

Illuminated Felt Hats



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You will need:

- At least 4 oz of white or ivory wool roving/top
- Castile soap (grated bar soap or liquid)
- Warm water and a microwavable water vessel
- Shelf grip mat, bubble wrap, or tulle (about 24" x 45")
- Foam wrap for resist
- Ball brause, watering can, or mason jar with holes poked in lid
- Waterproof work surface or large boot tray
- Old towels
- Battery-powered LED lights

Optional but helpful

- A bowl, container, or a pot close to your hat size
- Rust-proof straight pins, clothes pins, binder clips
- Invisible thread and needle
- Palm washboard

See the notes at the end for more advice on supplies!



Design

Start by sketching your design. Remember that for inverted shapes like craters, you'll need to draw bumps.

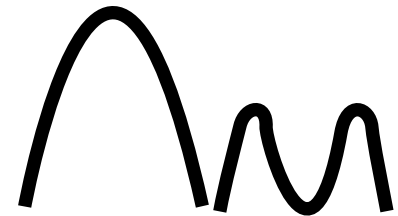
Measure the circumference of your head where you want the hat to sit, and look in a mirror to measure how tall you want the hat to be, and how wide you want the brim (if you want a brim).

Calculate:

Band width = Finished circumference divided by 2

Brim width = As estimated looking the mirror with tape measure

Height = Desired distance from band to top of finished hat



A bump becomes a crater!

We need to 30% to these numbers to allow for the average shrinkage that happens during wet felting. Take your numbers, multiply each by .3, then add that number to the original value.

Ex.: 22" head circumference. $22" \div 2 = 11"$ band width. $11" \times .3 = 3.3"$ shrinkage. $11 + 3.3" = 14.3"$
I always round up to half inches, so the measurement for our pattern would be **14.5"**

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Patterning

Get a big sheet of paper (white paper freezer wrap works well!). Use a ruler and your measurements to draw your pattern. Remember that the pattern will look funny, because we are accounting for the shrinking of the wool during felting! When you're happy with my pattern, go over it with Sharpie to make it easy to trace.

Lay your foam wrap on top of your pattern and trace on the foam with Sharpie. Do NOT use any marker or pen which is not waterproof, as the ink can bleed on your hat! Cut out your foam sheet resist. If your design had any sharp corners, curve them slightly. Sharp edges can poke through the wool during felting.

Laying Out

Prepare for wet felting. You can play around and find a setup that works for you, but here's mine: I take my boot tray and put it on my table. I lay a rectangle of Con-tact shelf liner inside the tray. On top of that I put a piece of scrap cardboard/matboard larger than my resist. I get towels, my soap, my water vessel, my ball brause, and my palm washboard out, and set them near my table.

Lay your resist down on top of the cardboard. Take the roving and pull out one staple at a time to create shingles of fleece running in the same direction with a slight overlap, covering the foam resist completely. (There are two common methods of laying down fiber, and you can see both of them in the video for this project.) The fleece should extend slightly beyond the borders of the foam resist, an inch or less.

Add another layer of fleece running perpendicular to the first, again covering the entire resist. (For non-illuminated felt hats I would usually do 3 or even 4 fine layers of fleece, but to get the best "glow" from our hats, thinner is better, and 2 layers will do!)

Use the cardboard to help you flip over the resist and the wool together. Set the cardboard aside. Set the resist aside, too, and move the rest of your roving where it won't get wet. Get some warm water in your microwaveable vessel and add your soap.

Sprinkle water (with the brause, watering can, etc.) in the middle of the wool you've laid out and work your way outward, trying to leave the edges dry.

Put the resist back on top of the wool. Now carefully fold the extra wool over the edge of the resist and sprinkle it with the soapy water to make it lay down and stick. Stay as tight to the edge of the resist as you can, working all the way around the foam shape.

Now dry your hands thoroughly! Get your roving. Be careful to keep it dry while you're working. Start just inside the edge where you have folded over the wool from the other side (so that we aren't making a 4-layer thick seam at the edge!) and put down 2 perpendicular layers of wool roving to complete the layout. Check for thin/thick spots.



Felting

Microwave your soapy water if needed to make sure it's warm, and then wet down your newest layers of wool. Take an extra piece of your foam sheet material or any smooth plastic and use that to press the wool down, saturating the fiber.

Cover the soon-to-be hat shape with the grippy shelf liner (or bubble wrap, or tulle). Start running your flat palms gently over the surface. They should glide easily, so add more soap if they don't. Rub for a few minutes, then flip the whole sandwich (mat-hat-mat) over. Rub this side gently for a few minutes too. Then pull back the top layer and check to make sure the edges around the resist are clean and that the fiber isn't shifting. You can adjust anything at this point as necessary, just be gentle. Put the top layer of mat back on

Time to roll! Roll the entire sandwiched project up. It helps to roll around a core like a pool noodle, or another rolled up grip mat. Roll the bundle back and forth, back and forth. I usually count 100 rolls. Then unroll, open the sandwich, and rotate the hat 90 degrees. Roll up again, and roll another 100 times. Unroll, flip the hat over, roll it back up, and roll 100 more times. Last time! Unroll, rotate the hat 90 degrees, roll it back up, and roll 100 times again.

Unroll and take a look at your hat. It should have skinned pretty well, with the fiber coming together enough that you can pinch it and the whole fabric will lift, not individual fibers. If not, you can roll some more, or you can do some more rubbing and massaging. When your hat can pass the pinch test, you can begin fulling.

Fulling

You can cut out your resist now. I like to poke through the bottom edge with small scissors, and then use big scissors to make a nice even cut. Pull out the resist and set it aside. Turn the hat inside out and spend a little time massaging or using the palm washboard on this side. Focus some friction on the seam, which may be a little bumpy if our layout wasn't perfect. You can also gently stretch areas that are too thick.

Start throwing the hat, first gently. Pick it up, and let it fall back on to the table. After a few minutes, you can actually pick it up, ball it up, and throw it onto the table. This really helps bring the felt together and accelerates shrinkage. Check your measurements periodically to make sure you don't shrink it more than you want to! You can also roll the hat or just the edges of the brim up and spot-shrink areas that need it.

Rinsing

When your hat has reached the correct measurements, it's time to rinse! Take your hat to the sink and squeeze and rinse until all the soap is gone. You can do a little extra fulling if needed by alternating hot and cold water, but finish with cold water to close the cuticle on the wool and encourage a tight, felted fabric.

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Shaping

This is the fun part! Start with the bowl/container/pot you found that is close to your head measurement, and start shaping your hat around it. Stretch it a little if needed, or rub it where you need it to shrink a little more. The wet wool is almost like clay, You can pinch and pull to create ridges and bumps. Form your craters, if you built any into your hat.

Take the hat off your makeshift hat form and stuff it with crumpled plastic bags. Check the measurements again, making sure you stuff until it's close to your original band measurement. Continue shaping. When you have the look you want, use pins and clips to secure the forms. The felt will keep the shape as it dries. When you are completely satisfied, set the stuffed hat on a towel, and leave to dry completely. This could take overnight, or even longer in places with high humidity.

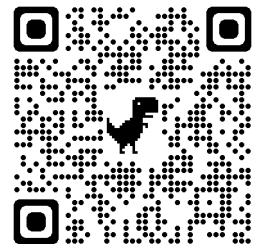
Finishing

For our illuminated hat, we need lights! Options include LED tea lights, or delicate LED fairy lights with waterproof battery packs. There are lots of fancier LEDs available just for this sort of application too, if you want to go for it. I like the fairy lights, which create a "hat full of stars" kind of look. The ones I used for this tutorial came with a remote, have 13 color options, and can fade, strobe, twinkle, etc. They use 3 AA batteries and last a good long while.

You can simply stuff the lights in your hat and be done, but I like to anchor the lights in a few key places to keep them more evenly distributed. Invisible thread is great, as it won't block the light. A few sewn tacks can guide the wire from the lights toward the side or back of your head, where you can hide it with your hair or clothing. You're done! Good work!

Notes

- I recommend white wool because all other colors will just look gray/brown when illuminated. Choose colored lights instead of colored wool.
- Corriedale, BFL, and Merino roving all work well. But almost all wool will felt, some just takes more elbow grease and time. AVOID "Superwash" or "Washable" roving, which has been chemically treated to reduce shrinkage for people spinning wool for things like sweaters. It will not felt!
- I prefer working with bars of 100% olive oil soap. I grate it and keep it in a container. It dissolves easily in warm water and is gentle on the skin.
- Questions? Comments? Send me an email at sarah@carrarts.com and I'll try to help. Also check out the workshops I offer, in person and via ZOOM, and follow me on Instagram @carrarts.



Scan the code
to watch the video!



Sourcing Suppliers

Some of these are affiliate links. I may get a small commission if you purchase your supplies through these links, at no additional cost to you. This helps me keep making more creative projects to share! Thank you!

[Color Changing LED Fairy Lights](#)

These are so fun and will let you change to color of your hat with the push of a button! You want waterproof lights if you will be wearing your hat outdoors.

[Corriedale](#) and [Merino White Wool Roving](#)

Sometimes also available at local yard stores, or order from the Woolery. I advise against ordering fiber from Amazon, as the quality/origin can be questionable.

[Olive Oil Soap](#)

The best, IMO– but a pure liquid castile soap like Dr. Bronners or a natural, gentle dish soap can work, too. Most felters have a favorite soap, I like Kiss my Face or À la Maison.

[Extra Large Boot Tray](#)

If you need to contain large, wet messes in your working space, this is the thing. A smaller boot tray will work for smaller projects and smaller spaces, of course.

[Con-tact Grip Mat Shelf Liner](#)

I use this instead of bubble wrap, I like that the water can move through it, but it's still nubby to apply extra friction to the felt. I order this to get wider width rolls that fit my giant boot tray.

[Foam Sheet for Resist](#)

I ordered some bulk packs of canvasses from Michaels once and they were wrapped in enough of this stuff to last me a lifetime, but you can buy it if you need to! Any mailbox/shipping store will likely have some in stock, too. If you are making larger objects and don't want to tape together pieces, you can use 4 ft wide [flooring underlayment](#)!

[Microwavable Bowl](#)

My sink is not in my studio space, which means a lot of back and forth carrying warm and hot water. I like this bowl because of its handle. It also doubles as a hat form!

[Ball Brause](#)

Such a handy little gadget! One of the few things on earth you can't order from Amazon! My understanding is they all come from Germany. The link is for my favorite fiber shop, The Woolery.

[Palm Washboard](#)

A beautiful wooden tool handmade in the US, and so helpful for felting. Link to the manufacturer's site.