Hempcrete Australia PTY LTD
energy saving eco building

HEMPCRETE CONSTRUCTION FOR THE TROPICS

1. How does hempcrete perform under high levels of humidity?

Hempcrete is a 100% natural insulation system. It is superior to bulk insulation, performs exceptionally well in all climates, with energy savings of 50% - 70%.

Hempcrete insulation REGULATES humidity as opposed to the traditional building products that actually capture humidity inside the building creating unhealthy living environments. Hempcrete does this by TRANSFERRING water vapour/humidity - rather than holding, storing or trapping it. This is due to the Hygroscopic properties of hempcrete i.e. ability of a material to attract and absorb water vapour molecules (see image 1).

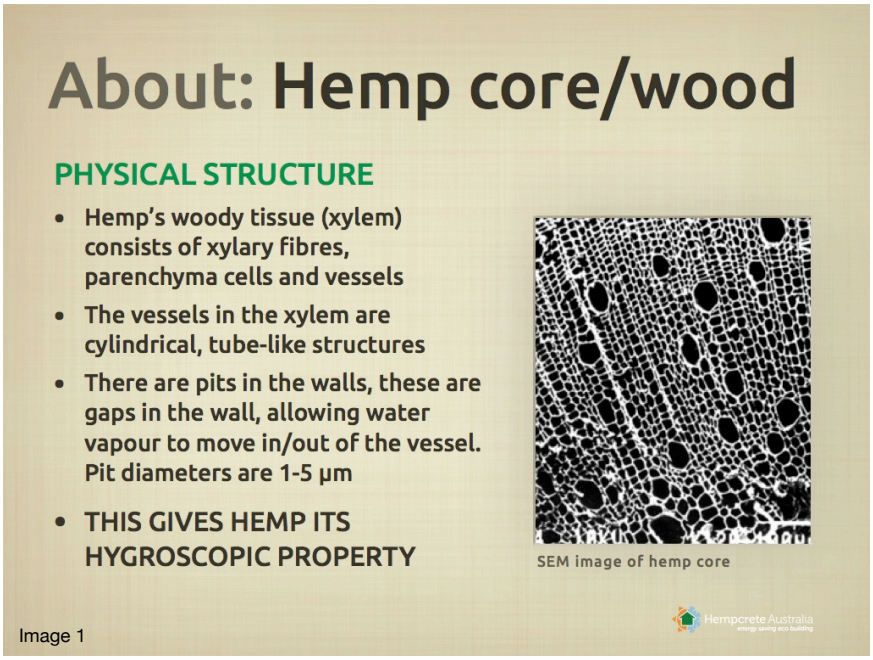

Image 1

To further explain: the hemp wood, which is a constituent of the hempcrete product, is composed of tiny perforated tubular structures (see image 2). You could say hemp wood is made out of tiny drainage pipes that are bundled together. During the contact with the lime in the mix, these tubes become completely coated by the lime binder. This prevents the hemp wood from ever rotting. In fact over time, the hemp wood will turn back into rock and eventually petrify (see image 3).

Even when humidity is high (such as in the tropics), the walling system will simply breath and REGULATE humidity, allowing damp air to move through the walls. Hempcrete walls do NOT accumulate condensation leading to mold and mildew. Please note that the humidity that passes in and out of a hempcrete wall is vapour ONLY. This does NOT result in water accumulation on the surface of the walls.

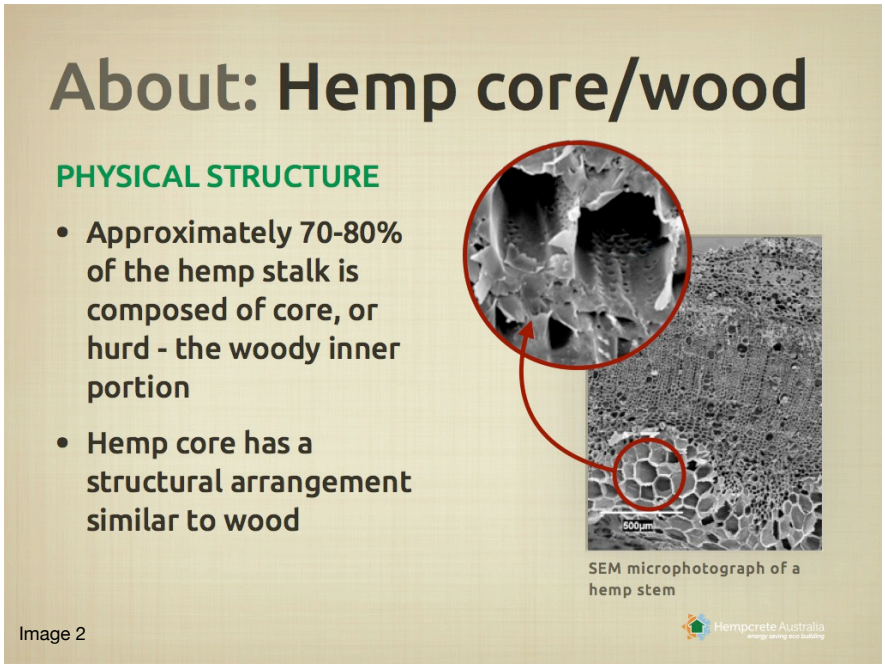

Image 2

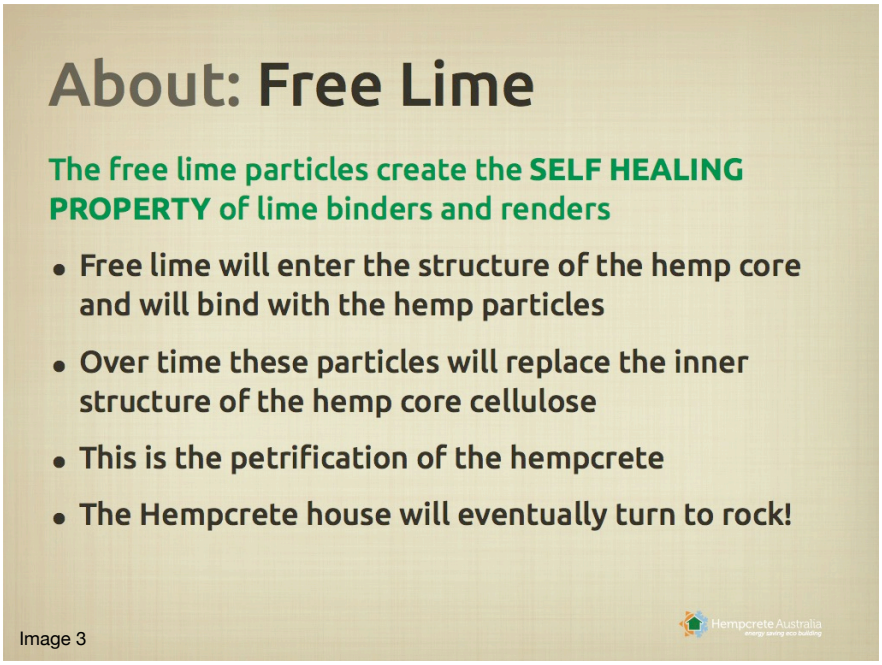

Image 3

In any case, an insulation product that cools on its own when exposed to long periods of heat does not exist. In other words, there is currently no insulation on the market that can keep heat out of a building when the climate is consistently hot. Hempcrete as an insulator performs well under constant heat and humidity, and particularly when good ventilation features are incorporated into the building design.

As a result of the above-mentioned properties, hempcrete is able to successfully maintain a constant temperature. Hence, with a small amount of cooling, hempcrete will be able to MAINTAIN that cool temperature. This is where your energy savings come into play.

2. Ventilation

A word on ventilation: all homes fitted with hempcrete will benefit greatly from well designed ventilation. Hempcrete walls will however continue to breathe whether the space is ventilated or not.

3. The structural frame inside the hempcrete

The framework for your hempcrete home is best to be made out of timber. Timber is used instead of steel as the lime does not react with the wood. A steel frame would over time start to rust due to the lime content of our binders.

As mentioned above, the hemp wood is coated with lime, and hence will not rot. The timber frame is not at risk or rotting either. Timber in fact requires a level of humidity to maintain a healthy condition. There have been examples of traditional timber post and beam constructions being renovated with cement infill (a non-breathable material) instead of the original lime and straw. The result was that the oak timber would swell (not being able to release it's humidity), and the cement renders would not be able to give, resulting in cracks. The timber would start rotting as it would attract moisture and not be able to release it (see image 4, the difference between lime and cement).

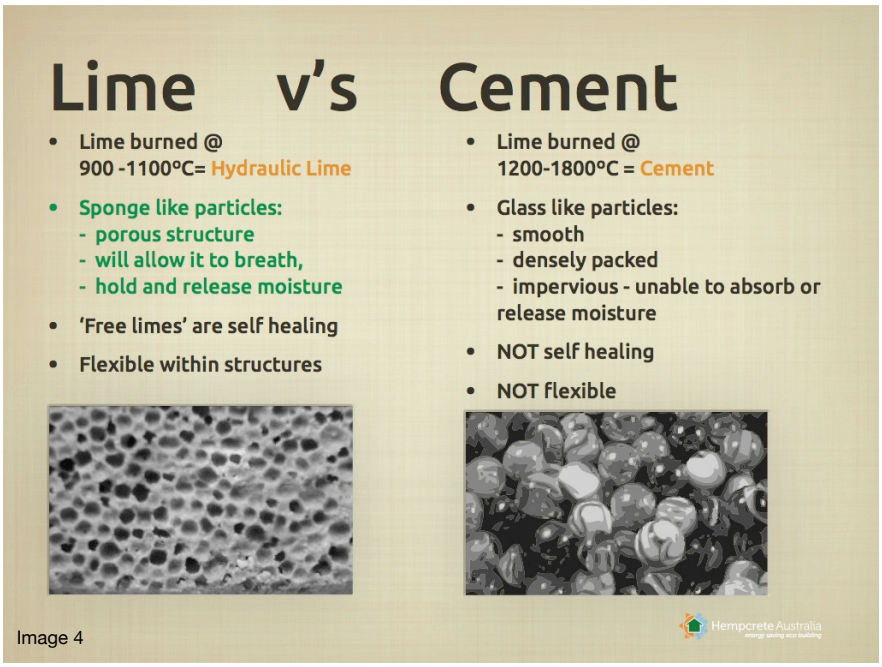

Image 4

4. Use of steel fasteners and tie-down bolts with hempcrete

Steel fasteners when used with hempcrete construction will need to be coated. Alternatively stainless steel products are used. There are specific technical application methods which are covered in the comprehensive manual that comes with the Certified Hempcrete Australia Training.

5. Hempcrete's advantages, thermal mass and more...

THERMAL COMFORT (see image 5) is a key factor in how people experience buildings. People can feel hotter or colder due to slight changes of temperature.

Lightweight materials such as: synthetic/fibre-glass insulation; polystyrene and aerated concrete store little or no temperature at all. If subject to thermal shock (sudden changes in temp) they will allow temperature to flow through very quickly. This is regardless of how good an R value (thermal resistance) the manufacturer claims it to have. *Heavyweight* materials such as: concrete; rammed earth; block; brick and timber-crete are not able to absorb and emit heat quickly and do not transfer moisture.

Hempcrete walls are a perfect combination of being a lightweight material with the characteristics of a heavyweight material which both INSULATES and STORES heat. Hence, hempcrete walls can successfully function as a thermal mass, with increased wall thickness or by changing its density - for example with the addition of sand.

Image 5

There are many other great attributes of a home built with hempcrete: healthy, non-toxic living (no VOC's or toxic chemicals); termite resistant; cyclone resistant, fire resistant; negative carbon footprint; good acoustic performance; design flexibility (curves are achievable) and it can be 100% recycled or put in the garden. Hempcrete also has a very long life - pretty much as long as a castle, with hempcrete structures in Europe dating back 2000 years. Hempcrete Australia applies Rockcote's weather proof and breathable renders that provide a high quality, long lasting, non-toxic natural finish for in and outside walls.

To ensure the quality and performance of our product is consistent, and the certified product is installed according to building regulations, Hempcrete Australia runs comprehensive training courses for builders, carpenters and owner builders. Our next 3 day training is in Cairns on 25, 26 & 27th October.

For more information visit hempcrete.com.au or call 07 5429 6634.