

Microwave Heating Bags (Corn Bags)

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Making them safe for patient use.

When I first heard about making microwave heating bags with corn or other fillers, I asked people on the embroidery lists for personal experiences. I wanted to use them for my patients at the hospital, because it gets very cold in my unit, especially at night, no matter what time of year. Being the physical rehab unit, our patients have lots of sore achy muscles in addition to the healing from their knee and hip surgeries. Heating pads are good for warming arms to help a vein pop up better before starting IVs, or to warm cold fingers when you need to check an oxygen level. Breastfeeding moms can use them for sore breasts. They're wonderful in bed for cold feet, or to snuggle against your chest. They help ease the pain of fibromyalgia and arthritis. Cats and dogs like to lie on them. You can take one in your car as you warm it up on those chilly winter mornings. As an added bonus, corn bags can be used in a cooler or lunch bag to help keep food warm for an after-church dinner. Just heat, and place the food container on top. They can be used as a bun warmer on your table. You could make a little quilted pad in the shape of a house, fill it with corn, heat it up, and call it a house warming gift. Corn bags can also be frozen, and used as ice packs for food or injuries. Make a couple of long tubes, freeze them, and use them for computer wrist rests if you have carpal tunnel syndrome. Keep one in the freezer while you use the other one. Freeze one for the dog for the car in the summertime.

When I first brought the idea up at work, I was almost certain they'd refuse to let us use them, because of the risk of burns and infection control issues. I was asked to gather information for the safety committee, and they wanted a heating bag to take with them. I spent the next week scouring the internet for information, instructions, and warnings, and printed out whatever I could find. They brought my information to their meeting, and I'm excited to announce that August 28, 2002, they approved the corn bags for use at Tulsa Regional Medical Center! They gave us certain stipulations to make them safer, but they agreed to allow us to use them on our patients! Here's the information I learned and presented to them:

Types of fillers and a comparison of heating pads:

Different types of fillers are used, but I chose deer corn, which is also called feed corn or field corn. Corn is a larger grain than rice, wheat, or flax; so it can hold its heat longer, yet remain moldable around arms and legs. It's not the same as popcorn, which is sealed closed, builds up steam, and bursts open. Feed corn is naturally cracked open at the bottom where it comes loose from the cob, and will not pop open when heated. For the corn bags, you should use whole corn, not cracked corn, as the cracked corn will dry out too quickly. Wheat carried warnings from several websites, including a couple of fire station's websites, warning of the danger of fires and explosions from the small grains drying out. They suggested putting a glass of water in the microwave every time you heat it, or a minimum of once weekly. That's okay for private use, but I couldn't trust other people to be consistent with doing that, because it's extra work and impractical to expect them to do it. If wheat gets too moist, it can start to rot. Rice is also small, and can scorch if reheated before it's completely cooled, or it can scorch if it's heated for too long. Because it's a smaller grain, it doesn't stay warm for as long. Rice tends to develop a slightly rancid odor over time. Flax seed is 30-40% linseed oil, which can be explosive in the presence of oxygen. Flax heating bags have been known to explode. Essential oils and dried botanicals, used for aromatherapy, also carried the risks of fire. They can stain and they tend to lose their scents quickly. People who have used essential oils and herbs report that the scents don't last very long, and there's no way to refresh the bag without staining the cover. Some people are allergic to perfumes, and some people don't like certain scents, so in the hospital setting, scents

are automatically ruled out. Most people enjoy the mild popcorn odor, but not everyone does. If you don't like the corn odor, you can put the inner corn bag inside a Ziploc bag, then place it in the fabric pillow sham, and the odor will not be noticeable. Cherry pits are expensive, more than ten times the cost of corn, and no mention was made of it having any benefits over corn. The insides of cherry pits are poisonous to a dog or child if they were to chew them open. If some pits were to dry out and crack open, there is a question of the insides getting onto the fabric and soaking through. I have heard that cherry pits can be used in the washer and dryer, but have not tested them to see if this was true. Thermal pads that use sodium acetate, and are activated by squeezing a metal disk, are expensive, can leak, and must be boiled between uses to restore them to their unactivated state. Heating pads must be kept near electrical outlets, and can pose burn and fire hazards. Aqua K heating pads require a physician's order, they are charged by the day, and must be obtained from central supply department. That's not very practical for many patients. The pads themselves are for single patient use, and must be discarded. This makes them a poor choice for short-term use, such as IV starts. They aren't portable, so they can't be used when patients are in the dining room or the therapy room. Hydrocolloid hot packs must be immersed in a hot water bath that ranges from 150-180 degrees, they must have 6 to 8 layers of padding between the pads and a patient's skin to prevent burns, and they only remain warm for 30 minutes.

No corn bags were recalled or issued warnings by the FDA or the Consumer Products Safety Committee. Several models of electrical heating pads have been recalled. Several models of sodium acetate pads have also been recalled.

Types of fabric and cleaning instructions:

Cotton is the safest fabric to use. As a natural fabric, it carries a lower risk of fire danger than synthetic fabrics. It's inexpensive, and easy to wash. Cotton quilt fabric, cotton denim, cotton flannel, and any other weave of cotton is acceptable. It's important to make a slipcover pillowcase, so it can be washed. The corn bag itself shouldn't be washed often, so you want to be able to keep it clean. The corn will seem to feel hotter when thin fabrics are used. Thicker fabrics will make the corn's warmth seem to permeate your skin more slowly.

It's best if you don't wash the corn bags, and use a washable cover. However, if you must clean them, corn bags may be washed gently by hand in mild soap for a few minutes, but don't wash any longer than absolutely necessary, or you'll hydrate and soften the corn. Drip dry on a line for a few hours, then put in the drier on gentle for 30 minutes. Heat in the microwave, then place on a rack to dry. It is important to expel the moisture absorbed into the corn by microwaving the warmer a few times, allowing it to dry between three or more heatings. Try to get most of the moisture out in the dryer first, though, so you don't end up cooking the corn. Frequent washing is not recommended, but it's okay to freshen them once or twice a year. A better way to clean them is to scoot all the corn to one side, and carefully wash the fabric on the opposite end of the bag. Move the corn to the opposite end of the bag, and finish washing the fabric, trying not to get the corn any wetter than necessary. To dry, microwave the bag two or three times for the normal amount of time for the size of bag you're using, letting cool in between.

Since the hospital already re-uses head pillows with outer cotton pillow cases and inner plastic pillow covers, the corn bags could be protected the same way to satisfy the issues regarding oozing wounds, sweat, and other body fluids.

How much filler to use:

It doesn't matter how much corn you use, but you want to make your bag about half full, so there's enough room for the corn to mold around body parts when you're done. When I made them for the hospital, I had to make every one consistent, so they would be heated up the same. That's not a bad idea if you're going to make them for your family members for Christmas, either. You never know when Aunt Gracie is going to be talking on the phone to Uncle Joe, and he's going to ask her "How long did she say to heat them up?" I

used 4 level cups for mine.

Using plastic covers between the corn bag and the pillow sham:

I was wondering if you used the bags, and wanted to reheat it, would you have to take off the pillow sham and plastic bag, or could you just put it in the microwave? According to the Ziploc website:

“Ziploc® Brand **Sandwich Bags and Snack Bags should not be used** in the microwave because they are too thin. Ziploc® Brand **Storage Bags may be used** for microwave reheating. Ziploc® Brand **Freezer Bags may be used** for microwave heating and defrosting. (Don't use Ziploc® Brand Freezer or Storage Bags to microwave food on high.) When defrosting or reheating, always open the zipper one inch to vent. Be careful when reheating foods that are high in fat or sugar content (bacon, pastries), because these foods reheat very quickly and may exceed the softening point of the bags.”

Other considerations:

Corn is a natural product, and it's possible that you may bring home a bag that has had a weevil egg or two laid in it. When you first open your bag, be sure to use it up. Microwave your heating pads right away, to kill any eggs or bugs that might be in it. If you don't use your corn up, either throw it out to the birds, or be sure to store it in an airtight container, so if anything hatches, it can't get out.

The first 2 or 3 times you warm up your corn bag, the bag and the microwave walls will be very damp as the initial moisture cooks out. This dampness will subside, and the corn bag can be used for many years. You can wrap a hand towel around the corn bag when you first heat it, and this will help to draw the initial moisture out of the bag faster. I like to cook my bags 3 times before I ever give it away. This also reduces the chance that any fungus or mold spores will survive. The corn odor will subside substantially after the first few times you heat it up.

Corn bags do not carry the fire risks associated with electrical heating pads.

Corn bags have a smaller risk of lowering a person's blood pressure too much, because they gradually cool down, unlike heating pads that stay on all night.

The bigger you make your corn bag, the faster it will cool off. In other words, if you make a 5x9 bag, and you make a 7x11 bag, if you fill them each with 4 cups of corn, the large one will have more surface area, so the corn will cool off quicker. I know this is a "no-brainer", but just be aware that it will affect the reheating time, and the instructions you give out.

You can sew channels into your bag to keep the corn spread out more evenly. However, microwaves tend to heat unevenly, and it may be safer if you don't. You can mix the corn kernels up by mashing the bag around in your hands as you walk to the patient's room to deliver it. Also, the corn on the outside cools down first, so if you can mix it up again, then you can bring the warmer inner corn to the outside.

Chemical heating bags that you squeeze to mix the chemicals together stay warm for 30-60 minutes, about half the time of corn. Their temperature range is 110-125 degrees, but can get as hot as 180 degrees. The hospital buys these for the same uses I wanted to use the corn heating bags for. Chemical heating bags can only be used once, and cost much more per use. Skin can burn in seconds when liquids are at 125 degrees. McDonald's coffee was 140 degrees when that lady was burned. They now keep their coffee around 120 degrees. The recommended temperature for your hot water heater is 120 degrees.

Skin doesn't burn as quickly with dry heat. The blanket warmers at the hospital are kept at 125 degrees.

4 cups of corn, heated for 2 minutes, averaged between 120 and 140 degrees for the first 15 minutes, on the

ones we tested. They averaged 110-120 degrees when microwaved for a minute and a half.

Not all deer corn is created equal. Wal-Mart sells deer corn in 40 lb bags for \$3.96, but only during hunting season. It's stored in the aisle next to the hunting equipment in the store I go to. The four bags of Wal-Mart corn I purchased were labeled "extra clean" on the bag. They had hardly any cob chunks, and no visible bugs. Out of three 50 lb bags from a feed store for \$5.00 each, one bag had bugs, while two others did not. All of those bags had slightly more cob parts than the Wal-Mart brand, as well as some tiny rocks. If you can't find corn at Wal-Mart, you can find it year-round at country stores, feed stores, or agricultural stores. The price is around 10 cents a pound in the country, but may be as much as 20 cents a pound in the city. It usually comes in 40 or 50-pound sacks. Make sure you get whole corn, not cracked corn.

4 cups of corn weighs 1.8 - 2 lbs, depending on the moisture content. You can make 20 - 22 heating bags from one 40 lb bag of corn.

You can make 4 bags with matching pillow shams, from each yard of fabric. When I made them for the hospital, I tore my fabric strips ahead of time, and made stacks for the bags and the pillow shams. Once I got those done, I made 54 bags and 54 pillow shams in 7 hours.

If your fabric is \$4.00 per yard, and your corn is 10 cents per pound, the supplies for your bag will cost \$1.20 to make, not including thread. If your fabric is \$2.00 per yard (from the bargain table), it will cost 70 cents per bag. This includes the pillow sham. They sell on various websites for \$3 to \$20 each, with the average price being \$5 to \$8 each. They're even cheaper if you make them from scraps, such as cut off denim pant legs. You can use white muslin for the inner bags, for \$2.00 per yard, and use pretty fabrics for the outer bags, saving money that way. That would make your cost be around 95 cents per bag.

If you like, you can embroider the heating and cooling instructions on the bag itself, and embroider a design on the pillow sham. Instructions for injuries use the acronym R.I.C.E. that stands for Rest, Ice, Compression, Elevation. That's what they tell you to do during the first 24-48 hours, to reduce swelling. Ice should be applied for 20 minutes on, then 20 minutes off. After that, you should apply heat to aid circulation and promote healing.

I made one pillow sham that was embroidered. I like to use cotton quilt squares for my test sewing. I took my stitch-out of Dee's patriotic pen, and used it for the front of the pillow sham. I used cotton batting and red cotton to make some quilted fabric for the back of the sham. The quilted side feels cooler than the other side, so you can flip it over if it's a little too warm.

How to make your own basic style microwave feed corn heating bags

Instructions for cutting:

Start with 45 inch wide cotton fabric, and as long as you want. Snip the edge of the fabric every 9 inches. Tear off a 9 inch wide strip for each bag you want to make. Cut the strip in half along the fold line, so each piece is 9 inches wide by 22 or 23 inches long. The two pieces don't have to be exactly the same length.

You can also take a fat quarter and tear it in half. Use one fat quarter for each corn bag and matching pillow sham.

Making the pillow sham:

Take one of the two pieces to use as the pillow sham. Serge the short ends to give it a finished look. If you are using the sewing machine, fold the ends under towards the wrong side, and make a narrow hem at each end.

Place the fabric on the table, right side up. Fold one short end over, 3 1/4 inches. Now, fold the other short end over, and bring it up so that it overlaps about an inch and a half past the other short edge. Serge or sew the raw side edges closed. Turn right side out. Ideally, you should use cotton thread, but polyester thread will be okay. Rayon and Nylon threads haven't been tested. Do not use metallic threads.

Making the corn bag:

Fold the remaining piece of fabric in half. The folded size should be 9x11 inches. If serging, fold wrong sides together. Serge down one long side, across the folded bottom, and up the other side. Leave the top open. If using the sewing machine, fold right sides together, sew 3 sides (including the folded edge), then turn right side out. Measure out 4 level cups of corn, and put in the bag. Sew or serge the last side closed. Cut the fabric off with the serger (or fold inside and sew) about a half inch to an inch, to make the finished bag the same size as the pillow sham.

Getting the bag ready to use:

Heat the bag 3 times, at 3 minutes each. Let it cool between each time. This will kill any critters, eggs, or spores that may be present, and will remove the initial excess moisture.

If using in a hospital, store the bags near a microwave that isn't used for food, to help reduce the risk of infection. That will encourage people to only use that microwave for heating the corn bags. Some hospitals have a microwave that's used exclusively for bath washcloths, and that one can be used for the cornbags as well. If a patient gets germs on a corn bag, and you reheat it, you probably wouldn't want to put your lunch in the same microwave, and if your lunch splatters, you probably wouldn't want to get food all over the corn bags. It's okay to use them in the same microwave as your food at home. Place a sign at eye level, explaining how long to heat the bags initially, as well as how long to reheat them. Your sign should also instruct people to use a Ziploc bag between the corn bag and the outer slipcover. Be sure to put a box of Ziploc bags nearby. Finally, you should have a container for dirty outer covers, so that when people return the corn bags, they'll have a convenient place to put the outer covers, and won't just reuse them on another patient. I used a plastic bath basin, and wrote "dirty corn bag cases" on it with a black marker.

Heating instructions:

When heating for use on adults who are awake, alert, have normal sense of feeling, and are capable of moving the bags, do not heat more than 2 minutes. If an adult is not capable of repositioning or moving the bag off themselves, or if they have poor circulation or poor sense of feeling (as many diabetics do), don't heat more than a minute and a half, or they could be burned. The "official" heating time should be one minute to a minute and a half on your sign. The bag stays warm for an hour or two. When used as a bed warmer, most patients will fall asleep before it cools off. When reheating a bag that isn't completely cooled,

only reheat for one minute. If you use a different amount of corn, you will need to experiment to see how long to heat it. Do not use on infants.

After heating, place the bag in a new plastic Ziploc bag. This will protect the bag from being soiled by any wounds, sweat, or other body fluids.

Place the washable pillow sham over the plastic bag, and give to the patient.

Wash the pillow sham between patients.

I hope you've enjoyed this information, and thanks for taking the time to read it. If you would like to try getting them approved in your own hospital, I wish you luck, and hope they approve them for you, too!

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Basic Corn Bag Warmer Pattern

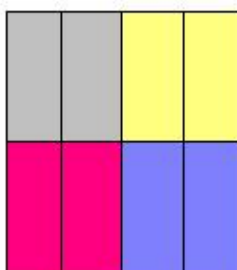
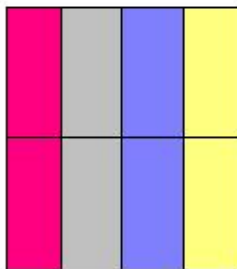
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36 x 44 or 45 inch piece of 100% cotton fabric. (Quilting cotton, flannel, denim, or other cotton fabric of your choice).

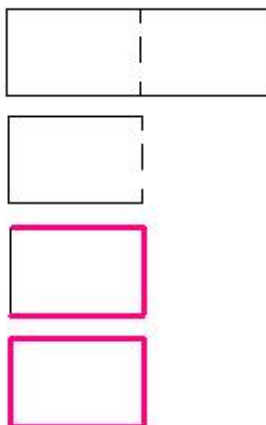
Cut or tear one yard of fabric into 8 pieces, 9x22 inches each. An easy way is to snip fabric every 9 inches, then tear it in strips. Cut each strip in half on the fold line.

You can also take four fat quarters and cut them in half.

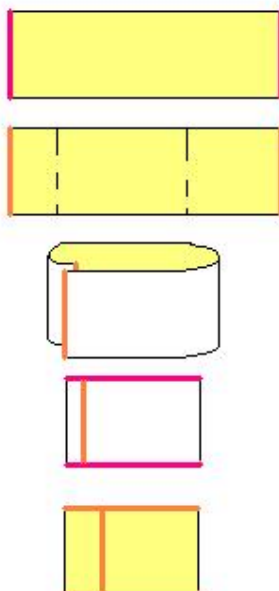
To save money, buy white muslin for the inner bags, and save your pretty fabric for the outer bags. Cut the muslin to the same size.



To make the inner corn bag, take one piece of fabric, fold it in half with wrong sides together, and serge three sides, including the folded edge. If you're using the sewing machine, fold right sides together, sew three sides, then turn right side out. Fill with 4 level cups of corn, and serge the last side closed, or fold the edges to the inside and sew closed.



To make outer cover, serge the short ends or sew a hem. With right side up, fold the left end over by 4 inches, then fold the right end up and overlap the left end by 2 inches. Serge or sew down both sides. Turn right side out.



Microwave Muff Hand Warmer "Corn Muff"

Copyrighted by Diamond Threadworks

Cut Denim or other heavy cotton fabric
15 x 25 inches for small size or
18 x 32 inches for large size

Fold along center, right sides together.

Sew or serge long edges together, to
make a tube.

Begin to turn tube inside out. Stop turning
when it's pulled halfway through.

Wrong side of fabric should be facing each other.

Turn tube with open side up, and fill
halfway with about 8 or 9 cups of deer
corn. Don't use more, or you won't be able
to fit your hands inside. Sew or serge the
inner raw edge to the outer raw edge,
sewing around the circle, to enclose the
corn inside the tube.

To prepare for first use, microwave for 5-6 minutes, to kill any eggs that might have been laid in the corn. Let cool, and reheat another 5-6 minutes, two more times. It is now ready to use.

Microwave 3-4 minutes to heat up when you want to use it as a handwarmer. Wonderful for Winter walks. Take one to work, and when the windshield is frozen over at quitting time, you can stay warm while you're waiting for your defroster to start working.

Microwave tube-style foot warmers

"Footie bags"

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Use hand towel, shop towel, or cut denim or other heavy cotton fabric to 18 x 22 inches.

Make two.

Fold along center, right sides together.

Sew or serge long edges together, to make a tube.

Begin to turn tube inside out. Stop turning when it's pulled halfway through.

Wrong side of fabric should be facing each other.

Turn tube with open side up, and fill halfway with 4 cups of deer corn. Don't use more, or you won't be able to fit your feet inside. Sew or serge the inner raw edge to the outer raw edge, sewing around the circle, to enclose the corn inside the tube.

To prepare for first use, microwave both foot warmers together for 5-6 minutes, to kill any eggs that might have been laid in the corn. Let cool, and reheat another 5-6 minutes, two more times. It is now ready to use.

To use, microwave both foot warmers together for 2-3 minutes. Adjust heating times, depending on your microwave and comfort level.

Use with caution with diabetics and others who may have decreased sensation or circulation in their feet! Do not use on people who are unable to remove the corn bags, or who are unable to move away from it. Do not use with open wounds or damaged skin. Do not use any type of heated product with medicated creams, lotions, or ointments.

Microwaveable Foot Warmers

Closed-toe footies

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Use hand towel, shop towel, or cut denim or other heavy cotton fabric to 18 x 22 inches.

Make two.

Fold along center, right sides together.

Sew or serge long edges together, to make a tube.

Sew or serge one end closed.
Turn right side out.

Fill with 4 cups deer corn, and sew or serge the other end closed. Push this end down into the corn, so that it meets the seam at the other end. This makes the "pocket" that your foot will fit into.

To prepare for first use, microwave both foot warmers together for 5-6 minutes, to kill any eggs that might have been laid in the corn. Let cool, and reheat another 5-6 minutes, two more times. It is now ready to use.

To use, microwave both foot warmers together for 2-3 minutes. Adjust heating times, depending on your microwave and comfort level.

Use with caution with diabetics and others who may have decreased sensation or circulation in their feet! Do not use on people who are unable to remove the corn bags, or who are unable to move away from it. Do not use with open wounds or damaged skin. Do not use any type of heated product with medicated creams, lotions, or ointments.

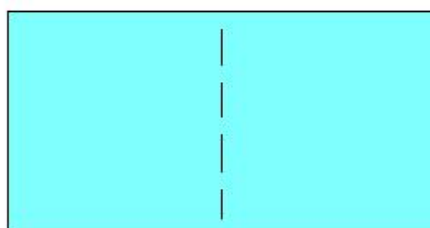
Microwaveable corn-filled neck warmers.

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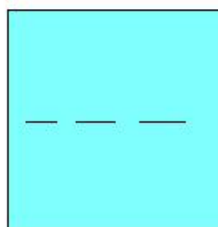
Doesn't heat your neck up as much as tube style warmers, and puts more heat on your shoulders and upper back.



Get a fat quarter or shop towel.
You can also cut some denim or other heavy cotton fabric to approximately 18x22 inches.



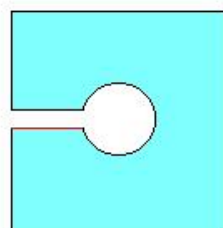
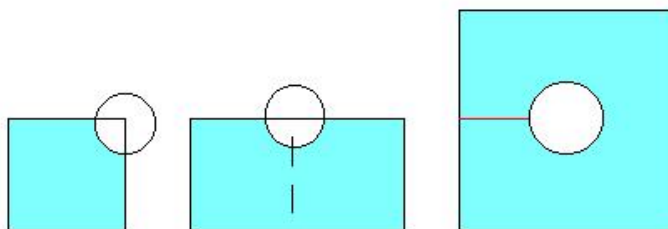
Fold Fabric in half. This will be your finished size.



Fold fabric in half two times to find the center of your rectangle.



Place the hole of an old CD over the corner of the fabric. Draw a 1/4 circle line on the fabric. Unfold, and redraw the line to make it a half circle. Cut out the circle, and unfold again. Your fabric should have one fold remaining. Cut a slit from the circle to the edge that's opposite from the fold.



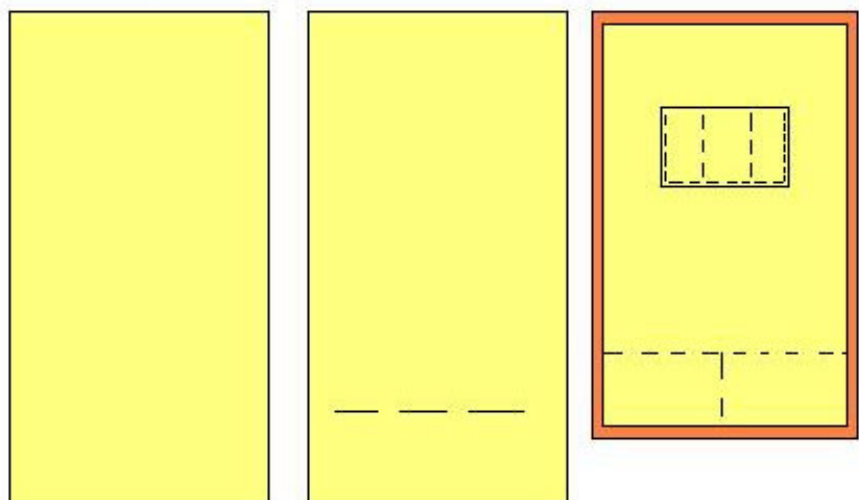
Serge all the way around, starting in the center circle. Leave last straight side open. Fill halfway, using 9 cups of feed corn. Serge last side closed.

To prepare for first use, microwave for 5-6 minutes, to kill any eggs that might have been laid in the corn. Let cool, then reheat another 5-6 minutes, two more times. It is now ready to use.

To use, microwave 2-3 minutes, and drape around your neck and over your shoulders.

TV blanket with foot warmer pocket and remote control pockets
Can also be used as a stadium blanket with pockets for hot dog money, chap stick, or radio.

Instructions from Diamond Threadworks
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Instructions:

You will need two and a half yards of fleece, flannel, or quilted cotton fabric, 45 to 60 inches wide.

Cut two and 1/4 yards of fabric for main part of blanket.

Fold up along the bottom 18 inches, right sides together, and serge or sew the sides closed to form a foot warming pocket. This pocket can be used to hold corn bag warmers, or just to put your feet in. Turn right side out. Finish edges with blanket stitch, satin binding, bias tape, or other edging of your choice.

If desired, stitch through center of pocket to form two separate pockets.

Take a matching or coordinating piece of fabric, and cut it to 18 x 14 inches, to make pocket for remote controls. Embroider designs if desired. Double fold top edge of pocket, iron crease, and sew closed to form top hem. Fold remaining three sides over one inch, and iron crease. Pin into position onto blanket, 12-18 inches from the top, and centered from side to side. Stitch both sides and bottom to attach to blanket. Stitch two lines through all layers from top to bottom edges, to make three equal sized pockets.