



Hempcrete Infill Insulation

Hempcrete is a mixture of hemp hurd (the woody core of the industrial hemp plant) together with a lime based binder. The material is wet-mixed and cast on site in shuttering around a timber frame, which supports the vertical load of the structure.

Hempcrete is a breathable (vapour permeable) material, which is hygroscopic (it regulates humidity in the air by taking in water vapour and releasing it again when humidity levels drop). This is important both for the health of the building's occupants and necessary to keep the fabric of the building in good condition. The regulation of humidity in the indoor environment to a healthy level (between 40-60% relative humidity) has been shown to inhibit the spread of viral and bacterial infections, allergic reactions, asthma and other respiratory conditions.

Hempcrete is naturally fire, mould and pest resistant meaning that there is no need for toxic chemicals to be added to it. This feature together with its vapour-permeability and hygroscopic nature means that hempcrete helps to create healthy living environments.

Hempcrete has negative net carbon emissions meaning it's a "Better-Than-Zero-Carbon" material. The exceptional eco-credentials of this natural sustainable material make using hempcrete in your project the obvious choice if you want to reduce your energy bills, your carbon footprint and the overall impact of your building on the environment. 165 kg of carbon can theoretically be absorbed and locked up by 35 cubic feet of hempcrete wall, which is held in the building fabric over the life span of the house. As government policy becomes increasingly concerned with reducing carbon emissions and finding more efficient ways of meeting carbon reduction targets, hempcrete will make a major contribution to offering a genuinely zero-carbon solution to sustainable construction.

Hempcrete in comparison to other free-form construction materials has a much higher R-value. Concrete has a typical R- value of about 0.08 per inch of thickness compared to hempcrete, which ranges from 2.4 - 4.8 per inch of thickness depending on installation method. Hempcrete has all the characteristics of Thermal Mass with the added benefit of being lighter weight than concrete (one-eighth the weight of concrete) and other masonry building materials and is able to STORE and RELEASE ENERGY (heat) that gives hempcrete its superb ability to insulate. Materials like concrete cannot absorb and emit heat quickly and do not have the ability to buffer moisture. There is no other construction material on the market which has such a high R-value to low production value ratio.

Hempcrete Applications:

- ★ Exterior/interior walls
- ★ Between floor joists
- ★ Between roof trusses

Advantages to using Hempcrete

- ★ Shallower foundations
- ★ 30-40% less lumber, labour in framing
- ★ Lower transport costs of materials to site
- ★ Lower finishing costs
- ★ Lower mechanical (HVAC) requirements
- ★ Natural fire and pest resistance (NO termites)
- ★ Amazing acoustic absorption
- ★ No mould (Highly alkaline due to the lime based binder)
- ★ Greatly reduces toxins in your living environment
- ★ Thermal Mass Insulation
- ★ High Thermal Resistance
- ★ High Thermal Inertia
- ★ Significantly reduced Co2 emissions
- ★ Inherently airtight
- ★ Low to zero construction waste
- ★ No dry rot
- ★ Natural substrate for plasters and renders
- ★ Discounted home insurances

Hempcrete Properties

- ★ Density: 93.6 to 136.4 Kgs/M3
- ★ Compressive strength: 116 to 145 pounds per square inch (PSI)
- ★ Flexural strength: 44 to 58 PSI
- ★ Fire rating: approximately 1 hour per 4 inches of thickness
- ★ R-Value: 2.4 - 4.8 per inch
- ★ Air permeability: 1.0×10^{-6} PSI
- ★ Vapor permeability: 3.4×10^{-5} PSI
- ★ Carbon capture: 165kg/M3
- ★ Achievable air tightness: <1.1 cubic feet per minute
- ★ Acoustic absorption: 0.69 noise reduction coefficient (NRC)