

Steamboat Boiler Instructions

Introduction

This guide will help you create a pop pop boat powered by a simple steam engine without any moving parts.

Materials Needed:

Aluminum can
Plastic drinking straws
Cardboard
Silicone glue or blu-tack

Materials Needed:

Scissors
Ruler
Sharpie
Pliers (optional)
Scrap/work surface to assemble components (cardboard, paper, etc.)

Instructions:

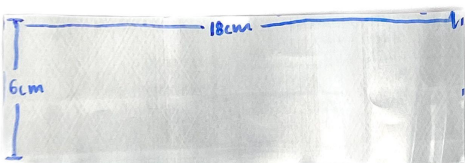
Step 1 Prepare the aluminum can



⚠ This portion of the activity involves cutting up an aluminum can. Make sure to warn students about safety, or pre-cut the aluminum if you're more comfortable with that.

- Take an empty, clean, dry, and non-damaged aluminum can and cut the top off with scissors along the widest part. The starting incision can be made with the tip of the scissors, or a box-cutter/knife. Make sure to be careful, the edges are very sharp!
- Once the top is off, cut down the can vertically, and then around the bottom at the widest part. You should be left with just the middle part of the can. Cut off any jagged edges to create a clean rectangle.

Step 2 Trim the aluminum can



- Trim the aluminum rectangle down to 6cm wide and 18cm long. Draw a vertical line down the middle of the trimmed rectangle.

Step 3



- Draw a 1 cm border around the sides of one half of the trimmed can. Cut along this 1 cm border (making the side with the border smaller than the other side).

Step 4 Fold boiler flaps to create air-tight seams



- Fold the rectangular can along the vertical line. Now the smaller side should be directly on top of the bigger side.
- Fold the side flaps over.

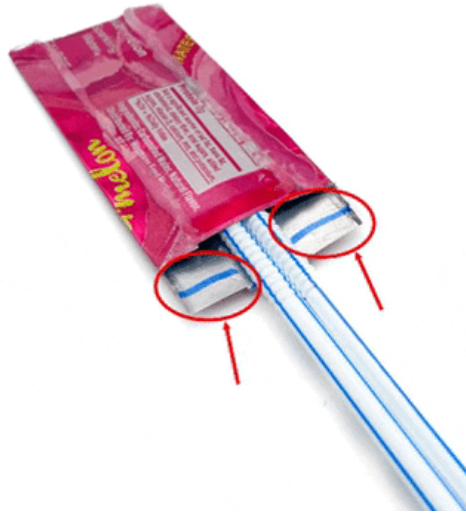
Step 5 Seal the folded seams with adhesive



- Using the adhesive of your choice (silicone or blu-tack), seal the flaps that you folded by placing your adhesive underneath and on top of the flap. Pliers can be used to press on the creases and seal the sides. (see yellow circles where adhesive was applied to seam)

If using silicone, let it set for at least 30 minutes.

Step 6 Install the straw



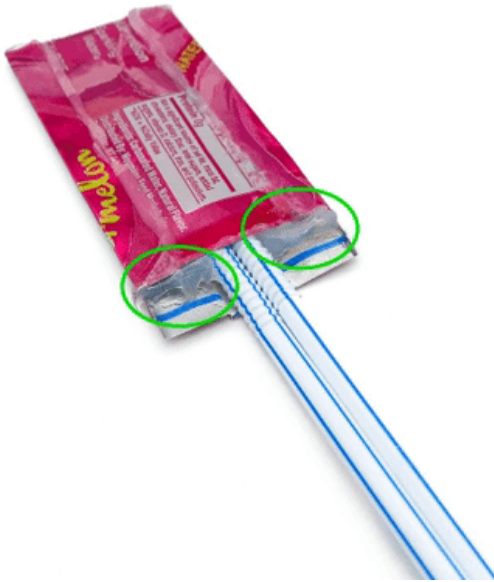
- After the silicone has dried, use a pen or other tool to open the unsealed side of your boiler.
Make sure to be careful of sharp edges!
- Put your two straws together and place them into the boiler with the side closer to the bend going in first. Mark on either side of the straws.

Step 7



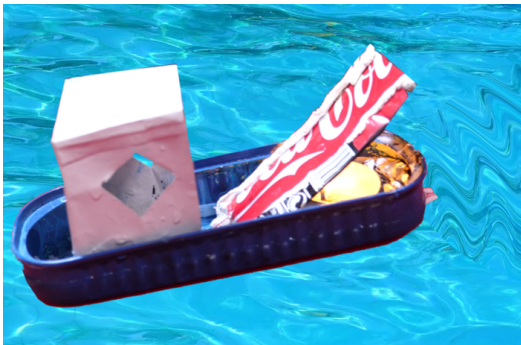
- Take your straws out and cut slits where you made your marks. Now, the middle part of the aluminum should be as wide as the two drinking straws.

Step 8 Seal around the straw outlet



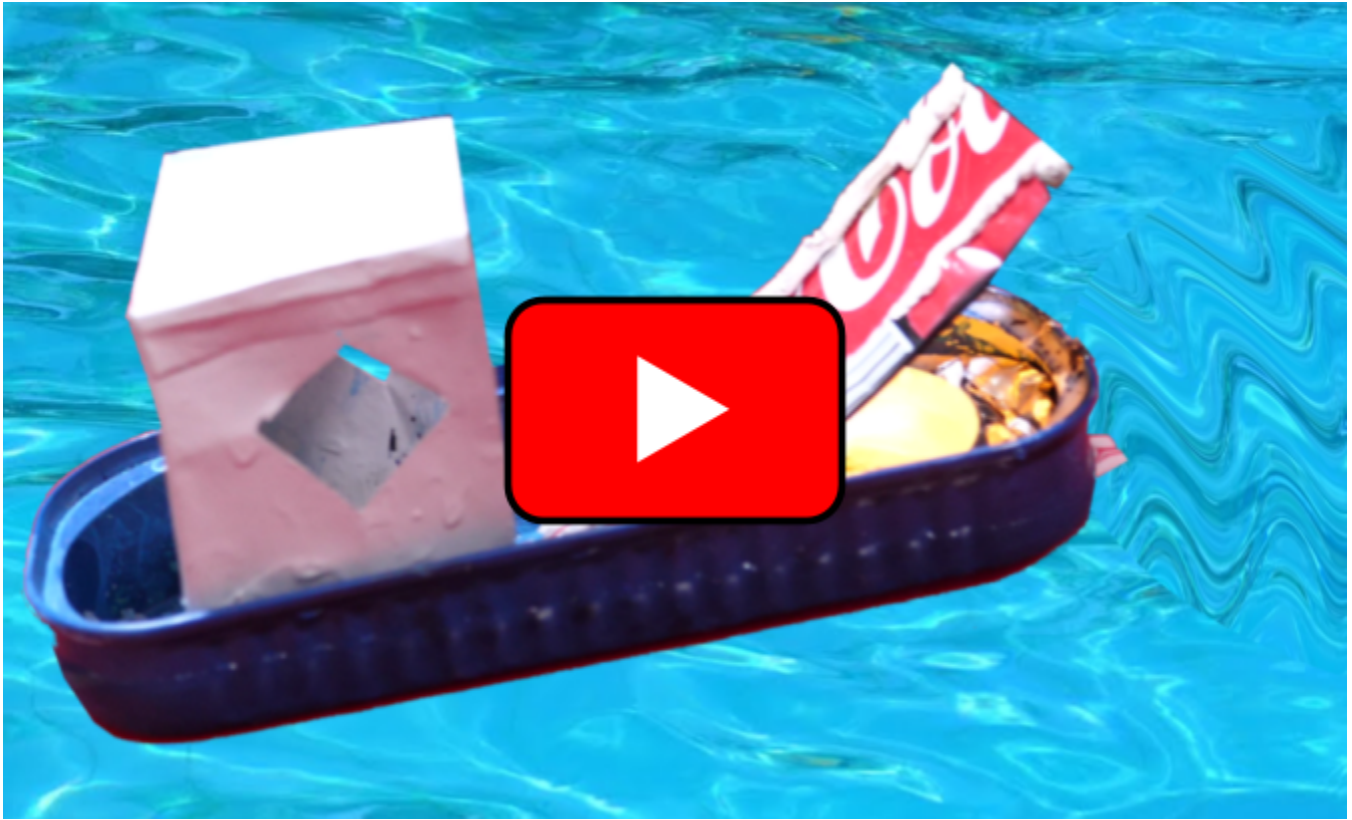
- Place some of the adhesive of your choice around the short end of the straw, right underneath the bendy part. The adhesive should cover both straws all the way around.
- Insert the straws back into the boiler. Place some more adhesive on either side of the straws to ensure a tight seal.
- Fold the flaps over on either side of the straws and seal them down with more adhesive. You can use pliers to crease the aluminum if needed. When looking at the boiler, there should be no gaps or holes.

Step 7 Test steam engine for air tightness



- Once finished, you can test the seal of the boiler by submerging it in water and blowing through the drinking straws. If bubbles appear, there are still gaps on the boiler that need to be sealed. If there are no bubbles, your boiler is ready for use!
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Video Instructions



▶ How to Make a Simple Pop Pop Boat

Additional Resources

[How to make a pop pop boat](#)