



## 31 THE BUZZ ON HEMP IS BUILDING

JUL

### Hemp: The Future of Green Building

Green building (building structures using ecologically friendly and resource-efficient materials) is on a steady rise. According the United States Green Building Council (USGBC), almost 50% of all non-residential construction in the country this year will be green.[1] This equates to roughly \$120–145 billion in building opportunities. Similarly, the use of sustainable products to build residential homes is increasing at a phenomenal rate. The USGBC estimates that by 2018, 84% of home-building firms will have at least 15% of their business base consist entirely of green projects.[2] While the use of fiberglass, plastics, adhesives and a host of other damaging synthetic products may be on the way out, the need for sustainable building materials is expanding fast. As a growing community of architects, farmers, and construction firms are finding out, hemp is one material that holds an incredible amount of potential for the future of green building.



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It shouldn't come as a huge surprise that hemp is on the forefront of the green construction movement. Our country was literally built on hemp. The first draft of the Declaration of Independence was written on hemp paper. George Washington grew hemp that was harvested for industrial rope making, canvas weaving, and ship building.[3] To promote its growth throughout the country, President Washington proclaimed “Make the most of the Indian hemp seed . . . and sow it everywhere!”[4]

### Industrial Strength, Rot-Free, Nontoxic, Biodegradable



Green construction companies have been heeding these words more and more in recent years. Based on everything it can do, this incredible crop should be grown on a mass scale. For starters, hemp is completely nontoxic and biodegradable. Biodegradable shouldn't be mistaken for some sort of compromise in structural integrity though. Quite the opposite. Walls made of hemp can last up to 500 years.[5] In addition, according to Alan Crosky of the

School of Material Science and Engineering in the University of New South Wales in Australia, “Hemp fibers have higher strength to weight ratios than steel and can also be considerably cheaper to manufacture.”

Hemp doesn't mold, which is crucial in tropical regions that are highly susceptible to mildew.[7] This resistance, combined with its ability to dry quickly, makes hemp a wonderful composite for homes and buildings in moist locales or counties that experience frequent rainfall. Hemp is also rot-free, meaning it doesn't attract termites and is generally impervious to all the common pests that can whittle away at a building's lifespan.[7] A reliable material that is sustainably grown, durable, clean, cheap, safe, and reusable is a major boon to construction firms and to humanity overall.

### Hempcrete, The Builder's Friend

While hemp can take many forms that meet the various needs of an architectural project, one product above all others, hempcrete, is responsible for showing the world just what hemp can do. Made from mixing small pieces of hemp shiv (the core of the hemp plant) with a lime binding agent and water, hempcrete is an easily produced and lightweight insulating substitute that is a vast improvement from traditional insulation materials (like fiberglass) that are harmful to humans.[8] Hempcrete is only 1/7 as heavy as concrete but three times stronger when the poured mixture hardens inside the wood frames of building walls. One of hempcrete's most important traits is its ventilation. Hempcrete behaves like a natural thermostat, trapping heat from the sun and releasing it as needed. Its natural adaptability regardless of the outside temperature means that it can keep a house warm in the winter and cool in the summer while reducing the use of fuel.[9] As George Rixey, architect at Rixey Company Inc., a leading advocate of hempcrete in residential construction calls hemp a “thermal wall.” He tells us “[Hempcrete] provides a wall structure that is breathable, so you don't have a closed internal environment. You have a breathing environment.”[10]

Not only is hemp an affordable, long-lasting, strong and sustainable material, it also has the ability to eliminate toxins from both the soil and the air. Hemp is “carbon negative,” which means that it absorbs greenhouse gases and carbon emissions from the air and “helps eliminate toxins that get stale and fixed inside your house,” Rixey tells Global Mana.

“ You can have things like off-gassing like from chemicals in carpets and paints...that many people are allergic to. In this case there's none of that. Everything is a natural base that breathes through the hemp. In the process of the hemp actually hardening it actually creates negative carbon. So it literally draws toxins out of the air in the environment of the space and it absorbs it into its own entity.”



### Hemp For the Win

In addition, hemp requires far less energy to produce, resulting in less greenhouse gas emissions than the production of rock wool, a common insulation made of mineral fibers used in housing projects.[11] To put more simply, a study published by *Environmental Science and Technology* found that not only does the production of hemp have no negative impact on the environment, but all signs point to the fact that it's beneficial.[12]

Given all of these immense benefits, hemp is the obvious choice in an architectural landscape that is becoming more open to incorporating sustainable practices every day. While architecture companies see the obvious value of hemp and wish for the plant to play a bigger role in their projects, the sad truth is that, for now, hemp is still largely illegal to grow in the United States, making it harder to acquire for many of the toxic, non-green materials used for buildings.[13] But things are slowly changing. The federal government has recently passed legislation allowing for the growth of hemp by certain farmers with the cooperation of their associated state's department of agriculture.[14] Perhaps once hemp can once again be grown on US soil more people will take a chance on the wonderplant and fully showcase just how useful and versatile it truly is.



[1] <https://www.leafly.com/news/headlines/what-is-hemp-current-status-in-the-united-states>

[2] <https://www.leafly.com/news/headlines/what-is-hemp-current-status-in-the-united-states>

[3] <http://www.usgbc.org/articles/green-building-facts>

[4] <http://www.usgbc.org/articles/green-building-facts>

[5] <http://www.mountvernon.org/george-washington/the-man-the-myth/george-washington-grew-hemp>

[6] [http://antiquecannabisbook.com/chap04/Virginia/VA\\_IndHempP2.htm](http://antiquecannabisbook.com/chap04/Virginia/VA_IndHempP2.htm)

[7] <http://www.collective-evolution.com/2012/04/01/5-ways-hemp-will-change-our-world/>

[8] [http://www.ecobuildingpulse.com/newsletter/cannabis-construction-entrepreneurs-use-hemp-in-home-building\\_c](http://www.ecobuildingpulse.com/newsletter/cannabis-construction-entrepreneurs-use-hemp-in-home-building_c)

[9] [http://www.nytimes.com/2015/07/07/nyregion/cannabis-construction-entrepreneurs-use-hemp-in-home-building.html?\\_r=0](http://www.nytimes.com/2015/07/07/nyregion/cannabis-construction-entrepreneurs-use-hemp-in-home-building.html?_r=0)

[10] [http://www.nytimes.com/2015/07/07/nyregion/cannabis-construction-entrepreneurs-use-hemp-in-home-building.html?\\_r=0](http://www.nytimes.com/2015/07/07/nyregion/cannabis-construction-entrepreneurs-use-hemp-in-home-building.html?_r=0)

[11] <https://www.ukhempcrete.com/hempcrete-buildings-thermal-performance-and-costs/>

[12] <http://globalmana.org/portfolio/hemp/>

[13] <http://www.truthonpot.com/2013/07/16/hemp-insulation-a-carbon-negative-alternative-to-rock-wool/>

[14] <http://thejointblog.com/new-study-finds-hemp-insulation-is-carbon-negative/>