How to Dress For Snow Camping

When you are at a ski resort or mountain cabin with your family, you can play outside in the snow, and when you get too wet or too cold, you can come inside, change your wet clothes and warm up by the heater or fire. In cold weather camping, there is no inside other than the inside of your tent or snow cave. You have a limited number of changes of clothes, and taking off wet clothes in the tent has a tendency to get everything else wet. At night, the wet clothes you took off will freeze, making them that much more difficult to deal with.

**In Wilderness, It Is Far Easier To Stay Warm To Begin With, Then To Try To Get Yourself Warm Again After Becoming Cold**

**Conserve Body Heat**
The goal in cold weather camping, then, is not to keep cold out; it is to keep your own body heat in.
Layering

The best way to achieve this versatility is through the use of layers of clothing.

Types and Amounts of Clothing

1. long underwear; 2. shirt or inner layer; 3. sweater or light jacket; 4. wind or rain gear; 5. inner pants; 6. wind or rain pants; 7. wicker inner socks; 8. insulating socks; 9. boot liners; 10. and 11. footwear; 12. and 13. head coverings; 14. and 15. gloves and mittens
Layers include:

- Long underwear – ideally made of polyester, polypropylene, wool-poly blend, silk, or a wool-cotton blend (not the best)
- Insulating layer – synthetic fiber pile, wool, or wool blend is best
- Outer shell – Gore-tex and its clones are best, as they allow water vapor to escape, while keeping rain and melted snow out. This should be a wind breaker/water repellant layer with a hood.
- Rain suit or poncho - to keep out heavy snow and rain
- Accessories – sunglasses or ski goggles, wool or polyester “beanie”, or balaclava (covers face too, with opening for eyes, nose and mouth), polyester glove liners and insulated gloves with water repellant shell, polyester sock liners with polyester-nylon-wool blend insulated socks, rubberized, insulated leather boots, or rubber galoshes.


**Synthetics**

Synthetic materials, such as polypropylene and polyester have a very low water absorption factor. Polypropylene, for example, absorbs less than .1% of its weight in water. Instead, it wicks moisture away from your body to the outer layers, where it is either absorbed or wicked still further, depending on the make-up of that material. This is important, because we lose body heat much more rapidly through water than we do through air.

**Fiber Piles**

Fiber pile is mostly polyester. Polyester is a very stiff, springy fiber that holds its loft for trapping air. Pile begins as a thin, dense cloth which is then passed through napping machines until a thick pile, commonly called fleece, is achieved. Polyester wicks almost as efficiently as polypropylene. You can dip it in water, wring it out, and it will still retain its loft and keep you reasonably warm. Pile clothing is generally rated as 100 (light), 200 (medium), and 300 (heavy weight).

**Wool**

Wool and wool blends absorb moisture, but they also retain much of their loft and therefore insulating ability when wet.

**Cotton**

Cotton is probably the least desirable material for winter camping/snow play, because it absorbs water readily and when wet loses virtually all of its insulating ability.

**Down**

Down is a very good insulator as long as it is dry. It maintains greater loft for a given weight than any other materials, as long as it is dry. It mats down when wet, however, and loses almost all of its insulating ability.

**Gore-tex**

Gore-tex, along with a few recent clones, is essentially a thin, flexible Teflon membrane laminated between two layers of nylon cloth. This membrane contains 9 billion pores per square inch. Each pore is 20,000 times smaller than a drop of water, but 200 times larger than a molecule of water. It can still leak, especially in driving rains, and it needs to be close to the skin so that it does not get too cool and condense the water vapor moving up from the body and trap body moisture inside the shell.
Dressing for Snow Camping, The Ideal

There are many factors to consider, of course, but an ideal outfit, allowing maximum versatility, light weight, freedom of movement, and maximum wicking and insulating benefits, might include:

- Polyester long underwear with half-turtle neck
- 200 rated polyester pile pants
- 200 rated polyester pile jacket
- Gore-tex parka or Gore-tex insulated parka with hood
- Gore-tex shell pants or insulated pants
- Polyester pile face mask
- Knit wool cap, or polyester fleece cap
- Sunglasses or ski goggles
- Polyester glove liners
- Gore-tex outer gloves
- Polyester sock liners
- Plastic baggie thermal barrier for feet
- Polyester/wool/nylon trekker or ski socks
- Rubber coated leather boots, or rubber galoshes

Realistically

That's the ideal, but it can be fairly expensive, though prices have come down for a lot of these products in recent years.

As a practical matter, we might have to improvise, budgets being what they are. Also, see the Boy Scout Field Book, Okpik and Venture Crew Manual for Winter Camping for suggestions for making foam and nylon clothing inexpensively.

Here are some alternative suggestions:

- Long underwear; any will do (synthetics or wool-blend are the best). Avoid cotton (buy at Any Mountain, Mel Cotton’s, REI, Stevens Creek Surplus, Western Mountaineering, or any sporting goods store.

- Trousers – ideally wool or wool blend. Army surplus work very well and are cheap (Any Mountain, Mel Cotton’s, REI, Stevens Creek Surplus). Wool dress slacks can work (try Goodwill). Avoid jeans, they are made of cotton, absorb water, and do not insulate.

- Turtlenecks – again, synthetics or wool-blends are better.

- Wool Shirt or Sweater – medium weight, wool or synthetic.

- Medium to Heavy Sweater – wool or synthetic.
Heavy Jacket or Parka – water repellent, or spray with water proofing.

Outer Shell Trousers – nylon shell, skiers pants, or rain pants. Any ski shop, Mel Cottons, REI, Stevens Creek Surplus, or rent at the Ski Renter.

Poncho or Rain Jacket and Rain Pants – any clothing store, Mel Cotton’s, REI, Stevens Creek Surplus.

**Accessories**

And top this list off with:

- Polypropylene Inner Socks – Mel Cottons, REI, Stevens Creek Surplus
- Polypropylene/Wool/Nylon Blend Outer Socks – Mel Cottons, REI, Stevens Creek Surplus
- Heavy Leather Boots with Sno-seal, or Rubber Coated Bottoms, Mukluks, or “Moon Boots” (foam insulated nylon boots with rubber bottoms – commonly called “after ski boots” – Mel Cottons, REI, Stevens Creek Surplus, or rent at the Ski Renter.
- Polypropylene Inner Gloves – Mel Cottons, REI, Stevens Creek Surplus
- Insulated Nylon or Leather Outer Gloves – Mel Cottons, REI, Stevens Creek Surplus, Ski Renter
- Polypropylene Pile Neck Gaiter, or Soft Wool Scarf (long) – Mel Cottons, REI, Stevens Creek Surplus, Ski Renter
- Sunglasses or Goggles (preferably both) – Mel Cottons, REI, Stevens Creek Surplus, Ski Renter
- Polypropylene Pile Beanie or Cap, or Wool Cap – Mel Cottons, REI, Stevens Creek Surplus, Ski Renter

Polypropylene inner socks are inexpensive and sold at most outdoor shops and Scout Shops. Sno-seal and silicon spray for waterproofing clothes are sold in most outdoor shops and many hardware stores. Inexpensive gloves and hats can be purchased at surplus stores and hardware stores.
More on Cotton and Wool

Even people who live in snow country do wear cottons and wools. But they avoid getting wet, and if they do get wet, they go inside, dry off, and change. The more the wardrobe contains cottons, and even wools to a lesser extent, the more the Scout needs to be aware that he can’t allow himself to get wet. If he does, he needs to have a full set of clothes to change into.

Generally, on a two-day trip, try to be careful on the first day. On the second day, you can be more relaxed, as you are going to be getting into a warm car and heading home shortly. Save that big snow fight for the last day!

Thermal Barriers and Plastic Bags

A note on thermal barriers: Putting a plastic bag between your inner sock or inner glove and your outer sock or glove creates a waterproof “thermal” or heat barrier between your skin and the cold, wet snow. The inner sock or glove wicks moisture away from your skin so you don’t get to “clammy”, but stay relatively dry and comfortable. The plastic barrier keeps snow melt away from your skin and holds in body heat. The outer sock or glove insulates and protects the plastic thermal barrier.

Plastic bags also are handy for making impromptu waterproof skirts (OK, kilts if you are a guy), leggings (one bag over each leg), waterproof vests (just cut a slot in the top of a large garbage bag for your head, and slots on each side for your arms, and waterproof hats (or waterproof covers for your hats). Always bring half a dozen or so large, heavy-duty trash bags (30 gallon) with you when winter camping (at least three for summer camping too – you never know when it is going to rain!).

Remember, you lose about one-third of your body heat through your head. As your body temperature begins to cool, your body slows down the circulation of blood to your extremities in order to keep the body core warm. So, if your hands and feet are cold, put on a hat!

It’s the same at night. Wear a wool or fleece cap or beanie to bed. Keep your head warm, but don’t put your face inside the sleeping bag. Your respiration contains moisture, which will collect and condense inside the bag, making you colder.

Do not wear cotton clothing to bed. It will absorb moisture from your body, causing you to become colder
Sleeping Bag Categories

The camping bag is designed to be carried in a car. It is usually designed more for comfort than for thermal efficiency. The bag is most often rectangular, heavy or bulky, and not easily compressed. It can be used in temperatures above 32 degrees Fahrenheit.

The backpacking bag is designed to fit in a backpack. This bag is usually a modified mummy bag, a thermally efficient shape. The fill is typically made of fibers that are compressible yet resilient. The bag should weigh less than 5 pounds and have a temperature comfort rating of 30 degrees Fahrenheit or lower.

The winter expedition bag should have a temperature comfort rating of 0 degrees Fahrenheit or lower. It must fit on a pack frame, and be of the highest quality due to the often life-threatening situations of its use. This bag will be heavier, perhaps six or seven pounds; to increase warmth we much increase weight.

Fills

There are many fills for sleeping bags, ranging from wool batts, to many types of polyester, to goose down. The fill has a great deal to do with the size and warmth of the bag. When investigating sleeping bags in a store, be sure to check on whether the fill will shift during use, making cold spots in the bag. The amount of loft is also important. It indicates the insulation factor.

What happens if our sleeping bag gets wet? If your bag is completely soaked, it will lose insulation and be wet for hours. A synthetic bag will lose about 10 percent of its warmth, gain 128 percent in weight, and take more than a day to dry. This becomes a major concern if you plan to use your bag in wet or humid conditions.

Carry your bag in a waterproof sack and sleep in a waterproof tent to minimize wetness problems.

Construction

Check out the construction of the bags. The interior construction is hard to check except by asking questions at the store. External construction is easier to examine. Here are a few things to check for:

- Start with the stitching. If you can snag it with your fingernails, it’s suspect.
- The shell should be of a fabric that does not allow the insulation to filter through. Uncoated fabrics are best so that body moisture can easily pass through.
- Turn the bags inside out to see how they are finished. In better bags, inside seams are stitched to seal fabric edges.
• Check the diameter and length of the draft tube. It should be longer and larger than the zipper it is covering.
• Check for zipper stiffener, a webbing strip running the length of the zipper to prevent snagging.
• Take off your shoes and climb into the bag. It should be cut generously enough to allow elbows, shoulders, knees, and feet to move without compressing the loft. Though you need to move, you don't want too much room. Excess room increases air flow and reduces the bag’s thermal efficiency.
• Draw the hood closed to make sure that the air hole is near your mouth.
MUMMY BAG

Note: circumference dimensions taken with matter stretched flat. Width of zipper not included.

Cut-a-way view:
Side block baffle.

Sandwich construction

Between baffles
The Rating System

Good sleeping bag manufacturers list a comfort rating on each bag. These will range from a summertime temperature to an Arctic condition. Pick the bag that has a comfort rating comparable to the coldest temperature in which you will be sleeping.

You should be comfortable sleeping outside at the bag's minimum temperature. But, you may have to partially unzip a bag or wear an extra sweater if conditions are different from those specified.

Do You Have Trouble Keeping Warm?

Your body metabolism affects how warm or cold you are when you sleep. Physically fit people and those with more muscle tend to sleep warmer, but anyone can improve their comfort and warmth while sleeping by remembering the following tips:

1. Sleep on a pad. Sleeping pads provide insulation and comfort. Air mattresses, while soft and comfortable, offer virtually no insulation.

2. Drink plenty of water, even in cold weather. Dehydration from lack of liquids results in poor circulation to the extremities, causing them to become cold or even to freeze.

3. Eat before you go to bed. Hot foods are especially helpful.

4. Go to bed warm. Exercise to raise your body heat before sleeping.

5. Wear a sock hat or fleece hat to bed to control heat loss from the head and neck area.
6. Wear dry clothing for sleeping, and the more the better, up to the point where you're constricted. Waterproof clothing adds lots of warmth, but will cause some condensation of perspiration.

7. Use tents, shelters, or sleeping bag covers to get out of the wind. Wind reduces the insulation effectiveness of sleeping bags just as it does with clothing.

8. Place a bottle of hot water in your bag.

9. Sleep close to another person.

10. Sleep on your side in a fetal position, with extra clothing under your shoulder and hip.

11. Buy a warmer bag than you think you will need.

Keep your sleeping bag dry. While a synthetic bag only loses about 10% of its insulation ability if it gets wet, a down bag loses most of its ability to insulate (keep you warm). Sleeping bags become wet from outside moisture, from sweating on the inside of the bag, and from water vapor escaping from the mouth or nose into the bag.

To keep outside moisture from wetting the bag, place protective insulating material, such as a closed-cell foam pad, or a Therm-a-rest type sleeping pad (insulated air mattress) under it. Better still, use two closed-cell pads together, or one closed-cell foam pad and a Therm-a-rest type pad together.

Avoid sweating by wearing the least amount of clothing necessary inside the bag to keep warm and by using the proper sleeping bag for temperature conditions.

Try not to breath into the bag; if you do, moisture will collect and wet the bag or form ice crystals. If your face gets too cold, cover it with a towel or muffler.

When not in use, open the bag wide so that fresh air can get into it. Turn it inside out and hang it over the top of the tent, or on bushes or low hanging tree branches so that sun and wind can help dry it. Always shake the bag out and fluff it up when arising.

Here are two tips that will help you keep warm in your sleeping bag and let you get a good sleep:

- Eat a little something just before you crawl into the bag. This can be a candy bar, energy or power bar, energy drink, hot chocolate, etc. This gives your body a little energy and lets you sleep warmer.
Always relieve yourself just before you go to bed. The act of getting out of a warm sleeping bag in the middle of the night to go outside can be a chilling experience!

Care and Cleaning

Synthetic sleeping bags insulated with polyester fill can be hand or machine-washed. A mild soap works well. Always rinse thoroughly; never use detergents or dry clean a synthetic-filled sleeping bag.

Use only the oversize, commercial, rotating drum washer; do not use a domestic, top-loading agitator. Use warm or cold water.

When drying a synthetic bag, use the lowest possible heat setting. Better still, line dry—it only takes 24 hours to dry most synthetic bags at room temperature.

Down sleeping bags should be hand washed. A mild soap will suffice. Use only the detergents designed for down bags, typically sold at backpacking shops. Other detergents will wash out the oils and destroy loft.

A down bag can be washed in a sink or bathtub using warm water. Hand washing will not remove stubborn stains, but the final result will be a clean bag with a surprising amount of loft. You may wish to soak heavily soiled items for several hours.

Gentle squeezing is all the agitation required; more rigorous action may cause seams to rip because down absorbs a great deal of water and becomes much heavier. Drain the water from the tub, pressing gently on the bag to remove excess water. Refill the tub with fresh water and agitate gently. After a thorough rinsing with at least three water changes, gently squeeze out as much water as possible.

Hang bag to air dry, remembering to support it evenly. After two to four days, the bag can be machine dried. Sleeping bags should not be dried in household dryers; only a large, commercial dryer has enough room. Use low heat and toss in a clean pair of tennis shoes; these help break up clumps of matted down.

Down bags can be dry cleaned, but it is imperative that the cleaning fluid used is Stoddard’s solvent. Conventional dry cleaning fluids will remove the oil from the down and destroy the loft.

You don’t need to clean your down bag often. Try to keep your bag clean in the first place and wash it only when the loft has noticeably decreased, or when it is noticeably soiled or sweaty.
Storing Your Bag

In order to receive the best performance from your sleeping bag, it is essential that it be stored properly. A bag that is stored compressed (in a stuff sack) will lose its loft and its insulating ability. All fibers have a “memory.” If the fiber is compressed for a long period of time it will “set” and remain compressed when released. To prevent this, all bags, synthetic or down, need to be stored in large storage bags or hung up by the foot. The more the bag is allowed to loft, the better it will serve you.

Sleeping Pads

There are really only two types to use in winter camping: closed cell foam pads, such as the Ensolite pad, and insulated, self-inflating pads, such as the Therm-a-Rest. Closed cell foam pads insulate from the cold ground or snow, but do not absorb water. Insulated, self-inflating pads are soft and comfortable, and because of the insulation, the air inside the pad does not conduct heat away from your body.

Do not use open-cell pads, as they absorb water.

Do not use air mattresses, as the air in them conducts heat away from your body.
Ground Cloths

There are many possibilities. They need to be waterproof. They need to be lightweight. They should not be too bulky; they need to be easy to pack. If they have grommets in the corners for tying them down, that is a plus.

The “space blankets”, which are a brightly colored plastic on one side (typically colored red or orange, with the reflective aluminum Mylar on the other side work particularly well. Place them over the pad, under the sleeping bag, aluminum side facing up to reflect as much body heat back at you as possible.

Do not wrap the waterproof ground cloth over the top of yourself, or it will catch all of the water vapor coming off of you, condense it into water, and drip it back on you all night, resulting in a wet, and therefore less efficient, sleeping bag!

Packing Gear in Plastic Bags Inside Your Pack

Keeping dry is an essential part of staying warm in winter camping. Snow and rain seem to find their way into packs. When you change out of wet clothes and pack them, their moisture gets into everything. And there is always the danger of falling into a stream with your pack on. Pack individual pieces of clothing into zip-lock baggies, and even wrapping your sleeping bag in large trash bags helps prevent items in the pack from getting wet, or if already wet, from contaminating other clothing. As with staying warm, it is far easier to keep articles of clothing dry, then to dry it once it gets wet!

Extra Clothing

Extra dry clothes to change into if you get wet are essential. Clean clothes insulate better than dirty clothing. It is the air-pockets in the clothing that insulate; dirt and oils cause the material to compress, reducing its insulating ability. Carry extra polyester sock liners and nylon-wool-polyester outer socks for each day of your outing, up to three sets; extra polyester underwear for each day of the outing, up to three pair, one extra set of polyester long underwear, extra fleece sweater, extra pair fleece pants.

Rain Suit or Poncho

Heavy rains and snows will eventually get through your water repellant clothing; through the seams, zippers, around the neckline, and so on. A rain suit or poncho can add another waterproof layer to help keep water out. The rain suit is more streamlined, stays close to the body, and is less likely to catch on branches, but catches more moisture coming off of the body and condenses, creating moisture inside the rain suit. Ponchos are looser and catch less body moisture, but blow up in the wind and catch on branches and other objects.