Natural Fibre Insulation Twilight Talk

By Jeremy Hayden
& Joe Pritchard
Sustainable Insulation Specialists

of

MIKE WYE

Contents

What is Natural Fibre Insulation?

Natural Fibre Insulation

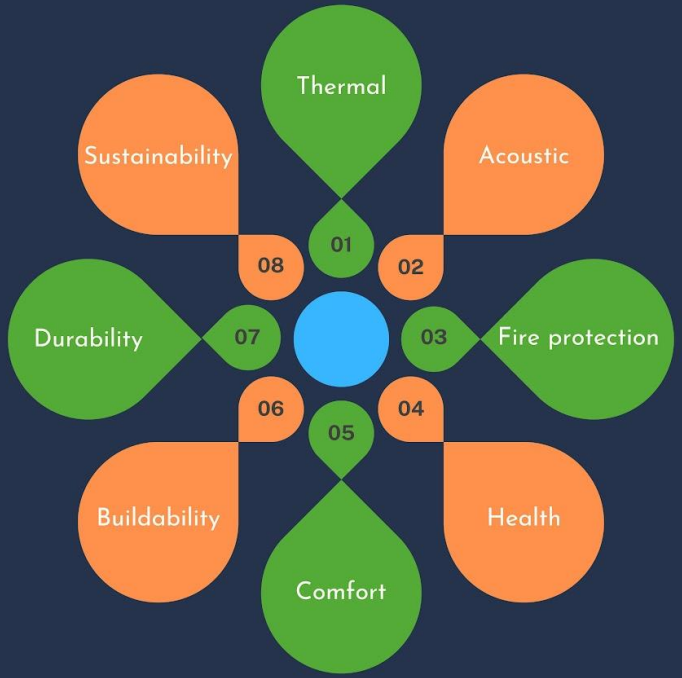
- Sustainably sourced plant or animal fibres
- Mechanically processed with minimal additives
- Wide range of applications Fibre Insulation.

Common types of Natural Fibre Insulation

- **Woodfibre** - Softwood, reduced to base fibres and reformed into boards, batts, or loose-fill insulation.
- **Cork** - Agglomerated bark extracted from cork-oak trees every 9 years
- **Sheep’s wool** - Made from sheep’s fleece and recycled plastic
- **Hemp** - Produced from the hemp fibres wrapped around the stalk
- **Cellulose** - Recycled paper

The Multiple Roles of Natural Fibre

- Thermal insulation
- Acoustic insulation
- Fire protection
- Health
- Comfort
- Buildability
- Durability
- Sustainability



- **More than just a U-value.**

Thermal Insulation

- Low thermal conductivity (lambda value)
- Most natural fibre materials range from 0.048 to 0.036W/mK
- Capable of meeting targets in Part L UK building regulations, AECB Carbonlite, EnerPhit and Passivhaus standards

Energy efficiency is not just about thermal conductivity.

- Decrement Delay
- Thermal mass
- Low Psi values
- Protects against summer overheating

Moisture Management

- Vapour Open
  - Allow moisture vapour to pass through the building
- Hygroscopic
  - Binds vapour as it passes through, reducing its harmful effects
- Capillary active
  - Can redistribute liquid moisture
  - Important - breathability is not a substitute for for ventilation.

Important - Vapour Openness is not a substitute for ventilation

Vapour Openness works in tandem with ventilation.

- STEICO sheathing and sarking boards are hydrophobic and resistant to liquid moisture.
  - Rainwater beads of the surface of the board
  - The boards can dry out if soaked, returning to their functional state

Health

Recent figures suggest that we spend over 90% of our time indoors. Indoor air quality therefore has a major impact on our health and the multifaceted consequences regarding health and ecology should be taken into account.

Our homes should be nourishing places and time spent at there should be restorative.

- High carbon dioxide
- High numbers of volatile organic compounds
- Mould and fungal exposure,
- Electromagnetic fields,
- Poorly balanced relative humidity and particulate matter

These air quality polluting environmental toxins can have a significant impact on our health.

Homeowners who move into a healthy home consistently report a sense of well-being, vitality, and joy that had been previously unknown to them. There is no doubt about it. Creating a healthy living environment is always worth it. Any step you take to create a healthy living environment will benefit you and others in your immediate environment.

Acoustic Insulation

- Key aspect of occupant comfort & quality of life
- One of the biggest complaints with new builds/extensions
- High density - generally 6-12x more than synthetic materials
- Irregular, loosely bound fibres absorb a wide range of frequencies

Sustainability

Insulating reduces energy consumption.

Natural fibre insulations

- Use less energy during initial creation
- Sequester carbon during their growth and store that carbon during their life.
- At the end of their life NFI materials can easily be reused or recycled.

For example,

- Woodfibre insulation is harvested from sustainably managed forests.
- The trees are grown until they reach peak strength for the structural components they produce.
- Offcuts and waste is used to make woodfibre insulation.
- 1.5kg of carbon is removed from the atmosphere per kg of wood.

Buildability

Efficient design

- Less layers in the structure
- Quick install

User friendly

- Friction fit - self supporting
- Tongue & Groove
- Easily cut
- Minimal PPE required

- Direct replacement to synthetic materials in most instances
- Synthetic rigid boards are near impossible to fit perfectly in a timber frame.
    - Shrink over time
    - Gaps caused decrease effectiveness of the insulation

Durability

Woodfibre sarking/sheathing boards

- Temporary weather protection, exposed for 4-6 weeks
  - Protect the building during construction
- As well as rain, construction involves a large amount of moisture
  - Screeds, plasters, paints etc
- Conventional insulation dry very slowly
- NFI redistributes moisture for faster drying
- Last the intended lifespan of the building

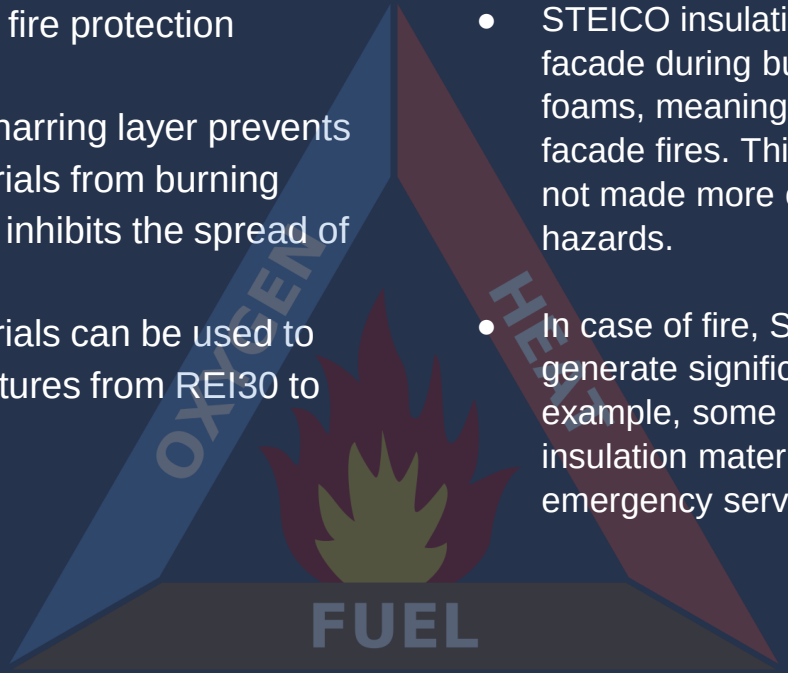
Reduces the chance of mould growth.

- Stored heat reduces the chance of condensation overnight, unlike a lightweight insulation.
- Consistent temperatures & lime renders prevent mould growth.
- Increase longevity, reduce maintenance costs

Fire Protection

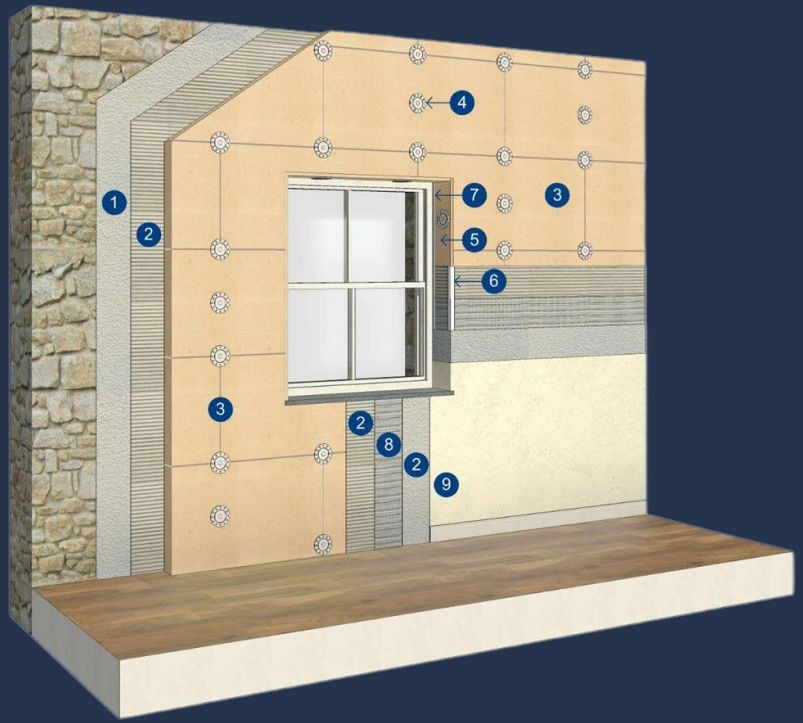
Wood boasts impressive fire protection features.

- In the event of a fire, a charring layer prevents STEICO insulation materials from burning through quickly and thus inhibits the spread of fire
- STEICO insulation materials can be used to build fire protection structures from REI30 to REI90.



- STEICO insulation does not drip from the facade during burning, unlike some rigid foams, meaning more safety in the event of facade fires. This means that extinguishing is not made more complicated by additional hazards.
- In case of fire, STEICO insulation materials generate significantly less smoke than, for example, some organic foam-based insulation materials. This is crucial for emergency services and anyone inside.

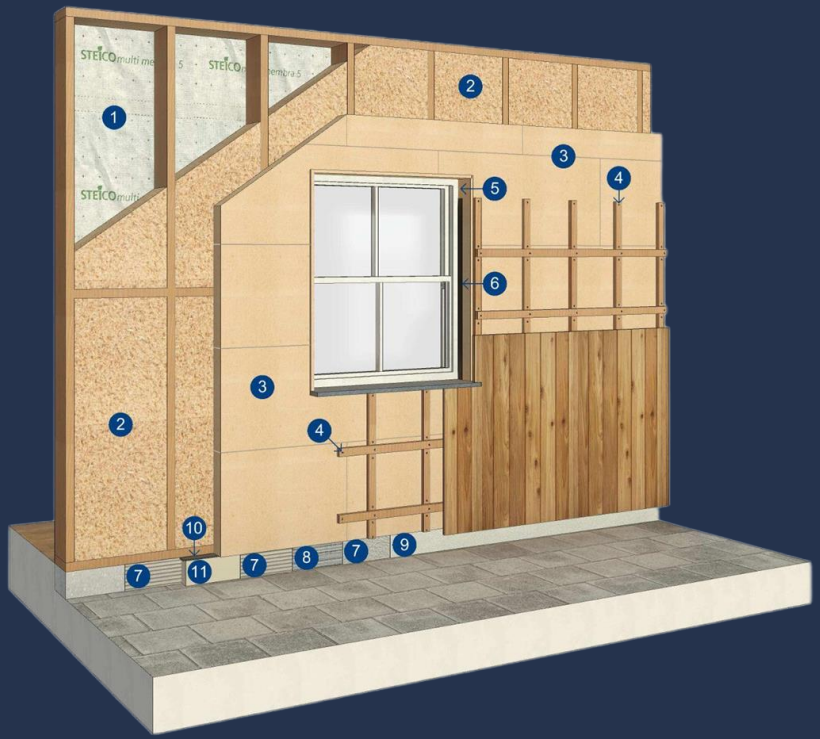
Typical Constructions
Solid Wall - IWI



1 - SecilTek Reabilita Cal RB (levelling)
2 - SecilTek Isovit Lime
3 - STEICO Therm Wet
4 - H3 Insulated Masonry Fixings
5 - STEICO Therm Wet Reveal Boards
6 - PVC Corner Bead (Mesh Wing)
7 - PVC Window Frameseal Beads
8 - Fibre Glass Render Mesh
9 - SecilTek Reabilita Cal AC FINO

Typical Constructions

Timber Frame Clad - EWI



1 - STEICO Multi Membra 5 Airtightness Membrane
2 - STEICO Flex fully filled frame structure
3 - STEICO Special Dry
4 - Heco Topix Countersunk Fixings
5 - STEICO Therm Wet Reveal Boards
6 - STEICO Multi Tape F with STEICO Multi Primer
7 - SecilTek Reabilita Cal AC
8 - Fibre Glass Render Mesh
9 - SecilTek Reabilita Cal AC
10 - ISO-Bloco 600 Joint Sealing Tape
11 - XPS Plinth Board

MIKE WYE

The **Sustainable** Building & Decorating Specialists

- Over 30 years of experience
- Large technical team
- Services:
  - Product specification
  - U-value calculations
  - Material supply
  - Installation advice
  - Ongoing support
- New Build & Renovation
- Nationwide delivery
  - Large stock holdings
  - Short lead times

MIKE WYE

The **Sustainable** Building & Decorating Specialists

Contact Us

mikewye.co.uk

sales@mikewye.co.uk

insulation@mikewye.co.uk

01409 281 644