

MAKERS MANUAL #30

Hannah Segerkrantz



INTRODUCTION

This manual shows how to make a low side table out of hempcrete. Hemp is a versatile and sustainable material, absorbing more CO₂ per hectare than any forest or commercial crop. When combining hemp shivs with a lime binder, hempcrete is made, having the strength of concrete and the flexibility of clay. The material naturally regulates heat and moisture, is carbon negative and biodegradable. This manual creates a new method of casting hempcrete into a fabric formwork and merges material knowledge with a low-end approach to meet current values of sustainability.

STEP 1

Lay out two pieces of textile and draw your desired shape. Make sure the line starts and ends at the bottom of the fabric – you need to keep one side open to fill your formwork with hempcrete later on! Try to avoid sharp corners and keep at least 20 cm between the lines – the textile will become three-dimensional once you fill it with hempcrete and the material needs volume to not break.

If you would like to experiment with more advanced shapes, you can find the templates through the QR code in 'further reading'.



STEP 2

Pin the fabrics together and cut out the shape with 1cm seam allowance. Sew along the traced line.



STEP 3

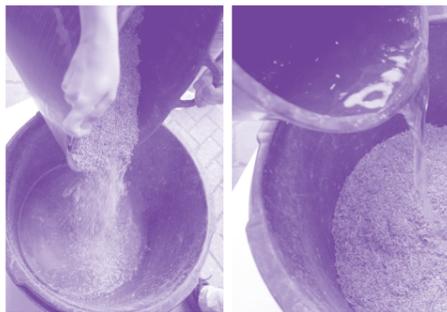
Prepare all the tools for casting, put on your mask and gloves.

STEP 4

Measure out the components with a 2:1:0.75 ratio in volume (hemp:lime+additive:water). The additive makes 1/12 of the lime.

STEP 5

Pour the hemp shivs into a large bucket and add half of the water. Mix well to make the shivs wet. When the hemp is moist, it gets coated more thoroughly with the lime, which is what you want for your mixture.



STEP 6

Add in the lime and additive, and mix well so that the fibres are completely coated. Fold in any material that might get stuck to the bottom of the bucket and watch out for any uncoated shivs.



STEP 7

Add in the rest of the water, and mix well. If lumps start to form, make sure to break them apart.

STEP 8

To test your mixture, take a handful and squeeze it into a ball. Push a gloved finger into it – if it crumbles, it is too dry, if your finger doesn't break the ball, it is too wet. The ball should break cleanly into two pieces and no liquid should drip out of it – this is how you know when the mixture is ready.



LIST OF THINGS

MATERIALS

- strong cotton textile
- hemp shivs
- hydrated lime
- additive
- water
- linseed oil

FORMWORK

- pins
- a marker
- a sewing machine

CASTING

- a scale
- 1 small bucket
- 4 bigger buckets
- a shovel
- a small piece of a wooden beam
- gloves and a mask
- 60g sanding paper
- a mixer (optional)



STEP 9

If necessary, adjust the mixture by adding a bit of water, lime or hemp shivs. The mixture should be light and fluffy, moderately sticky and not too wet.



STEP 10

To fill the formwork, start by putting a bit of the mixture into the base and edges of the shape, compressing slightly. Fill up 1/4 of the formwork and tamp it down lightly. Scratch the top surface to create more friction with the next layer. Make sure not to tamper too rigorously, as over compacting the shape will make it look chubby, and the layers might not stick to one another. Yet, the piece should not remain too airy, as later on it will not hold together very well.

STEP 11

Fill up the shape until a few centimetres from the edge. Leave the piece to harden for a few hours before moving it. Then take it carefully to the spot where it will dry for a few weeks.

STEP 12

After 24 hours, you can carefully

BIO OF THE DESIGNER

The notion of agency is always central in the work of Hannah Segerkrantz, and goes in parallel with the redefinition of what we address as our 'surroundings'. With an interest for the intersection between architecture and radical ecologies, her approach to research is environmental, sensorial and contextual.

FURTHER READING

- The Hempcrete Book: Designing and Building with Hemp-Lime by William Stanwix and Alex Sparrow
- There's No Place Like Home, Especially if It's Made of Hemp by Adam Popescu
- The Slow Design Principles by Carolyn F. Strauss and Alastair Fuad-Luke
- The Case for Material Intelligence by Glenn Adamson
- Wasted: When Trash Becomes Treasure by Katie Treggiden
- Open Design Now by Bas van Abel, Lucas Evers, Roel Klaassen, Peter Troxler
- Architecture without Architects by Bernard Rudofsky

Try and make more complex shapes with the hemp-it-yourself templates:



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remove the fabric by cutting it open along the vertical stitch that connects the textile.



STEP 13

Leave the shape to dry for a week or two, depending on the environment. The shape should feel completely dry and lighter than when you casted it, as the water has evaporated.

STEP 14

When the shape is dry, you can carefully sand away any excess material from the edges to make a smooth surface.

STEP 15

Find a covered space outside for good air circulation. Place the shape on a sheet of wood or plastic and put on rubber gloves. With a brush, coat the top and the sides of the shape with a layer of linseed oil and let it set for 12 hours. Turn the shape upside down and oil the bottom side. Repeat for at least one more layer. Hempcrete is a porous material meaning it will suck up the oil – if you wish to get a more glossy finish, you will need to apply multiple layers of oil. Let the shape dry completely before using it.

