

PAPER MAKING

how do make your own paper

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FABRICADEMY

MAKING YOUR OWN PAPER

Why and How ?





WHY TO MAKE YOUR OWN PAPER

- Because we can avoid using tons of trees all over the world.
- Because we can use, almost, all kind of discarded material and transform it in beautiful papers.
 - discarded plants from the agro industry.
 - discarded materials from the fashion industry
 - cigarettes butts
 - Recycling the paper already used.
- Because Handmade Paper offers an incredible field of creative possibilities since the simple sheet of paper , or paper clothes until strong and big constructions as sculpture , furniture and part of House's construction.

PAPER MAKING

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HOW TO MAKE YOUR OWN PAPER





HISTORY _ PAPYRUS

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- The paper's precursor was the papyrus that was prepared and used in Ancient Egypt for about 3200 BC.
- Made from the medulla of the *Cyperus Papyrus* plant.
- Results in a thick paper used both to write and draw.
- As it was very difficult to produce, after using the Egyptian used to paint with white ink to reuse it, this process was called Palimpsesto and was the first recycled process of the world.



PAPYRUS MAKING PROCESS

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- Make with the stem of the papyrus plant.
- Peel off the outer rind of the stem.
- Use the sticky fibrous inner pith or medulla cutting in strips in the longitudinal direction.
- wash them in a bath of cold water to remove the excess of inner liquid.
- arrange the slices in a strong base, side by side, overlapping a little one over the other.
- press with a wood rool to split off the excess of water
- arrange another layer of slices crossing over the first one
- press again with the wood until all the water splits off, and the two layers glue each other.
- let it dry between two sheets of fabric or paper, or under pressure.
- after drying it can be polished with a round stone or wood.





HISTORY _ AMATE

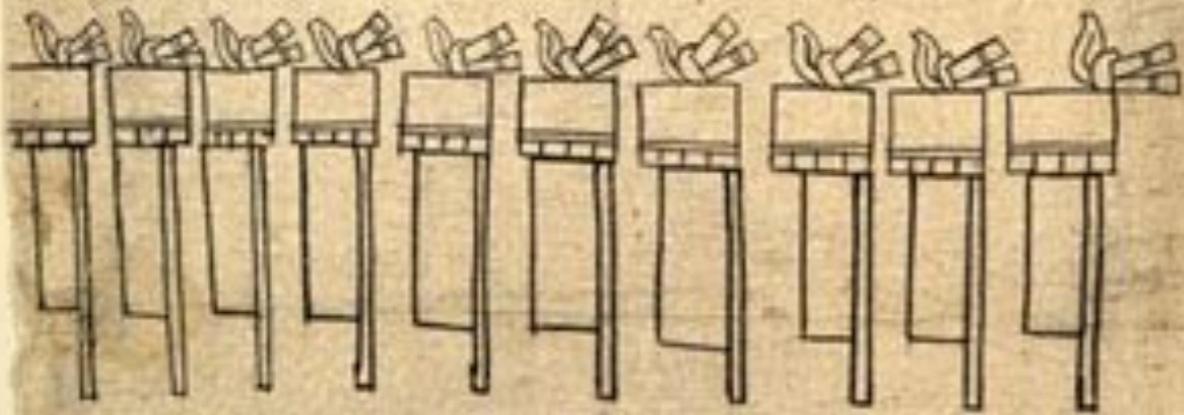
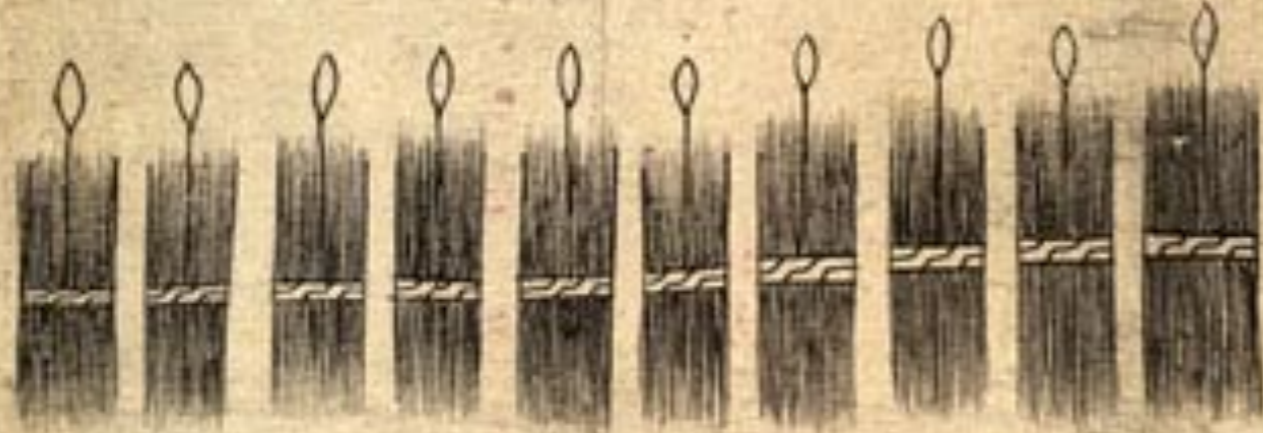
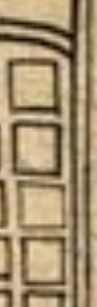
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- The other paper's precursor was the Amate that was prepared and used in Central America, most specifically in México in the pre-hispanic period.
- Made from the medulla of the Ficus plant.
- The process begins with obtaining the bark for its fiber.
- Results a thick paper used both to write and draw.
- The adults trees are considered sacred.
- It is easier using the barks of the oldest trees because its barks uses split off the tree.



AMATE MAKING PROCESS

- Soak the bark for a day or more to soften it , or boil the bark instead, which is faster.
- You can introduce ashes or soda cáustica.
- Rinse the bark in clean water.
- At this stage, [chlorine](#) bleach may be added to lighten the paper.
- Wooden boards are sized to the paper being made. They are rubbed with soap so that the fibers do not stick. The fibers are arranged on wooden boards and beaten together into a thin flat mass.
- This maceration process liberates soluble carbohydrates that are in the cavities of the cell fibers and act as a kind of glue.
- If there are any gaps after the maceration process, these are usually filled in by gluing small pieces of paper.
- Remaining on their boards, the pounded sheets are taken outside to dry.



塘漂竹斬



HISTORY _ THE FIRST PAPER

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- The first hand made paper documented in history was in China between 220 and 25 BC.
- Made with rags of the Paper Mulberry plant.
- Pounding and stirring rags in water
- After which the matted fibres is collected on a mat.
- The bark of Paper Mulberry was particularly valued and high quality paper was developed in the late Han period using the bark of *tan* (Sandalwood). In the Eastern Jin period a fine bamboo screen-mould treated with insecticidal dye for permanence was used in papermaking.



PAPER MAKING PROCESS – CHINA

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- Made with rags of the Mulberry plant.
- Pounding and stirring rags in water
- After which the matted fibers is collected on a mat.
- The paper production process began with the long baking of the fibers
- After were beaten and crushed.
- A paste was obtained which was then purified
- The sheet was formed on a sieve made of thin reeds joined together by sil or mane that was placed on a wooden frame.
- The sheet was dried and compressed onto the plate of porous material or leaving it in the air.



凡欲讀經先念淨口業真言遍

循唎 摩訶循唎 循唎 娑婆訶

奉請除災金剛 奉請辟毒金剛 奉請黃隨求金剛

奉請白淨水金剛 奉請赤聲金剛 奉請定除厄金剛

奉請紫賢金剛 奉請大神金剛

金剛般若波羅蜜經

The world's earliest known printed book



PAPER MAKING IN JAPAN

- ▶ Paper was introduced to **Japan** in 610 AD by Doncho, a Buddhist monk from Korea.
- ▶ Washi is the light, strong traditional Japanese paper made by hand from the inner-bark fibers of three plants.
- ▶ The name washi literally means "Japanese paper". Today most paper in Japan is made in large automated mills, but a few hundred families in rural villages continue to make washi in the traditional way.
- ▶ Traditionally, Japanese farmers make paper in the winter after all of the other crops have been harvested. The cold temperatures keep the organic materials fresh. The fibers in the pulp also contract in the cold weather and form a stronger sheet of paper.
- ▶ Since paper is essentially a combination of vegetable fibers and water, pure cold water is also vital to the art of making washi. Any minerals or impurities in the water will eventually mar the paper. The final ingredient in high quality paper is, of course, the fibers that are used. The three fibers used to create washi are kozo, gampi and mitsumata.

KOZO PAPER MAKING PROCESS

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- Made with rags of the Kozo plant.
- Select the branches, cut them and steamed in a boiler for a few hours to help to peel the bark off the branch,
- Separate the green and brown parts from the clear inner one, and separate these fibers.
- Rinse the inner part in the rain of clear water.
- Break the mixture in fibers
- After we can bleach or not these fibers.
- Creating the Pulp
- Collect the pulp to form the sheets of paper with a screen framed in a wood frame and stretched.
- With Kozo it is possible to make very thin sheets of paper, but also very resistant ones.
- The sheet can be dried and compressed onto the plate of porous material or leaving it in the air.
- In the image we have the artist Kamori Mori ,that leaves in Brazil and is the specialist here in Kozo paper production.



Cloths produced with Kamori Mori Kozo Paper



BANANA FIBER PAPER

- The use of banana fibers is very important all over the world , but specially in Brazil.
- Made with most parts of the plant, but specially with the dried and dyed leafs, it is a very good way of using the natural discarded material .
- Results in a thick paper that can be used for artistic works, as well mobility and so on.
- The color palette can be very large as we can use since the fibers in its natural color as well as after bleaching it , dyed with the desired color.
- Also using other parts of the plant as the banana peel, we can obtain the natural green color of the plant.

Eliana Anghinah Artwork with banana fiber





BANANA FIBER PAPER _PROCESS

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- Make specially with dried and died the leafs of the banana plant.
- Cook them with soda for many hours
- Wash the fibers in three baths of water
- Filter the fibers in a fabric
- Macerate the fibers with a wood hammer
- Beat in a blender to separate the fibers
- Bleach the fibers if you want them lighter
- Wash the fibers again
- Prepare the bath with the fibers and water, that now is called pulp
- Collect the pulp in a frame with a plastic or thin metal screen
- Pull of the sheet of paper and let it dry over a fabric



COTTON PAPER

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- The paper made with cotton is a very simple process because the fibers are already treated and it is not necessary to cook them with soda , neither macerate it.
- I use here in Brazil the paper chips discarded from the industry and production of the paper air filters for trucks.
- This material is very simple to buy and is called Cotton Linter.
- As a basic material we can prepare the pulp and store it dried to use whenever we want.
- The cotton paper can also be made with the cotton fibers directly, but in this case we need to treat the fibers as the banana fibers with soda and so on.
- It is also possible making paper with the trash of the discarded cotton clothes, t-shirts and jeans, in this case it is necessary also to treat the fibers, but it is very useful to transform all this trash in paper and save many hectares of trees.

MATERIALS AND INSTRUMENTS

- Cotton Linter
- Silk stockings
- CMC Carboxymethylcellulose
- Water
- Blender
- Bowl
- Sieve
- TNT Fabrics
- Threads
- clothes fasteners
- Cotton Bag Cloths





COTTON PAPER_ MAKING PROCESS

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RECEIPT

Cotton

1. 100 g of Cotton Linter (cotton filter scrap)
2. Divide in small pieces
3. Wet in water in a 10 liters bowl
4. Shake in one liter of water in little amounts

CMC solution

1. Put a soup spoon of CMC in one liter of water and shake



COTTON PAPER_ MAKING PROCESS

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Pulp preparation

- ▶ Use one cup of the CMC solution to the 10 liters bowl with cotton pulp
- ▶ The Pulp has to be put in small amounts
- ▶ Mix everything with the hands in the bowl until you have an homogenous suspension of the cotton pulp



Paper preparation

- ▶ Use the sieve to collect thin layers of pulp from the bowl
- ▶ invert the sieve over a thin stretch fabric , like TNT
- ▶ remove the excess of water with a cloth
- ▶ let it dry
- ▶ remove the paper from the fabric stretching the fabric when paper is completely dry.





COTTON PAPER_ MAKING PROCESS

Composites

- You can insert materials inside the paper, as a composite (dry flowers, natural pigments, used tea
- Forming the paper in layers and inserting the materials between one layer and another





COTTON PAPER_ MAKING PROCESS

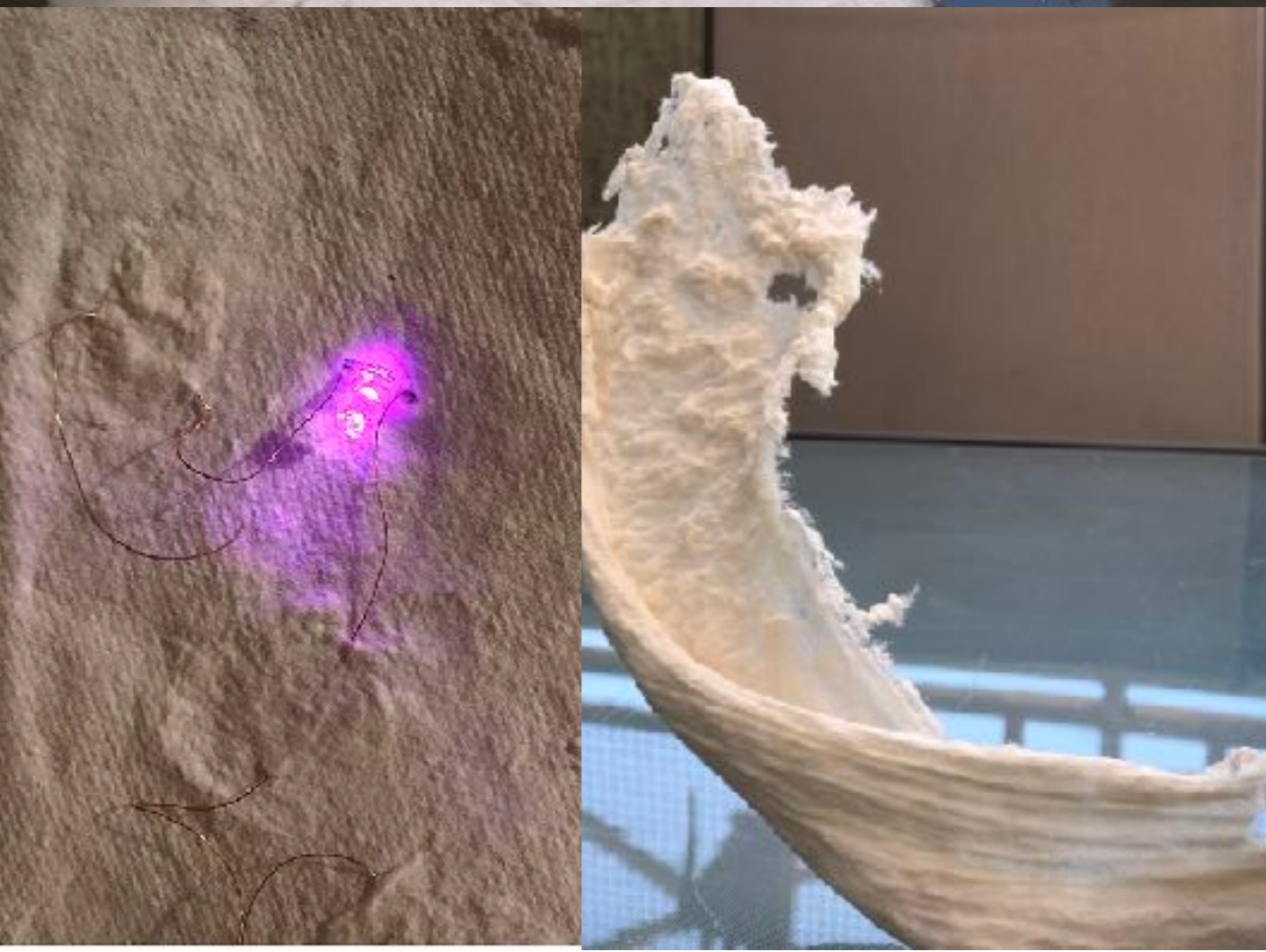
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Mixed technique

- Also you can insert conductive thread to produce some electronic with paper.

Scaffold

- You can mold the paper format with the fabric itself stretching and locking the fabric with the wet pulp or using a external mold to put the fabric with the wet pulp.



COTTON PAPER_ MAKING PROCESS

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Natural Dying Fibers

- ▶ You can use natural dyes to dye the fiber and use this dyed pulp to make your paper or some artwork with the colored pulp, like pulp painting.



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some alternative projects with paper making..



MOINHO BRASIL

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- Works with the dejected material from the agro industry making paper with their wast.
- Renata Telles



- [https://
www.moinhobrasil.com.br/](https://www.moinhobrasil.com.br/)



LEME _ UNB

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- Recycling cigarette butts to reciclagem paper.
- Therese Hoffman
- <https://lemepapelartesanal.wordpress.com/2013/03/28/reciclagem-de-bituca-de-cigarro/>



Ângela Barbour

Any doubt? Get in contact !



Papier

https://youtu.be/_CvLT1hYEac

Rizhome Final Project

<https://vimeo.com/261901746>

Fabricademy Page

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