

## Barnacle Wall

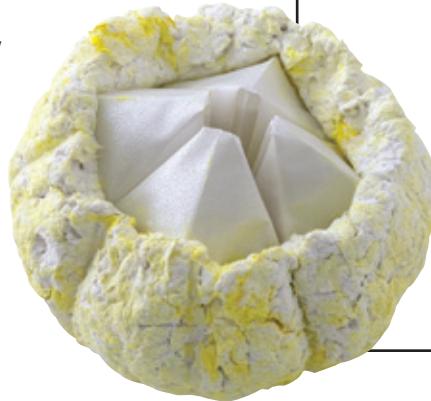
Make a colony of lightweight barnacles to encrust a classroom wall

### (art + science)

Question: What animal spends most of its life standing on its head and eating with its feet? Answer: The Barnacle! Barnacles stay in their hard, cone-like houses most of the time. When water covers them, however, they peek out and extend their six pairs of legs to filter food into their homes. Barnacles can be found on almost any surface that gets covered by water. They attach themselves to boats, rocks, shells, and even whales!

There are more than 1,000 different types of barnacle, also called "Cirripedia," Latin for "curl-footed." They look like they might be mollusks because of their shell-like covering, but they actually are crustaceans, related to lobsters, crabs, and shrimp. As larva (resembling tiny shrimp), they "swim" to search for a place to make their home by pulling themselves along with the sticky tips of their antennae. Their search could take hours or even days, as they allow the currents to take them from one spot to another. After finding the perfect spot, the barnacle attaches head-down using a brown glue that it excretes. This very strong glue remains long after the animal has died. In fact, dentists are studying the glue for its strong adhesive properties.

The barnacle secretes hard plates called chitin which totally encase them. These cones have six nearly fitted plates that form a circle around the crustacean. Four more plates form a "door" that the barnacle can open or close, depending on the tide. When the tide goes out, the barnacle closes up to conserve moisture. As the tide comes in, a muscle opens up these four plates, and the feathery legs of the barnacle sift the water for food. All six



### Materials (required)

Amaco® Claycrete™ Instant Papier Mâché, 5 lb (33118-1005); share one across class

Blick Studio® Disposable Palette Pads, 9" x 12", 50 sheets (03063-2023); share one pad across class

Blickrylic® Student Acrylics, Pint (00711-); share at least three colors across class

Snippy® Scissors, Blunt (57040-1005); share five pairs across class

Foam or plastic cup; one per student

Plastic wrap

### Optional Materials

Creativity Street® Stems, White, package of 100 (60923-1042)

Tri-Art® Art Noise® Academic Acrylics, Glow in the Dark, (01640-7090)

Grafix® Vellum (56892-)

Jacquard® Pearl-Ex® Pigments (27103-)



pairs of these feather-like feeding appendages, called cirri, are jointed and covered with hairs that trail through the water collecting plankton for food.

A barnacle sculpture is made easily with a pre-mixed papier mâché. Insert a carapace or mouth of folded vellum. Add legs if desired.

**GRADES 3-8** Note: Instructions and materials are based upon a class size of 24 students. Adjust as needed.

### Preparation

1. View some of the 1,000 different types of barnacles and study their anatomy.
2. Mix Claycrete with water in containers or gallon zip-lock bags.
3. Provide plastic or foam cups for shaping and drying of barnacles.

### Process

1. Mix Claycrete with water until it's a workable (but not too wet) consistency. (Mix approximately four cups of dry mix with 1-1/2 cups of water to make 2-3 barnacles.) Mix thoroughly by hand until there are very few lumps. This can be done in a gallon zip-lock bag or a plastic container.
2. If color is desired, acrylic paint, powdered pigment, or even glow-in-the dark paint can be added at this stage. The paint or pigment can be left partially mixed to create streaks and variation, or mixed thoroughly for even, all-over color.
3. Using a ball of mixed Claycrete about the size of an orange, press a thumb into the middle. While rotating the ball, create a larger and larger bowl-shaped interior, much like making a pinch pot. Continue until the barnacle shell has a hollow bowl shape. As an alternate forming method, push the ball of Claycrete down over the outside of a foam or plastic cup covered with plastic wrap. Set aside.
4. Now, if the barnacle is "living," make the four plates that open and close to feed. If making the empty barnacle shell only, no plates are needed. The same method used in the childhood game called "origami fortune teller" will be used to form the "mouth." Begin with a 5-7" square of palette paper, vellum, tracing paper, or paper that has been painted with pearlescent medium. Fold the square using the origami directions to make the mouth. Glue the four pointed "mouth plates" together for closed plates, or glue opposing pairs of points together for partially open plates.



*Step 1: Mix Claycrete with water to reach a dough-like consistency. Form the body of the barnacle using the "pinch pot" method.*



*Step 2: Create the carapace out of palette paper using an easy origami folding technique.*



*Step 3: Insert the mouth parts into the shell of the barnacle. Let dry and create a colony of barnacles!*

### **Origami Instructions:**

1. Start with a 5-7" square piece of palette paper or vellum paper, waxed side down.
2. Make two folds, one along the horizontal axis and one along the vertical axis. Crease well and unfold.
3. Fold each of the four outside corners in to meet at the center of the paper.
4. Flip paper over.
5. Again, fold all four corners in to the center.
6. Fold the square in half in each direction and open.
7. Push your fingers into each of the four open corner pockets and bring your fingers together to form a point. The four points that stick out can either be trimmed, or tucked into the finger pockets so that the carapace will fit into the barnacle's body.

### **National Core Arts Standards - Visual Arts**

#### **Creating**

Anchor Standard 2: Organize and develop artistic ideas and work.

#### **Connecting**

Anchor Standard 10: Synthesize and relate knowledge and personal experiences to make art.

5. Gently insert the origami paper form into the body of the barnacle. The outside corners of the paper piece may need to be trimmed to fit into the shell of the barnacle, or folded in toward the tips. Fold the Claycrete around the paper mouth plates to hold it in place. Add more Claycrete at the opening if needed. Add ridges to the outside shell of the barnacle by impressing the side of a pencil into the papier mâché.
6. Prop the finished barnacle inside a cup to dry, turning occasionally. Claycrete takes 1-2 days to dry, but the process can be speeded up by using a fan or the sun. Optional legs may be added by gluing craft stems (pipe cleaners) inside the carapace after the shell is dry.
7. When dry, combine the barnacles made in the classroom into a barnacle colony by gluing them to a sturdy board. For even more visual impact, cut a piece of board into a whale shape or shell shape for the barnacles to live on.

### **Options:**

1. For a colony of glowing barnacles, mix a teaspoon of glow-in-the-dark paint into the Claycrete mixture!
2. For a colony that is feeding, glue three pairs of pipe cleaner "legs" to the inside of the mouth parts.