

What is Hempcrete?

Hempcrete is a bio-composite made of the inner woody core of the hemp plant mixed with a lime-based binder. The hemp core or “Shiv” has a high silica content which allows it to bind well with lime. This property is unique to hemp among all natural fibers. The result is a lightweight cementitious insulating material weighing about a seventh or an eighth of the weight of concrete. Fully cured hempcrete blocks float in a bucket of water. It is not used as a structural element, only as insulating infill between the frame members, though it does tend to reduce racking. All loads are carried by internal framing. Wood stud framing is most common, making it suitable for low-rise construction. Hempcrete was first used in construction to build non-weightbearing infill walls in France during the early 1990s. Hempcrete buildings ten stories high have been built in Europe.

Hempcrete is a carbon sink; it is fire-resistant, pest-resistant, and a strong insulator. Hempcrete is lightweight, making it an excellent choice for most climates as it combines insulation and thermal mass. In addition, hempcrete structures make healthy buildings as they do not grow toxic mold.

Hempcrete lacks the brittleness of concrete and, therefore, does not need expansion joints. But it is half as light and three times more elastic than concrete, which makes it resistant to stress-induced cracking and breaking. Hempcrete is a low-density material, and unlike concrete, it can resist cracking under movement, making it suitable for earth-quake prone areas.

The building industry doesn't see very many “new” materials. The materials used to insulate residential and commercial buildings

have remained the same for decades, and most have serious environmental and/or health impacts. As we collectively begin to add more insulation to buildings to lower their energy requirements, the volume of insulating material we use is going to rise dramatically. It makes ecological and financial sense to fill this volume with materials that are annually renewable, low-impact and, ideally, sourced from waste streams or from by-products from other processes.

Hempcrete meets all of these important criteria, and compares favorably with conventional insulation materials in many ways. Hempcrete has an R-value of 2.4 to 4.8 per inch, compared to 0.1 to 0.2 per inch of concrete. Hempcrete can also achieve a higher R-value than fiberglass batt and cotton batt, whose R-values are, at most, 3.8 and 3.7, respectively.

From: American Lime Technology, americanlimetech@usheritage.com and other web-sites.