

PAPER RECYCLING MINI FACTORY

WHAT'S IN THE BOX

1. Manual blender x1
2. Plastic tray x1
3. Paper presser x1
4. Mesh x1
5. Deckles with different shapes x6
6. Cleaning cloths x2

EXTRA ITEMS YOU WILL NEED

- ◆ Plastic sheets to protect tables
- ◆ Plenty of scrap paper, newspaper, or ripped up egg box
- ◆ Water
- ◆ Vegetable scraps or dye for food colour



Fig. 1

SETTING UP THE MANUAL BLENDER

- ◆ Remove the cover of the blender by twisting it counter-clockwise and lift it up. (Fig.2)
- ◆ Install the blade by inserting it into the center pole at the bottom. (Fig.3)
- ◆ After closing the cover, remember to lock it by twisting the cover clockwise.
- ◆ Blend the paper pulp by rotating the handle on top.

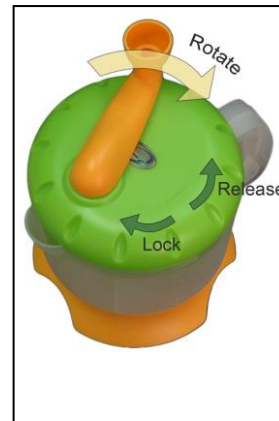


Fig. 2



Fig. 3

BLEND THE OLD PAPER INTO PULP

1. Tear or rip the paper into bits and soak it in warm water for at least several hours. The longer it soaks the better. You may leave it to soak overnight.
2. Half fill the manual blender with water and put a handful of the soaked paper into the manual blender and blend for several minutes until it looks like thick soup.

MAKING THE PAPER

1. Pour water into the tray so that it is $\frac{1}{2}$ to $\frac{3}{4}$ full. Add 2 or 3 handfuls of the paper pulp. As you may wish, you could also add a small amount of paint or food colouring to colour the paper. An alternative is to add leaves and dried flowers. Then, swirl the mixture together with your hands.
2. You can use the deckle to make paper of your desired shape. Attach the deckle with the shape you like over the mesh. (Fig.4)



Fig. 4

3. Hold the mesh frame with the deckle on top. Then scoop the paper pulp into the deckle from the mixture in the tray. Hold the frame under the water and move it gently backwards and forwards so that the paper pulp saturate on the deckle as evenly as possible.
4. Lift the frame straight up and out of the water. Hold for a few seconds to allow the water drain into the tray.
5. Carefully remove the deckle. Cover the mesh frame with a cleaning cloth, hold it tight and flip over so that the shaped paper pulp is on the cleaning cloth now. Do not put your fingers on the mesh or you will make a hole in the new paper sheet. Press down on the mesh with a sponge to wipe up the excess water.
6. Remove the mesh frame carefully by lifting upward. You have made a piece of recycled paper! Now you need to make it dry.
7. As shown in figure 5, place the cleaning cloth with the pulp onto the bottom plate of the paper presser. Cover it with another piece of cleaning cloth. Install the pressing plate and tighten the two nuts to further squeeze out as much excess moisture as possible.
8. Release the pressing plate of the paper presser. Remove the top cleaning cloth and let the pulp dry and undisturbed for at least 24 hours.
9. Once it's dry, gently peel off the cleaning cloth from the sheet of paper. Now you can use the newly made paper to create greeting cards for your friends and family! Use your creativity to turn your recycle paper into notepads, diary and many more!

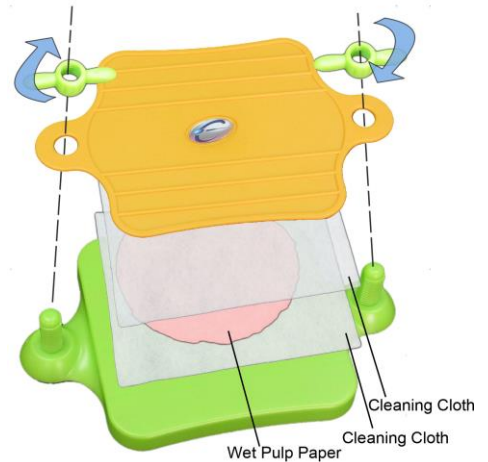


Fig. 5



TIPS FOR MAKING THE BEST RECYCLED PAPER

- ◆ If you plan to use your paper as stationery, dissolve a packet of gelatin in hot water, and stir the gelatin into the pulp mixture. The gelatin, which is known as "size", will make the paper less porous. Without the size, ink would bleed.
- ◆ You might want to add some wildflower seeds on top of the paper. Cards made with seeds can later be planted by the recipients to create flower gardens.
- ◆ Don't let the pulp get too thick on the mesh - thinner paper turns out better!

FACTS ABOUT PAPER AND PAPER MAKING

- ◆ The word "paper" is derived from the word "papyrus," which was a plant found in Egypt along the lower Nile River. About 5,000 years ago, Egyptians created "sheets" of papyrus by harvesting, peeling and slicing the plant into strips. The strips were then layered, pounded together and smoothed to make a flat, uniform sheet.
- ◆ Paper was invented in China about 2100 years ago by a man named Ts'ai Lun. He took the inner bark of a mulberry tree and bamboo fibers, mixed them with water, and pounded them with a wooden tool. He then poured this mixture onto a flat piece of coarsely woven cloth and let the water drain through, leaving only the fibers on the cloth. Once dry, Ts'ai Lun discovered that he had created a quality writing surface that was relatively easy to make and lightweight. This knowledge of papermaking was used in China before word was passed along to Korea, Samarkand, Baghdad, and Damascus.
After further commercial trading, the invention spread to the Middle East, where it was adopted in India and subsequently in Italy in about the 13th century, as an import from Islamic Spain. They used hemp and linen rags as a source of fibre. Paper is recorded as being manufactured in both Italy and Germany by 1400, just about the time when the woodcut printmaking technique was transferred from fabric to paper in the old master print and popular prints.

PAPER AND ENVIRONMENTAL PROTECTION

- ◆ About 20000 trees are needed to make a Saturday edition of a big-city newspaper, which means more than a million trees a year!

- ◆ Nowadays, 42% of the global wood consumption goes to paper production. If we reduce paper use and promote paper recycling, fewer trees will be cut down, and we would have more trees to protect the land to minimize the damage caused by flooding and to absorb carbon dioxide (CO₂) which causes global warming. Global warming affects our lives. When the earth gets warmer, ice in North/South Pole will melt, not only will it leave the animals homeless, but will also flood our lands, destroy the crops, leading to shortage of food, etc.

If the warming gets worse, as scientists expect, some kinds of plants and animals may extinct (disappear completely); there may be more storms and floods; sea level may rise so much that people have to move away from the coasts; and for some areas the temperature may rise so high that the land may become too dry for farming.

- ◆ After experimenting with this kit, you will understand the basic procedures in making recycle paper. Hopefully you will be more concerned about protecting our environment by reducing waste and recycle more. Try to think of more ways to reduce the amount of paper used at home and school. Always use both sides of a piece of paper, before you recycle it or throw it away. Let's protect the earth together!

Warning: Not suitable for children under 36 months due to small. This experiment kit includes sharp parts, use with care and only under supervision of adults.