

How to make an inflatable cube

Beta instruction manual
produced by Tools for Action.

First Edition
November 2015. Paris.

Second Edition
March 2016.



Materials & Tools

- Mylar insulation foil (we use Parotec 150g/m² from the company Folnet), 150cm wide.
- Red plastic vinyl for the red line, minimum 40cm wide.
- Double stick carpet tape (5 cm wide)
- Velcro tape (5 cm wide)
- Gaffer tape
- Plastic bottles for the valve (we use the plastic containers of the local Berlin supermarket used to store cabbage with a bottleneck of 10 cm. The advantage of a wide bottleneck is that you can inflate and deflate the object faster.)
- Scissors
- Utility Knife
- Roller (not necessary but makes life easier)
- Ruler
- 12 V fan for inflating (we use the TMC Bilge Blower, available at Conrad Electronics)
- 12 V battery
- For the mass production of inflatable cubes, we created our own tools and templates, so it becomes easier to create the same shapes over and over again.



Step 1:
Remove the print.

Remove the print with acetone.

Tools: rags, gloves, acetone.



Step 2: Mark & Cut the Smaller Piece

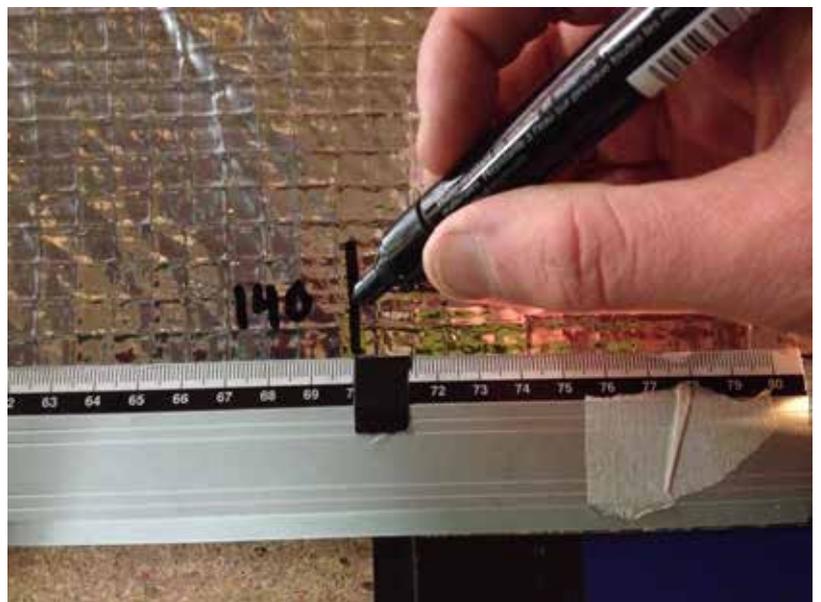
The piece, called the Smaller Piece, will end up being 140 x 420 cm.

Please follow these steps to cut it:

1. Roll the foil out on the table, silver side up.
2. Draw guide marks along the long edges. Mark every 70 cm and 140 cm, until you reach 420 cm. On the top edge, mark your guide marks 10 cm in towards the center. On the bottom edge, just mark along the bottom. Make your guide marks about 2cm long.
3. Cut the foil at the third 140 cm mark (420 cm).
4. Cut 10 cm off the top edge of the foil.
5. You should now have a piece of foil that is 140 x 420.

The reason we measure and cut this way –rather than cutting it all at once with a long tape measure –is because the material never lies flat and therefore is never accurate if you cut it all at once. Plus these guide marks are helpful for future steps. The 70 cm marks are used to mark where handles will be located. The 140 cm marks are used as guides when taping the cube together at the end.

Tools: markers, ruler, knife



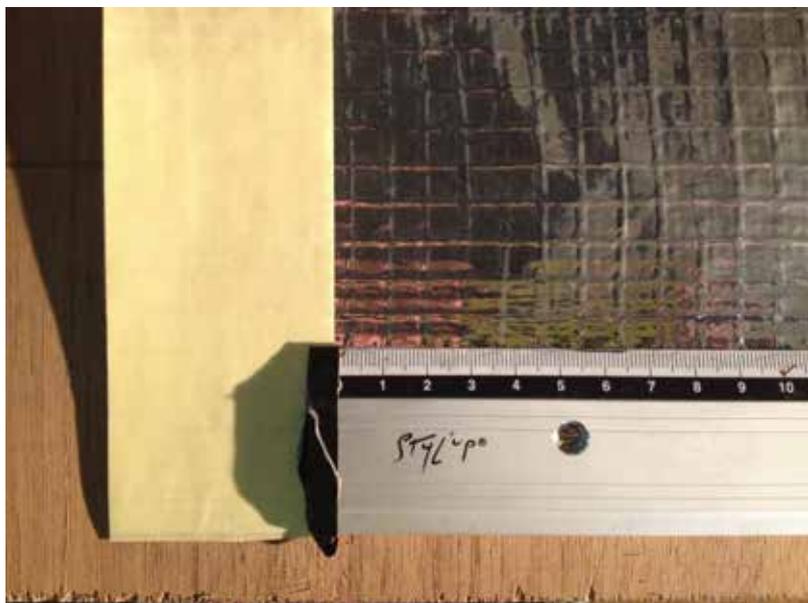
Step 3: Mark & Cut the Larger Piece

The piece, called the Larger Piece, will end up being 150 x 430 cm.

Please follow these steps to cut it:

1. Roll the foil out on the table, silver side up.
2. Put a strip of double stick tape along the short edge of the foil on the silver side. (Try to avoid putting the tape on and then pulling it off to readjust it. Each time it gets stuck down and ripped off it gets weaker. Its best if you can just stick it down correctly the first time.)
3. Draw guide marks along the long edges using the *inside edge* of the double stick tape as your zero point. Mark every 70 cm and 140 cm, until you reach 420 cm.
4. Put a piece of double stick tape along the second short edge on the silver side.
5. Cut the foil at 430 cm. This is the outer edge of the double stick tape.

Tools: markers, ruler, knife



Step 4: Double Stick Tape

Put double stick tape on the long edges of the Larger Piece, on the silver side.

1. Begin by peeling back the wax paper on the corner of the double stick tape you stuck on the short edge in Step 3.

2. Layer a new strip of tape on top.

3. Extend the new strip of tape all the way down the long edge.

4. When you reach the second short edge, peel back the back the wax paper on the corner of the double stick tape on that short edge, and layer the long strip on top.

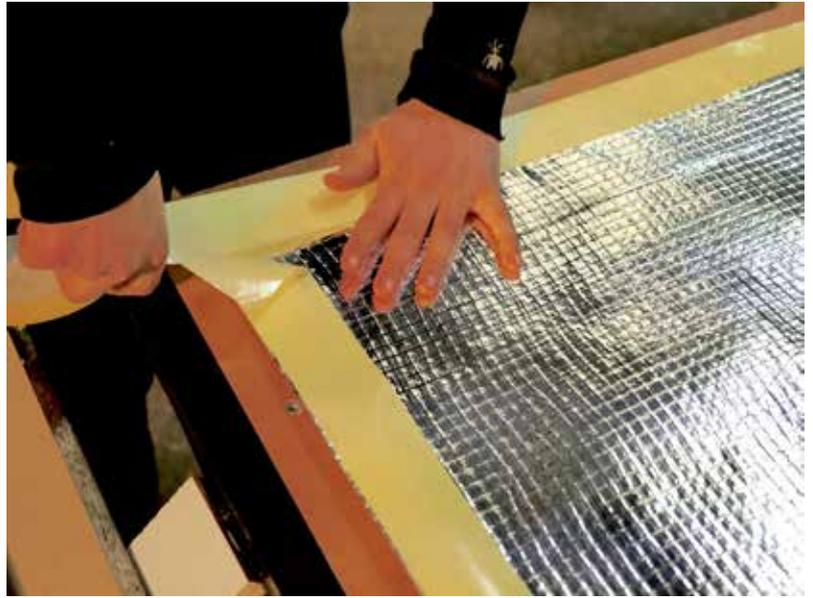
5. Cut off end of the tape with scissors.

6. Repeat on other side.

7. Roller over the top of the tape to remove air gaps.

Tools: double stick tape, roller, scissors.

**Please note: The photos with the red line on this step are from inflatable making in Paris 2015. We have since changed how and when the red line is adhered. Step 5 represents the updated version of how we attach the red line, or alternatively, a mirrored panel.*



Step 5: Red Line & Mirror

1. On the Smaller Piece, adhere strips of velcro along the center section (see pattern diagram). Use velcro that is 5 cm wide.
2 strips : 140 cm long
3 strips : 130cm long.
Roller over the velcro to secure it.

2. You can use this velcro to attach either: a red line across the front - or - a mirrored foil panel.

2A. RED LINE:

— Cut a strip of red foil 40cm wide x 140cm long.
— Adhere strips of velcro along the edges of the foil on the back side. You will need two strips of velcro that are 140 cm and 2 strips of velcro that are 30 cm.
— You now have a red line you can velcro across the top of the center section. We recommend waiting to attach it until right before or just after you inflate (Step 11) so it doesn't get wrinkled. It's a good idea to roller over the velcro edges after you attach it.

2B. MIRROR:

— Cut a piece of mirrored foil 140cm x140cm.
— Adhere strips of velcro along the edges of the foil on the back side. You will need two strips of velcro that are 140 cm and 2 strips of velcro that are 130 cm.
— You now have a mirrored foil panel you can velcro across the center section. We recommend waiting to attach it until right before or just after you inflate (Step 11) so it doesn't get wrinkled. It's a good idea to roller over the velcro edges after you attach it.



Tools: red tape, mirrored foil, knife, ruler, marker.

Step 6: Make the Handles

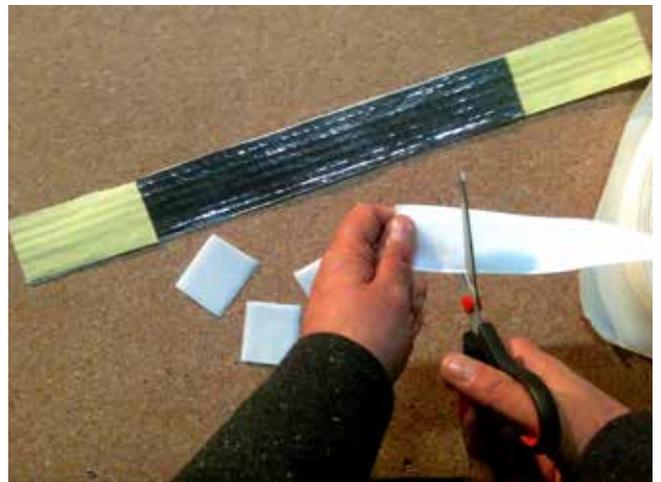
Make 10 handles. 8 with velcro and 2 with out.

1. Make the handles out of 2ply foil: Put a long piece of double stick tape along the white side of the foil, then fold the piece of foil over. This will make a strip of foil that is 2 pieces thick and silver on both sides. Cut the foil to 5 cm x 50 cm.

2. Put 10 cm of double stick tape on either edge. Roller to remove air bubbles.

3. Cut five 5 cm long strips of 4 cm wide velcro. Cut a mixture of “hook” and “loop” strips. Adhere the 5 velcro strips in the middle of the handle, alternating strips of hook and loop. This will make a 20 cm area of velcro in the middle of the handle. The handles of different cubes can be stuck together to make stacks of cubes. Attach the non velcro handles to the valve side of the cube.

Tools: velcro, double stick tape, roller, marker, scissors.



Step 7: Insert Handles

Stick the handles on to the foil.

1. Use the pattern diagram to mark the positions of the handles on the cube. (We made a template out of cardboard that was 25cm x 37.5cm and, lined the center up to the 70 cm guide marks, and then made marks around the corner of the template.)

2. Cut slits that are 5 cm long. Slide the double stick tape on handles through the slits and then stick them onto the white side of the foil. The velcro should be facing out.

3. Reinforce the front, inside and back of handles with gaffer tape.

4. Roll with roller.

Tools: marker, roller, ruler, knife.



Step 8: *Make the Valve*

Use the plastic lid enclosed in the package to make the valve for the inflatable. The valve is used to put air into the inflatable.

1. Cover the clear plastic part of the valve in double stick tape. Put vertical strips of the double stick tape on the *outside* of the plastic. Overlap the strips so to prevent air gaps. (To lay one strip on top of another, you have to peel back a little of the wax paper).

2. Cut vertical slits in the taped plastic. This allows the plastic to splay open. Cut every 1 - 2cm vertically, up to the wavy line in the plastic.

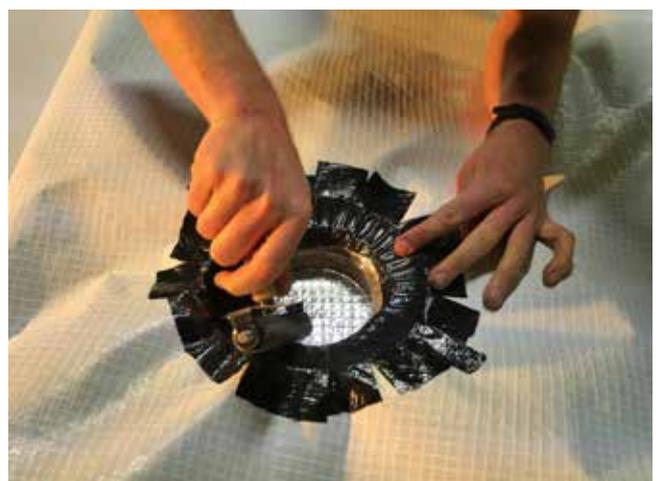
Tools: plastic lid, double stick tape, scissors.



Step 9: *Insert the Valve*

1. Trace the lid in the center of red line on the Larger Piece.
2. Cut out this circle to make a hole.
3. Flip over the Larger Piece, so the white side of foil is facing up.
4. Put the clear plastic opening through the hole.
5. Stick the double stick tape on to the white side of the foil.
6. Reinforce the inside with gaffer tape.
7. Roll with roller and smooth with fingers.
8. Flip the foil back over, so the silver side is facing up.
9. Put the red lid back on. The red lid should be on the silver side.

Tools: marker, scissors, gaffer tape.



Step 10: Put the Inflatable Together

Stick the inflatable together by attaching the double stick tape on Larger Piece to white side of the Smaller Piece.

1. Begin by attaching the Larger Piece to the Smaller Piece so the red lines connect.

2. Then attach each side, one by one. When you are folding a corner, you need to make an incision across the double stick tape to allow you to fold the corner. Reinforce above the incision with black gaffer tape on the white side.

It is helpful to begin at the corners and only peel back a little of the double stick tape at once. Try to make the 140 cm guide marks match up.

3. Roller the tape to remove air bubbles.

Tools: roller.



Step 11: Inflate

Use a fan with a hose attached or a vacuum cleaner on reverse to inflate the inflatable cube.

1. Stick the hose into the valve opening.
2. Wrap gaffer tape around the gap between the hose and the valve.
3. Inflate
4. Quickly remove gaffer and hose and screw on red lid.
5. Have fun playing with your inflatable!

Tools: fan or vacuum cleaner, hose, gaffer tape.

