IGNITION SERIES

RECYCLED PAPER PRESS

Instructions

Warning! — This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.

Only for use by children 8 years of age and older. Use only under careful supervision of adults who have familiarized themselves with the kit's written safety precautions.

A Note to Parents and Supervising Adults
Please stand by your child's side in the paper-making process, providing support and company to him or her as needed. Read through the instructions together before beginning the experiments, and follow them. Please be sure that no small pieces get into the hands of young children. Provide your child with any required household items that are not contained in the kit, and encourage your child to repeat an experiment if the initial results don't meet expectations.

1st Edition © 2008 Franckh-Kosmos Verlags-GmbH & Co. KG, Stuttgart, Germany

This work, including all its parts, is copyright protected. Any use outside the specific limits of the copyright law is prohibited and punishable by law without the consent of the publisher. This applies specifically to reproductions, translations and microfilming and the storage and processing in electronic systems and networks. We do not guarantee that all material in this work is free from other copyright or other protection.

Layout and design: komuniki – Michael Schlegel, Würzburg; Text: KOSMOS; Photos: VDP – Verband Deutscher Papierfabriken e.V. [Association of German Paper Manufacturers, Inc.]

First English Edition © 2010 Thames & Kosmos, LLC, Providence, RI

® Thames & Kosmos is a registered trademark of Thames & Kosmos, LLC.

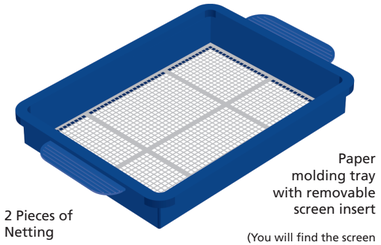
Translation: David Gamon; Editing: Ted McGuire; Additional Graphics and Layout: Dan Freitas

Distributed in North America by Thames & Kosmos, LLC. Providence, RI 02903
Phone: 800-587-2872; Email: support@thamesandkosmos.com

Printed in China / Imprimé en Chine

Thames & Kosmos®

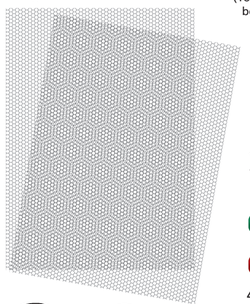
Contents



Paper molding tray with removable screen insert

(You will find the screen beneath the package's red plastic insert)

2 Pieces of Netting



Yellow Pressing Tool

4 Dye Tablets

(These are non-toxic watercolors)

String

Additional Items

Plastic bowl, cotton cloths (old dishrags or similar rags), powdered laundry detergent, water, hand mixer, newspaper, paper towels, toilet paper, napkins, and other scrap paper

Caution! — Dye tablets: The dye tablets are non-toxic, but as a precaution they should not be ingested. Avoid contact with eyes and mouth.

Before You Start

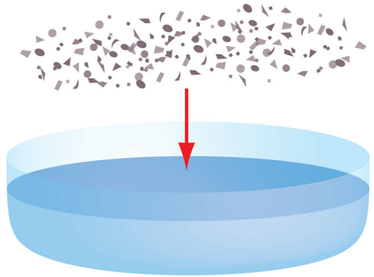
Find a quiet work area and cover the work surface so that any accidentally spilled water won't cause any damage. The ink from the newspaper and residue from the dye tablets can cause stains too. Keep small children and animals away from the work area.

Basic Paper-Making Instructions

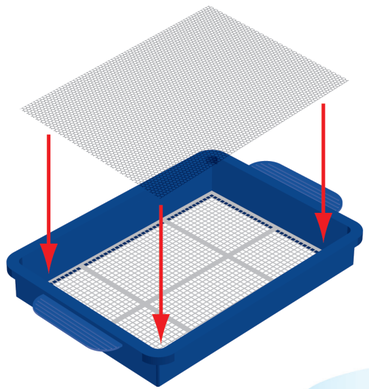
Let's Get Started!

Your homemade paper will be 100% recycled. As your raw material, you will just need newspaper, toilet paper, paper towels, or paper napkins. Also get your other required equipment ready: an old bowl, as shallow as possible, or a plastic basin, and an old cotton cloth (e.g., a dishcloth).

1 Tear a sheet of newspaper or several sheets of paper towels in the smallest pieces you can, and put them in an old bowl or a basin. Add about one liter of warm water. If you like, you can also add a spoonful of powdered laundry detergent, which will make the paper a little brighter.

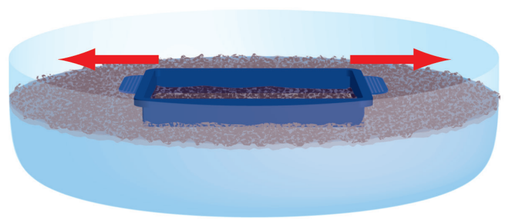


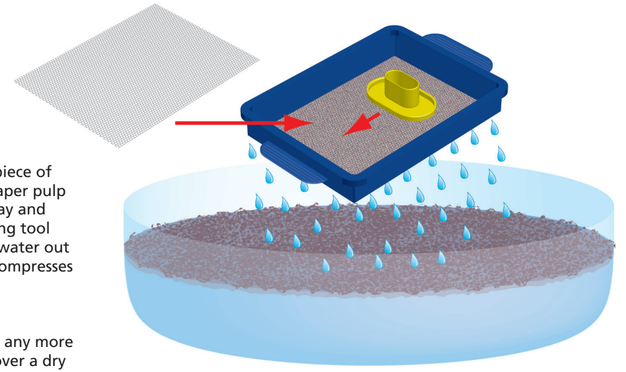
2 Thoroughly stir this paper pulp together and let it stand for a few hours, ideally overnight. If you want finer paper, let an adult help you break up the paper into smaller pieces with a hand mixer. If the fiber pulp is too thick, add a little more water.



3 Lay the screen insert into the paper molding tray, and place one of the pieces of netting on top of it.

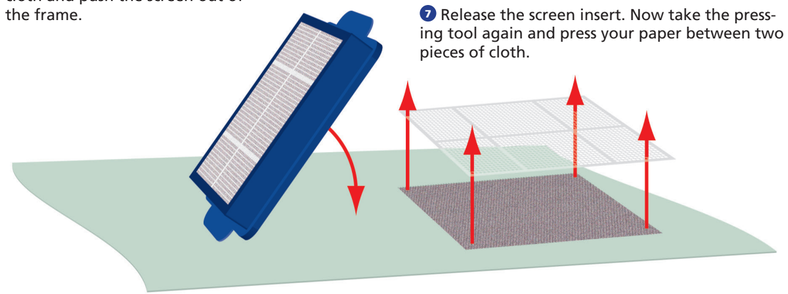
4 Thoroughly stir the fiber pulp one more time and completely submerge the tray in the bowl or basin. Now lift the tray, keeping it as horizontal as possible, up to the surface of the thin pulp, and try to distribute the paper fibers as evenly as possible in the tray by carefully rocking it back and forth. Now you can pull the tray completely out of the basin.





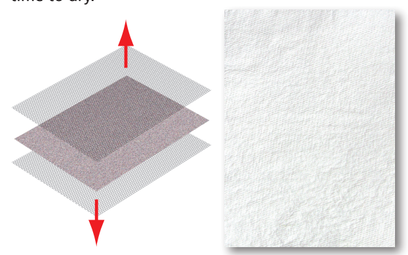
5 Now lay the second piece of netting on top of the paper pulp in the paper molding tray and stroke the yellow pressing tool over it. This pushes the water out of the paper pulp and compresses the paper fibers.

6 When you can't push any more water out, tip the tray over a dry cloth and push the screen out of the frame.



7 Release the screen insert. Now take the pressing tool again and press your paper between two pieces of cloth.

8 Finally, you will have to carefully pull away the two pieces of netting. It might take a little practice. Now your homemade paper will just need a little time to dry.



This is how you can gradually work through your paper pulp until it is all used up and you have made many sheets of paper.

If your first result doesn't quite measure up to what you're expecting, try it again! You'll soon get the hang of it with a little practice.

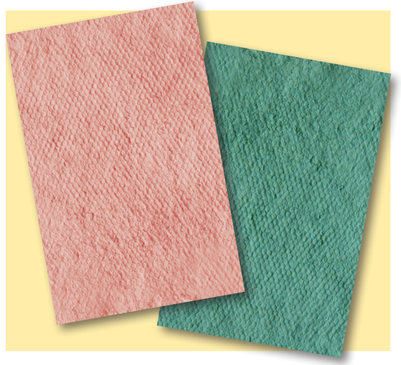
Tip:
The ink in newspaper will turn the paper grey. If you want to make brighter paper, just use the unprinted edge of the paper. Paper towels or white paper napkins will also produce bright paper.

Paper-Making Experiments

Once you have mastered the basic paper-making process, you can try all these variations to create your own unique, personalized paper designs.

Experiment 1: Colored Paper

Dissolve a dye tablet in a cup of water and add the colored solution to the paper pulp. This will give you paper with a delicate shade of color. As an alternative, you can use colored napkins for your paper pulp. That will give you a stronger color. Caution! The colored paper pulp can stain things! Only use old cotton cloths to press it out.

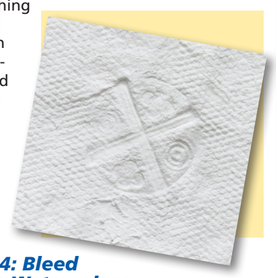


Experiment 2: Paper with a Watermark

Make a design (for example, your initials) by laying the string on the paper pulp when it is in the molding tray, before placing the second piece of netting on top. When it is pressed, the paper will be a little thinner and more translucent in that spot. Carefully remove the string before drying. You can see the watermark particularly well if you hold the paper up to the light.

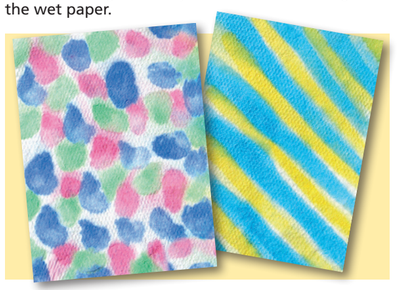
Experiment 3: Textured Paper

Press a stamp onto the freshly made paper (use a pre-made stamp or invent a design with a nail or a screw). Use anything that has a raised shape. Try it with a fluted or corrugated glass rolled over the pressed paper.



Experiment 4: Bleed Pattern with Watercolors

If you paint a pattern onto fresh, still-wet paper, it will produce a really cool effect. The colors create beautiful designs as they run and bleed through the wet paper.



Experiment 5: Designs with Colored Pieces of Paper

To make this design, scatter finely-shredded pieces of napkin on the paper pulp before applying the second piece of netting. They will also soak up water and dry along with the paper.

Experiment 6: Pattern Paper with Napkin Pieces

Cut a design out of a paper napkin and lay the upper layer on the smoothed paper pulp. The napkin piece will soak up water and dry along with the paper.

Experiment 7: Pattern Paper with Flowers

Lay flower petals or flat blades of grass onto the paper pulp before applying the second piece of netting. That will create beautiful and surprising effects as well.

Experiment 8: Greeting Cards

If you have made a selection of various kinds of paper, you can naturally combine these with one another. Try it with some homemade greeting cards for your friends' birthdays or design your own invitation cards for a party. Use your imagination!

Experiment 9: Make Your Own Book

Here's a great gift idea: As soon as you have made several kinds of paper, you can easily combine them into a book. Make holes in all the sheets of paper and stack them on top of one another. Place a specially designed cover sheet on top. Tie the sheets together with a piece of ribbon or yarn. You could use your book as a small photo album, for example.

About the History of Paper Making and Paper Recycling

The History of Paper

The word "paper" goes back to the writing material called papyrus (around 3,000 BC), which was made out of the pith of the papyrus plant. The stalks of the papyrus reed were beaten flat, pressed, and laid crosswise. The first report of usable paper comes from a Chinese history book. According to that book, in 105 AD the Chinese official Ts'ai Lun reported to the emperor that he had succeeded in creating paper from bark, hemp, old rags, and fishing nets. In the 8th century, the Arabs learned from captured Chinese prisoners how to make paper. Paper moved west 200 years later with the Arab military campaigns, first to Egypt and Syria, and then North Africa and Spain. The first paper mill is documented in Italy in 1256. The first German paper mill was the "Gleismühl" in Nuremberg, which started production in 1390. The owner at that time made his workers swear an oath to keep the art of paper-making a secret. The first American paper mill was built around 1690 in Germantown, Pennsylvania. Today, about a third of all the paper in the world is made and consumed by the United States.

Did You Know? Paper Facts

The explorer Marco Polo reported on the widespread use of paper money in China in 1298, and that there were already paper handkerchiefs then.

A complete paper web in a paper factory can be up to 35 miles long?

Around 360 million tons of paper are used every year worldwide, and the per capita paper consumption in the U.S. is about 700 pounds?

Paper accounts for more than a third of all recycled materials in the U.S.

In the Paper Factory

In today's industrial paper production, raw materials (wood fibers, recycled paper, fillers, and water) are mixed into a homogenous pulp in a pulper, which is a kind of giant stirring bowl. This thin pulp is taken from the supply vat onto a movable screen. The movement helps the fibers to intertwine as tightly as possible. In the process, most of the water runs off. Then, the web of soaked paper comes to the press. The paper web is guided through rollers in an absorbent felt cloth and the rest of the water is thereby removed. This pressing process makes the paper structure denser and firmer. Then, the paper web runs through heated drying cylinders. Finally, it is smoothed and rolled up.

Paper Recycling

Most of the paper manufactured today comes from trees. By recycling paper, we can reduce the number of trees that are cut down to make paper pulp.

Paper recycling starts by collecting paper. There are three sources of paper for recycling: mill broke, pre-consumer waste, and post-consumer waste. Mill broke is paper scrap from paper production that hasn't even left the paper mill yet. Pre-consumer waste is discarded paper that has not been used by people yet, for example, the scraps left over from turning paper into books. Post-consumer waste is paper that has been used by people and is no longer needed.

These three types of paper are collected by various recycling programs and sold back to paper mills that recycle it using a large-scale version of the paper making process you used in this kit.

Only about 33% of new paper is made from recycled paper. A lot of paper still goes into landfills. It is important for you to sort your household trash and make sure all paper goes in the recycling bin!