Wool – The Natural Insulation Choice for Healthy & Safe Homes

Mark Lynn

MD - ERI Ltd (Thermafleece)

Director - ASBP

THE CAMPAIGN FOR WOOL

PATRON: HRH THE PRINCE OF WALES

therma fleece®

Nature's finest insulation

Insulation is Multi-functional

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

Types of Insulation

- **Inorganic**

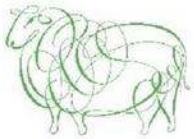
  Stone/Rock wool, glass wool (fibreglass)

- **Organic Petrochemical**

  PIR, PUR, EPS, XPS, Multi-Foil, r-PET

- **Organic Natural Fibre**

  Sheep's wool, hemp, flax, cellulose, jute, straw, wood fibre.



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Considerations

Understand the strengths and weaknesses of each type of insulation.

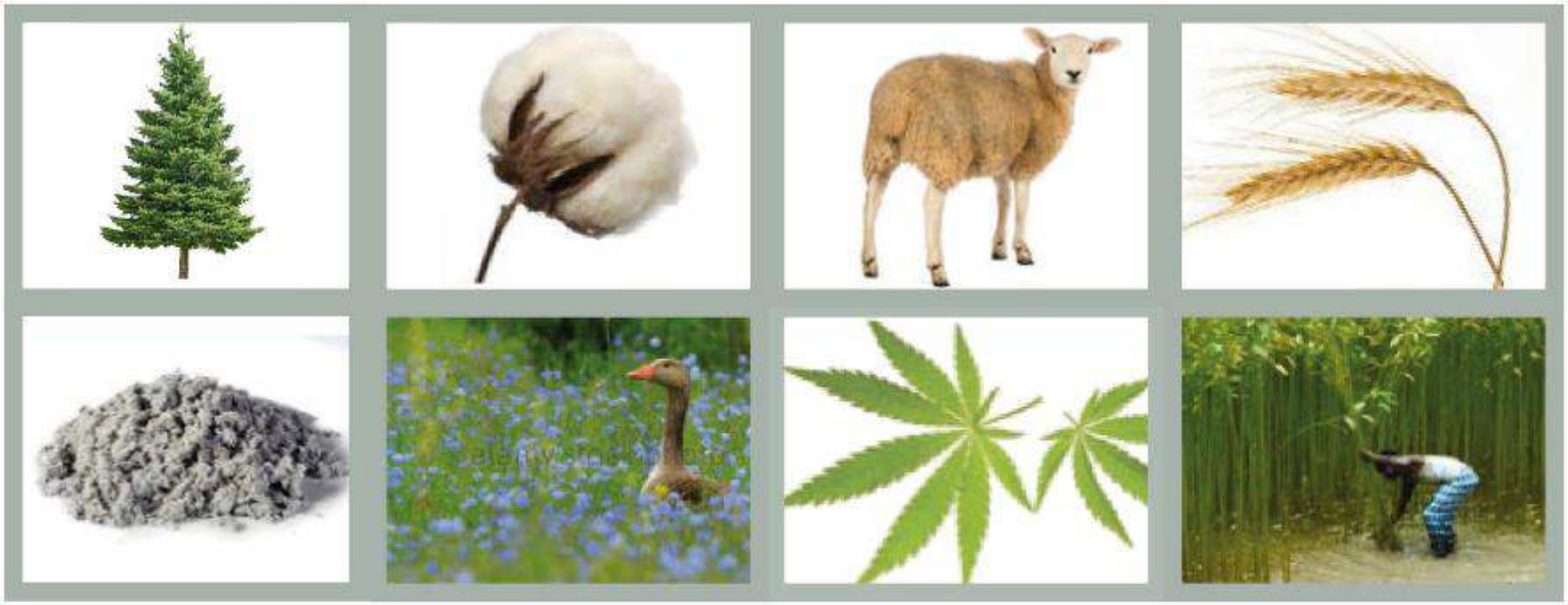
Don't just focus on heat loss.

Once insulation is built into the fabric it is difficult to change so get it right first time.

Consider using insulation types in combination to balance strengths and weakness of each.

Nature's Bounty

Natural Fibre Insulation products are produced from lower grade fibres or low value by-products



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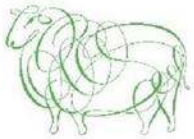
Natural Fibre Insulation

- Additional benefits:
  - Breathability
  - Thermal mass
  - Acoustics
  - Indoor air quality
  - Sustainability
- For introduction to breathability see ASBP briefing note at ASPB.org.uk

Why Use Wool

- Protein (keratin) based
- Extremely high moisture sorption
- High specific heat capacity
- Reduces sound movement
- Neutralises indoor air pollutants
- Natural fire resistance
- British Wool is local & sustainable



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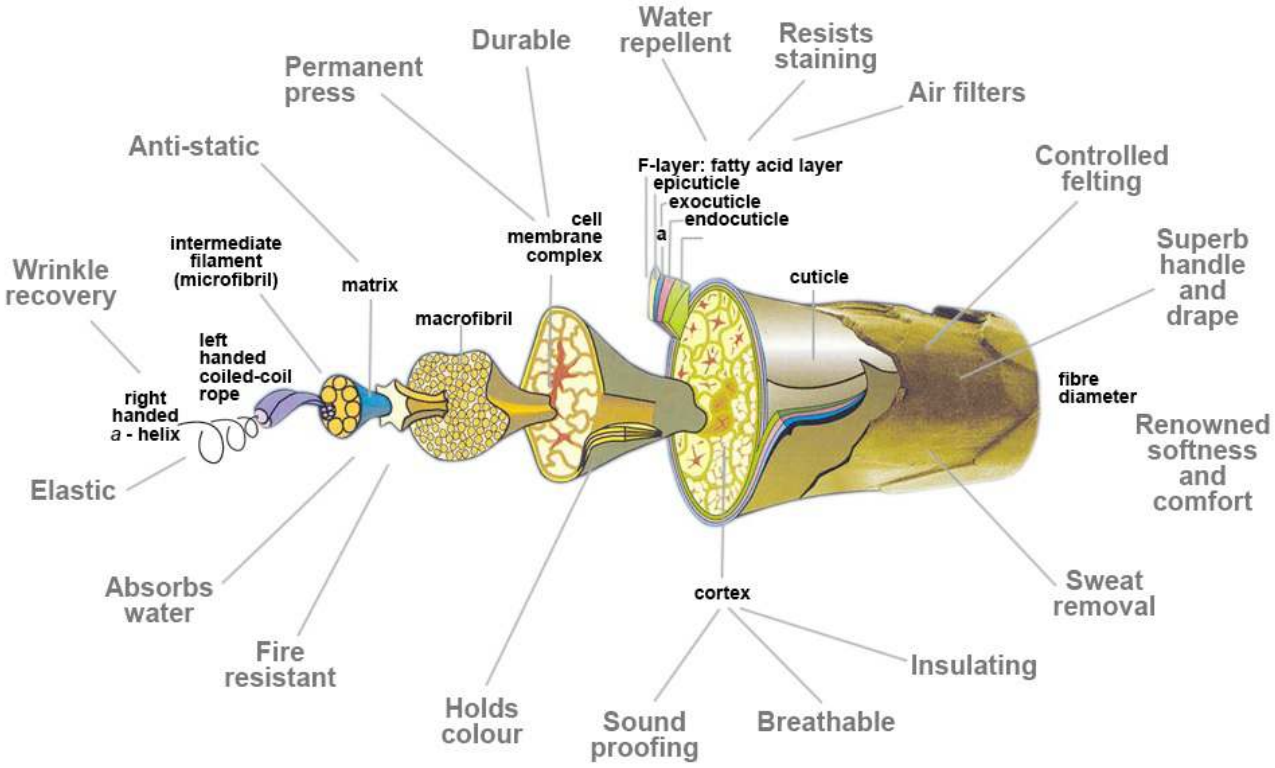
The Wool Fibre Under the Microscope



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Physical Structure

- Very irregular surface
- Increases surface area to volume ratio
- Creates a more disruptive surface
- Increases boundary layer reducing air movement

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British Wool

- More than 40,000 sheep farmers
- Producing >30m kg wool annually
- More than 60 UK sheep breeds
- Graded by feel, size & colour
- Coarse dark wool used for insulation
- Wool is part of our heritage

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From Raw Fleece to Finished Fibre

Raw wool is washed at temperatures between 80-40°C in a series of wash bowls to remove grease and dirt. The wool is then dried and packed.

Wool uses substantially less water in its production and processing compared to cotton.

Each kg of clean wool uses on average 7 litres of water to clean.

By-Products include:

Wool Grease – sold as lanolin

Sludge – used as fertilizer (rich in sulphur)

Waste water – treated prior to discharge

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Wool Insulation – The Fundamentals

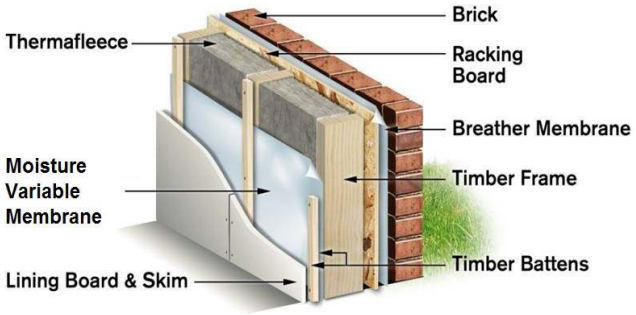
- **Fibre Separation**
  Critical to ensure good air entrapment and eliminate air channels.
- **Binding**
  Essential for maintaining structure and durability.
- **Additional Fibres**
  Help improve thermal performance at lower densities and to enable compress packing.
- **Moth-Proofing**
  All wool is vulnerable to clothes-moth attack. So effective durable treatment is essential.

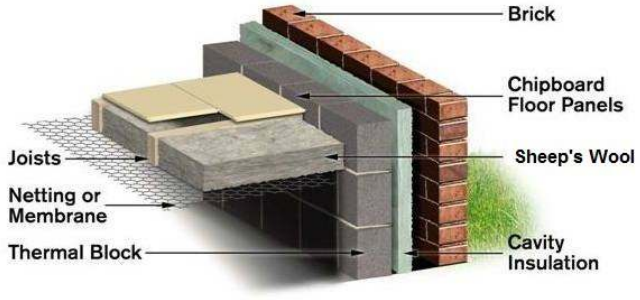
Applications

- **Lofts – between & over joist**
  - 240 to 300 mm depth for U 0.16 to 0.13
  - Can be laid on top of existing insulation
- **Roofs – between and under rafter**
  - Good for reducing sound
  - Install between cross batten under rafter
  - Full fill rafter depth with counter batten & breather membrane

Applications

- **Walls** – timber frame
- **Walls** – solid (between timber studs)
- **Floors** – intermediate & suspended ground floor





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Acoustic Comparison

		Practical Absorption Coefficients (BS EN ISO 354:2003)					
		Frequency					
	Depth	125	250	500	1K	2K	4K
	mm	Hz	Hz	Hz	Hz	Hz	Hz
Rockwool RWA45	50	0.20	0.50	0.85	1.00	1.00	1.00
Thermafleece UltraWool	50	0.20	0.55	0.85	0.90	1.00	1.00
Rockwool RW3	50	0.11	0.60	0.96	0.94	0.92	0.82
Thermafleece CosyWool	50	0.15	0.42	0.68	0.77	0.85	0.95

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