

Reduce Waste with DIY Beeswax Wraps!

Name: _____

Date: _____

Create your own beeswax wraps!

1. Gather your materials to create beeswax wraps!
 - a. **Color your cloth**: Cotton material, thick paper (manila folder or construction paper), tape, fabric markers, stencils (optional), zig-zag scissors
 - b. **Infuse with beeswax**: Parchment paper, beeswax beads or pellets, iron, ironing board
 - c. **Engineer use for wraps**: Water, cloth without beeswax (same material from part a.), snack items (solid and watery i.e. carrots and yogurt), rubber bands, string

Part A. Color your cloth

1. Wash and dry fabric.
2. Use pinking shears to cut pieces from cotton material (Fig. 1) (11 in. x 11 in. is a good standard size)
3. Use tape to secure your piece of cloth to the thick paper (Fig. 2).
 - a. Tape close to the edge so you will be able to color the maximum area of your cloth.
 - b. Use small pieces of tape rather than taping the entire edge.
4. Use fabric markers and stencils to color and personalize your fabric (Fig. 3).
5. Remove the tape.
 - a. Pull tape from the middle of the cloth toward the outside to prevent fraying.
6. Check the edges of your cloth to see if any areas need to be re-trimmed.
 - a. Use the pinking shears to re-trim frayed areas of your cloth as needed.



Fig 1.



Fig 2.



Fig 3.



Part B: Infuse with Beeswax (with help from your teacher!)

1. Tape one piece of parchment paper to the ironing board.
2. Place your cloth on the parchment paper.
3. Sprinkle beeswax pellets on the cloth (Fig. 4).
4. Cover your cloth and beeswax with a second piece of parchment paper.
5. Iron (on the cotton setting) gently over the top of the parchment paper. Make sure that wax is melted into all areas of your cloth!
6. Remove the parchment paper.
7. Wait a few moments for the cloth to cool enough to touch.
8. Gently remove the cloth, and hang your cloth to finish cooling (Fig 5).



Fig 4.

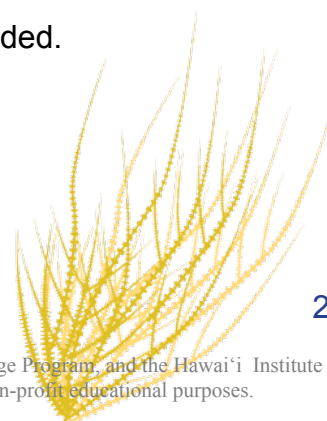


Fig 5.



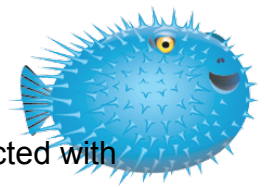
Part C: Engineer use for wraps

1. Determine if water will pass through a piece of cloth that does not have beeswax added.
2. Determine if water will pass through your piece of cloth that has beeswax added.
3. Experiment with methods to use your wrap to pack free-roaming snacks, like carrots or crackers.
 - a. Try making an envelope.
 - b. Try using heat from your hand to shape and secure your wrap in various positions and with various foods.
4. Use your wrap to secure a wet snack in a bowl.
5. Use rubber bands, string, or other materials to secure the wrap as needed.
6. Test the ability of your wrap to keep the liquid snack in the bowl.
7. Use soap and water to gently wash your wrap. Dry it with a towel.



Activity Questions

Answers will vary. Suggested responses, and ideas to bring up, are in red.



1. How did adding beeswax to the cotton change the way the material interacted with water?

It made the cotton water-tight. It made the cotton hydrophobic.

2. How would having too little beeswax affect your wrap?

It will prevent it from being water-tight. Watery foods will leak out, and other foods will dry out over long periods of time.

3. Why did the wrap stiffen as it cooled?

Beeswax melts at of 62 °C to 64 °C (144 °F to 147 °F). The beeswax melted with the heat of the iron and hardened as it cooled.

4. How did heating the wrap help you to make useful shapes?

Heating softens the wax and makes it easier to mold and easier to stick to itself (like when making an envelope).

5. What do you think might happen to your wrap if you wash it with extremely hot water?

Heating softens the wax and extreme heat may cause the wax to come off or become uneven. Note: the effect may also appear as “pilling,” with the wrap shedding wax as it cools. Review this with your students to ensure they keep their wraps in good shape.

6. Over time your wrap may crease or lose wax. How do you think you will be able to fix this?

Adding a small amount of wax and re-ironing.

7. What types of snacks or foods would not be well suited to the beeswax wrap?

Very watery foods (like yogurt in a bowl or frozen fruit when it defrosts) may leak. Wraps may be used successfully for these items if they are kept in a safe environment, like a fridge, but the wraps are hard to use for transporting this type of snack.

Wraps are also not a good choice for wrapping things that spoil easily, like uncooked meat, because it may be difficult to remove all of the bacteria, especially when washing with warm, not hot, water.

8. What physical properties would help to make your wrap work better?

It would help if the wraps were stretchy, and it would help if they were sticky. Some people add things like buttons/button holes to their wraps to create closures for their envelopes.

9. How will using your wrap to pack snacks help to reduce marine debris?

3 Rs—Reduce. Reuse. Recycle. These are three things we can do to reduce marine debris. Wraps are made of cotton and beeswax. Both of these materials are natural and biodegradable.

- Wraps can be used instead of plastic wrap, plastic bags, and aluminum foil. This reduces waste.
- Wraps are re-usable.
- Wraps can be made of recycled fabric.

10. How does your use of a beeswax wrap relate to Ocean Literacy Principle #6—that the ocean and humans are inextricably connected?

Answers will vary.

11. What other uses can you think of for beeswax wraps?

Wraps can be used to cap partially used drinks and to cover things, like playdough and slime, that you want to keep from drying out.

