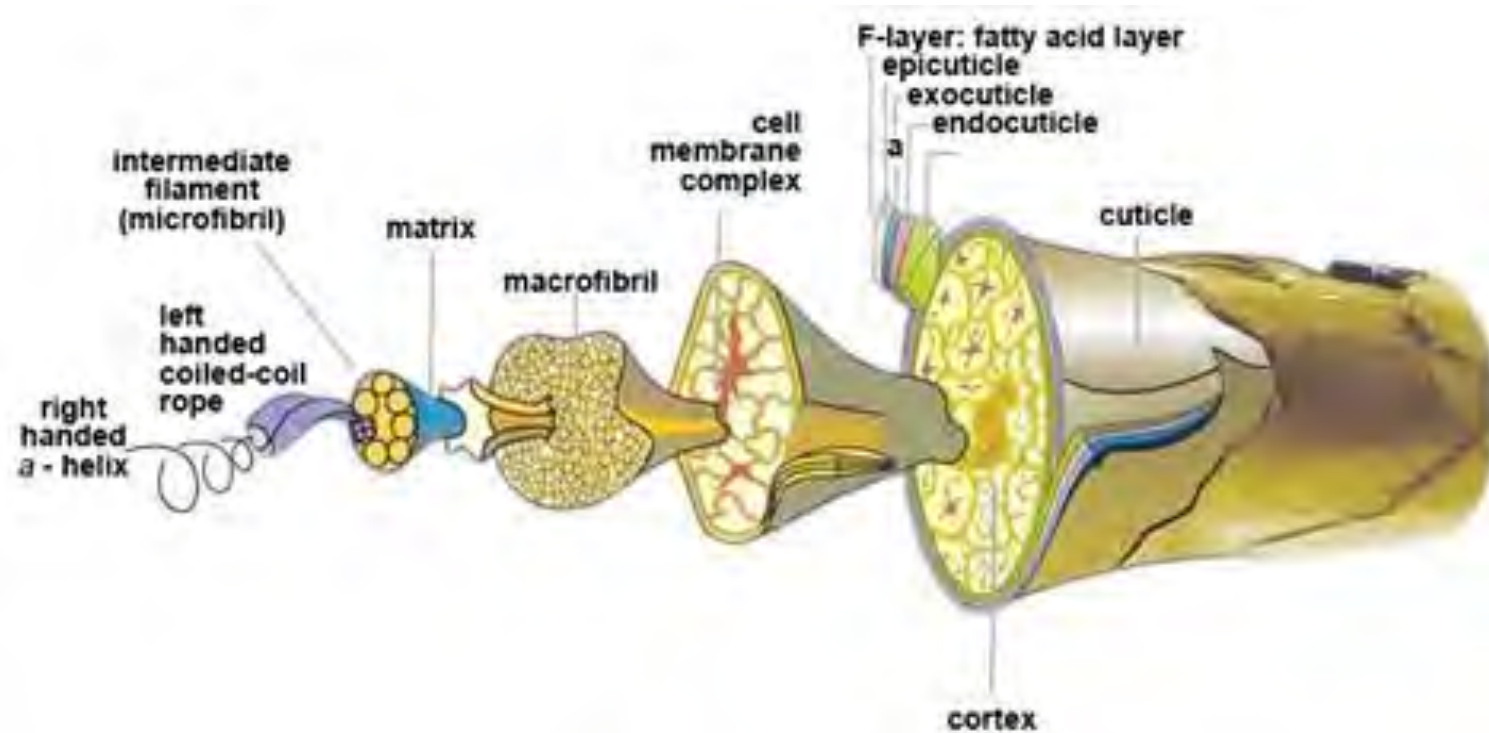
Reaction Step 2 (condensation):



- ▶ Sheep's wool achieved a reduction from 90 mg/m³ to <3 mg/m³ Formaldehyde in 7 hrs with 10-15% desorption.
- ▶ Similar tests by WRONZ achieved reduction from 7mg/m³ to <0.1mg/m³ in 45 mins with no recorded desorption.

Acoustic Absorption

- ▶ Irregular shape, structure, texture and density of natural fibres help disrupt sound waves and reduce noise.
- ▶ Provides effective sound insulation at relatively low density.



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www.asbp.org.uk



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