

# Hexayurt playa checklist

## From Appropedia

**Hexayurt.com** (<http://hexayurt.com/>) - Project Home - Burning Man Construction - **Assembly** - Plans - Mass Evacuation - Rapid Deployment - Materials - Infrastructure - Informatics - Education Concept - Research Agenda - Press - Contact -

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**Newsflash: we now have fire test data on R-MAX / Tuff-R.** . Please read the Hexayurt Safety Information before building your hexayurt

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## A Step By Step List of Everything You Need To Do

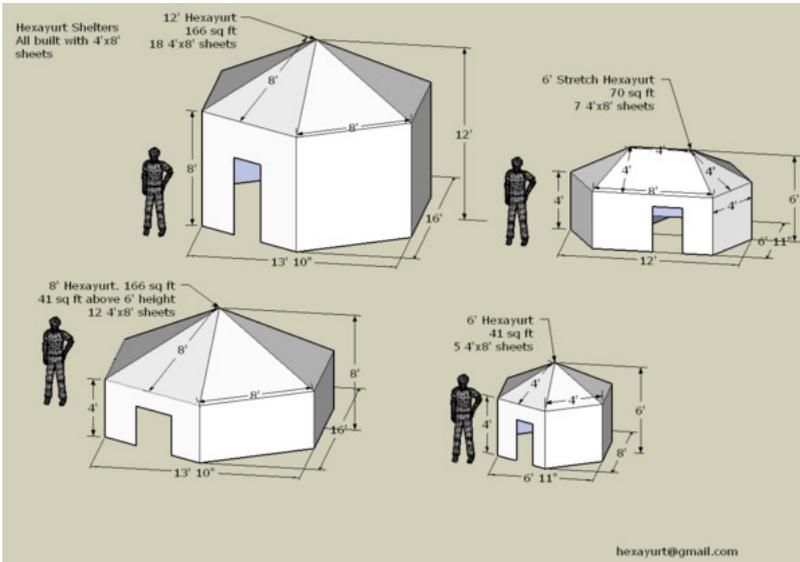
**These instructions are specifically for building an 8' Hexayurt for Burning Man.** They handle the technical aspects of the process very clearly, but in other climates and for long term use you should use other materials. Factors like interacting with dust and heat are also probably not going to apply to you, although they might for other desert building conditions. Note the building is as indicated in the diagram, without the higher doorway of the unit in the picture.

Building a Hexayurt on the playa this year is easy. You can get everything you need on one trip to a building supply store and one mail order.

This list is not a substitute for the videos. It's designed to be printed out and carried around, to the playa and to the hardware store, to make sure that in the rush you don't forget something important or do the steps in the wrong order.

It is very detailed because I know what the last minute crunch is like.

## Pictures and Plans



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## Decide

1. **Make the decision. Review the materials on the site, and if it's looking good, decide.**
2. If you need help deciding, go outside and draw a circle on the ground with a 8' radius. Your Hexayurt is just slightly smaller than this - it is the hexagon that fits inside of that circle. Big, isn't it?

## Mail Order Tape

1. **Mail Order 240 yards bidirectional filament tape** such as 3M 8959 ([http://products3.3m.com/catalog/us/en001/manufacturing\\_industry/packaging/node\\_GSX56YFN5Kbc](http://products3.3m.com/catalog/us/en001/manufacturing_industry/packaging/node_GSX56YFN5Kbc) "Extreme Applications" packaging tape, 6" wide. You can also use this tape calculator spreadsheet ([https://spreadsheets2.google.com/ccc?key=tXA4MICQeVYE\\_X3biU04Vig#gid=0](https://spreadsheets2.google.com/ccc?key=tXA4MICQeVYE_X3biU04Vig#gid=0)) to figure out exactly how much you need. This is not a standard width. 5" tape is perfectly good. In a pinch you can use 3" but needs to be handled carefully. The seams must be very precise. You can consult the tape spreadsheet (see the Additional Resources section of the main Hexayurt playa to understand why we need this much tape.
  - <http://hexayurttape.com/> know what you want the tape for and sell a good product at fair prices.
  - Office superstores like Staples carry 3" filament tape (strand tape) which will do in a pinch if used liberally.
  - One supplier is Tapes Unlimited, 1245 Hartrey Ave, Evanston, IL (847) 866-6060. They do not have a web site. But they know Hexayurts and are very helpful.
  - <http://penmar-industries.com/specialtytapes.html#sptp> Penmar Industries also carries a bidirectional filament tape in 5" which looks perfectly serviceable although I have not used it personally.
  - <http://thetapeworks.com/> also has a 6" bidirectional filament tape available, although possibly not in stock.
2. Check with 3M (<http://mmm.com/>) about direct ordering because sometimes Tapes Unlimited sells out.

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3. Total cost: \$130 with shipping, perhaps?

I'm a burner in search of these products, not part of the originators. But I have done research into this project... As of 7/3/08 I contacted these listed companies and they did not have the 6" wide 8959 tape. Also, they were not very helpful in my pursuit of this tape or one like it. After contacting 3M directly (they were helpful) and receiving info about local companies (near Hayward, CA) who may sell this product, only a couple of them were willing to send me a quote. They require a minimum purchase as well, 8 rolls to a box.

After looking around on the internet I was able to find this site: <http://3m.hillas.com/c-3287-3m-scotch-bi-directional-filament-tape-8959.aspx?PageNo=2> The tape can be bought one roll at a time, but it is a custom order product, so give them at least 10 or so business days to deliver. It is not cheap either. We plan on building a hexayurt for Burning Man, and even with the tape costing more than planned, it is still the cheapest alternative available to us. If anyone has had better luck at finding a lower price, please contact me starjewel47 at yahoo dot com. Thanks!

~~Check out JVCC 761; a similar tape that seems to exceed the 3M 8959 specs:~~

~~<http://www.findtape.com/product155/JVCC-761-Industrial-Grade-Filament-Strapping-Tape.aspx?tid=3&info=Permacel+P-162+High+Tensile+Reinforced+Strapping+Tape> I think it's cheaper too...~~

I just placed an order and this is not the Bidirectional tape the JVCC 762-BD is - Here is the link - <http://www.findtape.com/product328/JVCC-762-BD-Bi-Directional-Filament-Strapping-Tape.aspx> I purchased 6" and some 4" so I could see if I could use the 4" and I will let you know the results once I get it and have tested it.

<http://taperite.com> are aware of the Hexayurt Project and have **excellent** tape. Suggest you start here.

Mentioned in <http://eplaya.burningman.com/viewtopic.php?t=26890&postdays=0&postorder=asc&start=90> :

[http://www.goodbuyguys.com/catalog/product\\_info.php/products\\_id/742](http://www.goodbuyguys.com/catalog/product_info.php/products_id/742) (\$26/roll July 2009)

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Aug 1: GoodBuyGuys have said their tape isn't good for hexayurts:

<http://buygafferstape.com/blogs/uncategorized/2008/07/11/hurt-by-a-hexayurt/>

Aug 3, 2009: Please note that the above blog is dated 7/11/08. I spoke to goodbuyguys and they said that the tape they advertise as "good for hexayurts" is fine for playa use (see link to tape above)

European source for Hexayurt Tape: Eurobands <http://eurobandstapes.eu> EURO LVB 16165  
TRANSPARENT 16 EUR a roll roughly.

## Building Supply Run

**Building Supply Store.** You will need.

1. 12 sheets (13 if you want a spare) of 1" thick Tuff-R ([http://building.dow.com/na/res-us/products/insulation/tuff\\_r.htm](http://building.dow.com/na/res-us/products/insulation/tuff_r.htm)) , Super-Tuff-R ([http://building.dow.com/na/res-us/products/insulation/super\\_tuff\\_r.htm](http://building.dow.com/na/res-us/products/insulation/super_tuff_r.htm)) or Thermax (<http://building.dow.com/na/res-us/products/thermax/index.htm>) . Other manufacturers make foil covered polyisocyanurate insulation boards too. Only one side (the outside face) has to be foil. Do not use the bendy bright pink or blue polystyrene boards you see - they are too flexible and smell bad.
2. 12 large tent pegs. You could use rebar, or I have also seen 17" bright orange plastic pegs which work very nicely.
3. A heavy duty snap-blade craft knife to cut the panels, and one packet of extra blades. You should be able to extend the blade at least two inches.
4. Two or three light duty knives for cutting tape when you are assembling the buildings.
5. A 16'x20' tarp. It can be 14' x 16' but 16'x20' is the closest standard size.
6. 100 feet of rope.
7. A pair of gloves, safety goggles, and a dust mask or N95 mask. You are a Burner. You have these things already.
8. 12 6" long pieces of PVC pipe for the tape anchors. You can find things like this in the plumbing

section, or you can buy a pipe and cut it with a hack saw.

9. Bubble wrap or foam pipe insulation to pad the ends of your tent pegs.
- L0. Six rolls of 3" or wider foil tape. You will use this to cover exposed filament tape to reduce fire risk (see the Hexayurt Safety Information
- L1. (optional) Mallet to drive the pegs.
- L2. (optional) A 10 ft very straight 1"x4" or other device you can use as a ruler.
- L3. (optional) Plastic sheeting for windows.
- L4. (optional) Furnace filters to tape over vents for dust-free ventilation.
- L5. (optional), but recommended) a one gallon pump sprayer with a misting feature.

Total cost: under \$300, even in San Francisco.

## Make the Hexayurt at home

### At home, prepare the panels.

1. Take the six panels which will be used for the roof cone.
2. Draw a diagonal line, left to right, corner to corner, on three of the panels using the ruler or another panel as a guide.
3. Draw a diagonal line, right to left, on another three panels.
4. Put on your gloves, mask and goggles. This protects you from little bits of fiberglass from the panels.
5. Using the snap-blade craft knife, extended about two inches, cut the panels. Expect to change the blade every panel or so, and change the blade as soon as you feel the knife tearing the material rather than cutting cleanly.
6. You now have 12 right angle triangles.
7. Tape the edges. The best way of doing this is to start the tape about 6" from the point of the triangle, and then have one person run the tape down the edge of the triangle while another person holds the triangle in place. Once the tape is all the way down the edge, have a third person fold the tape down on to the sides of the board smoothly. Then rotate the board and do the next side. This comes easily

enough if you think "wrapping presents."

8. Now do the same for the 6 boards you are using for the walls.
9. You have now completed the first stage of panel preparation.
10. Do a test assembly. Instructions are below. You will regret skipping this phase. You do not need to fully tape everything, just a six inch blob top and bottom of each board rather than fully taping the seams. Get a sense of the process (full instructions below.)
11. Practice making tape anchors. Instructions are below.
12. You will notice there is no door, nor are their windows. You should cut a door now. The strongest door is two feet wide, cut one foot from the end of a wall. It should go from the ground to about six inches from the top of the wall. Cut the section out completely, and tape all exposed edges. If the door doesn't quite fit now, you can crush the door flap a little by banging it on the ground (really.) Then tape the top edge of the door into a hinge, like a cat flap. This is not the most convenient or aesthetically pleasing door. See the "Doors and Windows" section for other ideas.
13. Tape the door back into place in the panel in such a way that you can cut it open from the outside. If you do not do this, the panel may break above the door in transit or construction.
14. Total time: with three people, probably three hours including the test assembly.

## Transport the Hexayurt

### Transport arrangements.

1. Put three wall panels on the spread-out tarp. Stack six roof panels on one side, and six on the other, forming a neat 4' x 8' stack. Put the three remaining wall panels on top, and wrap the bundle **very** tightly in the tarp. One person lost their panel materials on a roof-rack because the force and the vibration wrecked the panels. I think they were directly exposed to the full force of the air.
2. The entire package is an easy carry for two people. It weighs significantly under 100 lbs. It is quite large.

# Playa Assembly Instructions

## Set Up

### On the Playa.

1. General procedures
  1. Never peel tape back off the boards carelessly, because you can rip the foil right off the boards.
  2. Never cut the board material on the playa because it generates moop.
  3. Careful juggling sharp knives and heavy rolls of tape!
  4. Now we have dust and heat to consider. Plan on working when dust and heat are minimized - early morning is the best time to do construction. If you arrive in the day, you can try the late afternoon, before dusk. Start early or you will be racing against darkness, which is no fun.
2. People. Plan on a core team of three to five people. You will need an additional half a dozen for about fifteen minutes when you lift the roof cone on to the walls.
3. **Start with a little magic.** Visualize clearly what you are about to build. This helps you do the construction efficiently. The clear picture in your mind helps you work correctly and coordinate with your helpers.
4. Draw a 8' radius hexagon on the ground. A little high school geometry helps!
  1. Put a tent peg in the ground at the center of the Hexayurt space.
  2. Take an 8' piece of string, and tie it to the tent peg.
  3. Tie the other end to another tent peg, and draw a circle in the Playa. This is the edge of your hexayurt.
  4. Now pull out the central tent peg. You have two tent pegs separated by 8' of string.
  5. Push one into the playa at the edge of the circle. This is where one corner of your Hexayurt will go.
  6. Have somebody take the other peg and walk across the circle until the string is tight and they are also at the edge of the circle. Have them push the peg into the ground there. Together you are



3. Now take the 12" piece of tape and stick six inches of it to the sticky side of the tape just above the pipe. This sticky-to-sticky connection is very strong.
4. Then take the remaining length of the 12" piece of tape and wrap it around the pipe, so that the pipe cannot unroll from the tape.
5. You need to see this done.
5. Position the tape anchor about six inches below the ground edge of an isosceles triangle, where the split in the two boards is. It is still attached to the roll of tape!
6. Have one person roll the tape about half way up the panels starting from the tape anchor.
7. A second person stands by the prop and reaches down to take the tape from the first person, and rolls the tape all the way to the top of the boards.
8. Make sure there is a gap between at the apex of the roof cone before going further. Pause, because this is important.
  - **VIDEO: mind the gap!**  
**([http://ia341215.us.archive.org/2/items/Hexayurt\\_Clips\\_From\\_Combined\\_Endavor/H](http://ia341215.us.archive.org/2/items/Hexayurt_Clips_From_Combined_Endavor/H))**
1. At the point of the roof cone, where you are about to tape, there must be a gap. There is no gap between the two right-angle triangles making one roof triangle. That is not where we want the gap. We want the gap at the apex of the roof cone, between the point of the two triangles.
2. If this gap is not left, then as you get to the end of the roof cone process, it will become impossible to fit the pieces correctly. It is like trying to jam 105% into a pie chart - the pieces seem too big for the allotted gaps. If you wind up in this position, you will probably wind up trimming one of the boards and that is frustrating.
3. So how big should the gap be? About an inch and a half between the closest points. Possibly two inches. Too much is definitely better than too little.
4. The prop, however, won't hold the pieces in quite that alignment. Perhaps wad up a T-shirt and put it on top of the prop? I usually just fudge this, but I think making a tool by padding the prop is likely a better idea.
9. Now, gap assured, roll the tape down the other side. The person by the prop will roll it about half way, and a third person will take it down to the ground edge.
10. At that place, make another tape anchor. You must not cut the tape in the wrong place.





- cloth and dry them before attempting to tape them to things.
2. Have two people take one panel each and hold them in position while a third person handles the tape.
  3. Put the walls roughly in position over the hexagon you drew. This helps tape the angle correctly. Also the angle that the boards make to each other stops the walls you have taped already falling over.
  4. Tape all six of the walls into shape, but leave one connection open. It can be very useful to be able to get in and out of the walls quickly.

## Put the Roof Cone on the Walls

**This bit is pretty easy too!**

### ■ **VIDEO: joining the roof to the walls.**

([http://www.archive.org/download/Hexayurt\\_Clips\\_From\\_Combined\\_Endavor/Folding\\_H](http://www.archive.org/download/Hexayurt_Clips_From_Combined_Endavor/Folding_H)

1. First, find some helpers. 9 is a good number.
2. You want six people to lift the roof cone. Each should stand in the middle of a wall with their hands spread as wide as possible, and they should lift in a coordinated fashion.
3. If the walls are positioned just outside of the roof cone, around it, the lifters should now step under the roof cone and lower it close to wall height.
4. If the walls are beside the roof cone, the lifters should carry the roof cone over the walls.
5. Either way, the hustlers should now position the walls under the roof cone.
6. Before you start to tape, get things lined up. Make sure that all the corners, all the way around, are about right.
7. Now tape. Start in the middle of a wall, and put the end of the tape over the seam between roof and wall. This part is pure magic! You run the tape all the way around the building, a single unbroken strand that acts just like the tension ring in a yurt. It's also fun because the tape makes a nice noise as you zoom it out along each side, and people get very excited.

8. When you get to a tape anchor, you have a choice. Over or under? I've tried it both ways and I can't figure out which is best, so I'm going to suggest you go over the tape which holds the tape anchors, so that the actual plastic tubes stick out just under the tension ring. Going under the tape anchors is fine too, however.
9. Now cut the tape that is currently holding the door closed and let your friends in/out.

## **Tie it to the Playa**

### **Almost done! Almost Done!**

1. The Hexayurt sits on the tarp, and is not yet guyed down.
2. Go inside of the Hexayurt and tape the joint between the wall and the floor. If you are feeling fussy, do this inside and out. This is your dust lock and really makes life much more pleasant.
3. Now cut away the excess tarp, or just leave it. This may depend on your siting.
4. Now drive in your tent pegs. They should be pretty close to the bottom of the yurt. Make sure to pad the ends and mark the guy lines with something easy to see at night.
5. Run the rope through the plastic tubes at in each tape anchor.
6. Guy that puppy down. I, personally, favor the "trucker's hitch (<http://www.youtube.com/watch?v=w9YVoZMndbc>) " to get a good, tight guy line.
7. Basically, tie the rope through the plastic pipe, and run the free end down through the tent peg and back up. Put it through the triangle made where the rope is tied through the pipe, and pull until it is tight enough for your liking. Then tie it off just below the triangle.

## **Final Finish Work**

1. Tape your furnace filters to the outside of the hexayurt, over your vents, so that if you bang the dust off them it falls on the outside of the building, not the inside.
2. Put the foil tape over your exposed filament tape seams to protect them from fire. This is really important. In 2009 we'll have a tape which combines the filament tape and the foil tape in a single

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product, but it is not here yet.

3. **You are done.**

Congratulations!

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