



FREQUENTLY ASKED QUESTIONS

about UK Hempcrete and hempcrete construction

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OUR SERVICES

What is UK Hempcrete?

UK Hempcrete is a Derbyshire-based company specialising in the design and construction of buildings using hempcrete and other low-impact, vapour-open, healthy building materials. Together our expert team has decades of experience specifying hempcrete and other natural construction materials. Our core business is working with architects, contractors, homeowners and business clients, both in the U.K and internationally, to pioneer genuine sustainability in the construction industry. We provide a complete suite of services including consultancy, design, contractor training, material supply and installation services for projects involving hempcrete and other bio-based construction materials.

Alex Sparrow, Founder and MD at UK Hempcrete, is a specialist in bio-based construction; from designing and constructing buildings, to development of the sector nationally and internationally through his consultancy work. He co-authored The Hempcrete Book; Designing and Building with Hemp-lime, which is recognised as the definitive guide to hempcrete construction.

Do you sell hempcrete?

Yes, we supply hempcrete and many other natural building materials through our material supply website at: www.naturalbuildingstore.com. Hempcrete can be purchased in its raw components (bales of hemp shiv and a specially-formulated hydraulic lime binder) for mixing on site, or as precast hempcrete blocks. For commercial scale projects we recommend using a precast application; hempcrete blocks or off-site hempcrete panels. For advice about hempcrete options for commercial construction contact our team on 01629 343 143 or office@ukhempcrete.com.

Can you give me a price for installing hempcrete on my project?

Depending on the nature and location of your project we will discuss with you the most appropriate option for realising your hempcrete building: cast-on-site hempcrete, precast blocks or off-site panels. We can then provide you with an installation quote, or connect you with installers in your area.

Do you supply prefabricated hempcrete panels?

Whilst we do not currently have an off-the-shelf hempcrete panel system for sale, we have constructed prefabricated panels in the past and would happily work with you to specify and produce an off-site panel solution for your project.

How do I book a consultancy session with you?

For more information about our consultancy services, please download our brochure here. If you would like to discuss your consultancy requirements, or book an initial consultancy session with our director Alex, please contact us at office@ukhempcrete.com or 01629 343143 to arrange an appropriate time.

How can I ensure that my building is designed correctly?

The best way to ensure that your project is designed correctly is to work with professionals who have experience with that material. Hempcrete is unlike conventional construction methods, so it is important to appoint a designer who can design details that are thermally and economically efficient.

UK Hempcrete's specialist design service, Studio Bio, provides all stages of architectural design delivered by a team who specialise in the construction detailing of hempcrete and other natural construction materials. For more information, or to request a fees quote, contact 01629 343 143 or design@ukhempcrete.com

Architects who are not used to working with hempcrete and other natural materials may not find it easy to detail buildings correctly when using these materials. Designing a building using natural construction materials demands an understanding of how thermal performance and vapour movement interact in a dynamic building envelope, to ensure that the risk of interstitial condensation is eliminated.

In addition, novel materials which are not widely used may have implications for the build process, and may need to be finished differently or detailed differently in how they interact with adjacent materials in the building. This is not an insurmountable problem and can usually be solved simply by the architect finding out about hempcrete and natural building; for example by reading around the subject, visiting existing buildings or buying in consultancy from a company such as UK Hempcrete, that specialises in the use of hempcrete.

When designing for cast in situ hempcrete, it's important to remember that significant cost savings can be made at the construction stage, if the building is designed by someone who has a good understanding of energy efficiency within the specialist construction process. Paying a little more up front for specialist design can save money later on site.

How much will my hempcrete building cost to build?

The development cost for hempcrete buildings can of course vary. This depends on: the design; the type of hempcrete application; the scale of the project; the standard of finishes required; and a host of other factors. Understandably, contractors and quantity surveyors are not always confident at pricing a project using new materials such as hempcrete and other bio-based construction materials.

Clients want to know early on that hempcrete and other natural materials will be affordable within the project otherwise there is little point including them in the design. For this reason, UK Hempcrete has developed an easy to use Hempcrete Project Budget Estimating Tool for domestic clients to use alongside early design stages to build an accurate budget estimate. We can provide a specialist Cost Consultancy service alongside this to help the client estimate the cost of installing hempcrete and other natural material elements on the project.

For commercial scale projects we are able to assist clients and quantity surveyors to develop an accurate cost model for projects involving hempcrete and other bio-based construction materials alongside their specification in the building.

ABOUT HEMPCRETE

What is hempcrete?

Hempcrete is made by mixing hemp shiv (the woody stem of the industrial hemp plant) together with a binder. The binder is usually either pure natural cement (a strongly hydraulic lime), or a formulated hempcrete binder made from lime mixed with a smaller proportion of pozzolans, natural additives or Portland cement.

Hempcrete can be wet-mixed on site and cast around a structural frame, or pre-cast off site to form blocks or panels. Although very hard and self-supporting once set, hempcrete is not load bearing. This is due to the amount of air trapped within the material and the slightly flexible nature of the hemp shiv aggregate.

Hempcrete has a medium density, which means it provides both insulation and thermal mass within the same material. It is vapour-permeable, meaning that water vapour is allowed to pass freely through the wall assembly, rather than being trapped within it, which can cause damp and deterioration to the building's fabric.

What can hempcrete be used for?

In new-build, hempcrete is most often used to make walls, but it can also be used to form insulating floor slabs, ceilings, and roof insulation. In contrast to conventional insulation materials (which tend to be installed in a cavity within the wall, or added to the wall as an extra layer in the build-up), hempcrete forms the wall and insulation in one solid piece of material; the only other integral material being the structural frame (usually untreated softwood).

Wet finishes - a lime or clay plaster internally and lime render externally - are applied directly to the surface of the hempcrete wall, and these are the only other materials that need to be added to the basic hempcrete wall, although cladding (timber, stone, brick etc.) can be used in place of wet finishes, if desired.

Why should I use hempcrete?

Hempcrete is a vapour-permeable material which is hygroscopic; it absorbs moisture from the air when humidity is high (releasing it again when humidity levels drop). These properties are very important, both for the health of the building's occupants and in order to keep the fabric of the building in good condition.

In traditionally constructed (pre-1919) buildings, hempcrete works in harmony with the original materials, allowing the building to "breathe"; meaning that water vapour can pass in and out of the wall rather than being retained within it to cause damp, mould, and eventually damage to the building's fabric. Hempcrete is made entirely from natural materials and is naturally fire-, rot- and pest-resistant, which means there is no need for potentially toxic chemical treatment of the material. This fact, together with their hygroscopicity, means that hempcrete buildings are extremely healthy living environments.

Hempcrete is a sustainable material. The hemp plant used as the aggregate in hempcrete absorbs so much carbon during its rapid growth that, even after the energy used in production of the lime binder, transportation and during construction is allowed for, more CO₂ is locked up in a hempcrete wall than is used to build it. In other words, hempcrete has negative net carbon emissions; it's a "better-than-zero-carbon" material. The exceptional eco-credentials of this natural, sustainable material make hempcrete the obvious choice if you want to reduce your energy bills, your carbon footprint and the overall impact of your building on the environment.



What are the challenges to using hempcrete?

As a relatively new material, which is quite different from most conventional building materials, cast-on-site hempcrete can be tricky to work with until some key concepts and techniques are understood. The only downside of hempcrete's recent rapid acceptance as a building material across the UK, is the fact that examples can be found where a lack of understanding of the material and correct construction techniques resulted in problems with the build process.

This is especially common where inexperienced contractors expect hempcrete to behave in the same way as conventional building materials. However, the problems which arise are not usually long term or serious, and with a little basic knowledge and the proper training, casting hempcrete on site is a straightforward and rewarding way to build.

For large commercial projects, the on-site drying time of cast-in-situ hempcrete can cause problems with the schedule as the length of drying time varies depending on the weather conditions. For this reason we always recommend a precast hempcrete application (blocks or panels) for commercial scale projects.

What do you mean when you say vapour-permeable or breathable?

Hempcrete is vapour-permeable and hygroscopic, which means it can absorb and release moisture in response to the internal environment. This means humidity levels inside the building are naturally regulated and the risk of damp and mould eliminated.

It is important that the finishes applied to hempcrete are also vapour-open, so the wall is able to breathe, to ensure vapour is not trapped within the wall. Lime and clay plasters are the most common finishes because they can be applied directly to the hempcrete, allowing the material to "breathe" and regulate moisture.

What makes hempcrete so sustainable?

Not only does hempcrete provide exceptional thermal performance, significantly reducing operational carbon emissions through the lifetime of the building, but in terms of embodied carbon it is actually a better-than-zero-carbon material. This means that more carbon is removed from the atmosphere and stored in the material than is emitted by its production and installation on-site.

The amount of carbon sequestered in a hempcrete wall varies depending on the exact type and source of materials, as well as on the application technique. Depending on the material type and source, estimates range from 60-165kg of CO2 sequestered per cubic metre of hempcrete.

Can I use other plant-based aggregates, instead of hemp?

Of course there is nothing stopping you from using a different plant-based aggregate and there are plenty of people experimenting with new materials. However, hemp has been proven to be a highly-performing aggregate and there are a range of hempcrete binders already on the market that have been developed to work specifically with hemp shiv as an aggregate.

So, why use hemp?

The strong cellulose of the hemp stalk makes it highly durable and when bound in lime, it is capable of going from wet to dry almost indefinitely without degrading. A hempcrete wall has a good ability to absorb and release moisture in response to the internal environment, and has a lot of air trapped within both the cell structure of the shiv and the matrix of the hempcrete itself. Combined with the dense mass of the lime binder, this means the wall has both insulation and a good amount of thermal mass, in addition to being vapour-open and hygroscopic; meaning it offers excellent thermal and humidity regulation in the internal space.

In addition to its technical performance, storing hemp shiv in the wall has huge environmental benefits. The main environmental benefit is the very high level of atmospheric carbon that gets sequestered within the material. The reason the hemp plant absorbs so much carbon dioxide is because it is a tall, fast-growing plant which needs to create a hard woody stem to support itself at its full height. It grows up to 4 ½ metres in 4-5 months in the UK climate. The hemp plant is naturally pest-resistant and weed-suppressant, eliminating the need for chemical fertilisers and insecticides, and is useful as a break crop, naturally clearing the land of pests. It requires very little fertiliser, and is deep rooting; returning key nutrients to the soil and improving the condition of our over-compacted, depleted farmland by breaking up and aerating the soil to a significant depth.

Is hempcrete better than concrete?

It depends what you mean by 'better', as the two materials are good at different jobs. Whilst the name can be misleading, it is worth noting that hempcrete and concrete are very different materials and are not used in the same way. The term "hempcrete" is often used because historically it has been mixed and cast on site into a shuttered framework, in a similar way to concrete. Concrete uses a binder of cement and an aggregate of sand mixed with other larger materials like gravel, stone or rubble. In comparison, hempcrete uses a lime-based binder and the hemp shiv is the aggregate.

Hempcrete (in its usual "hemp-lime" form) has been developed as a non-structural material. Therefore, it cannot replace concrete for structural applications. Also, due to the plant-based aggregate in the material, hempcrete does not perform well in locations where it is exposed to standing water, or constantly has water running across it. Therefore unlike concrete, it cannot be used in below ground or foundation applications.

Whilst concrete is good at keeping water out, it can also trap moisture inside the building, meaning that it relies heavily on mechanical ventilation systems to purge moisture from the interior. Hempcrete is vapour-permeable and hygroscopic, which means it can absorb and release moisture in response to the internal environment. This means humidity levels are naturally regulated and ventilation systems, if required, can be a lower spec and allow cost savings.

Whilst hempcrete and concrete both act as heat stores due to their thermal mass, hempcrete also has far superior insulation properties. Whilst concrete has been receiving a lot of bad press recently due to its enormous carbon emissions, hempcrete actually sequesters more carbon than it emits (as outlined above) so is actually having a net positive impact on the levels of atmospheric carbon.

In comparison to conventional concrete cavity systems, hempcrete is generally a simpler construction with simply a structural frame, the hempcrete and the finishes. This makes it more accessible to self-builders and can save time and money in construction.



How can I save money when building with hempcrete?

As with all construction, the best way to ensure cost-efficiency when building with cast on site hempcrete is to be efficient with the material. This means ensuring you have a designer who understands how hempcrete works, an engineer who understands its racking abilities, an installer who does not over tamp the material and a project manager who manages the construction schedule to allow sufficient drying. It may be tempting to accept a low fee for technical detailing, but this often ends up being far more expensive when the building is not designed correctly or efficiently.

Hempcrete is a low-tech material because, unlike conventional construction techniques that rely on layers of materials doing different things, hempcrete does the work of several materials. Installing cast-on-site hempcrete is labour-intensive, so much of the construction cost is in the labour. If you are able to install the hempcrete yourselves (ideally with family and friends), a large proportion of the cost can be saved, though it's important to not underestimate how much work is required to install hempcrete to an entire house!

Where can I learn more about hempcrete?

If you would like to discuss a particular project and whether hempcrete would be a suitable solution for you, please get in touch with us by phone at 01629 343143 or by email at: office@ukhempcrete.com.

For further reading, the following books are all widely available:

The Hempcrete Book: Designing and building with hemp-lime | William Stanwix and Alex Sparrow

Hemp Lime Construction: A Guide to Building With Hemp Lime Composites | Rachel Bevan and Tom Woolley

Building with Hemp | Steve Allin

Clay and Lime Renders, Plasters and Paints: A how-to guide to using natural finishes | Adam Weismann and Katy Bryce

Essential Hempcrete Construction: The Complete Step-by-Step Guide | Chris Magwood

GET IN TOUCH TO DISCUSS YOUR PROJECT:



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