

2. Insulators

by [WorldWeb Travel Guide](#)

Insulators

The following list rates insulators from the most efficient and effective to the least effective of the bunch. No one material is suitable for all conditions, each has its advantages.

Down -

Still the best insulator overall. It is warmer, lighter, and more compressible than any other material. Goose down is the warmest followed by duck down, but a good goose duck mix is almost as good as pure goose, and less expensive. A good down garment will last a life time with a little care. Personally speaking, down is the most comfortable and luxurious of all insulators.

Down has some problems. It needs special ticking, and should not be sealed in a waterproof fabric. When it becomes wet, down has no benefits. There is nothing worse than shivering in a wet down bag, and it is hard to dry in the field. Another problem is cost, good quality down is probably the most expensive insulator.

For extreme cold down stands alone. Winter sleeping bags and parkas made of down are usually the best in their class. This not a good material for active sports such as cross country skiing, skating, etc. For non high intensity activities in extreme cold such as down hill skiing, camping, resting, etc. down is unequalled.

Synthetic Pile or Fleece

This wonderful material is responsible for a minor revolution in outdoor clothing. Fifteen years ago only Helly Hansen pile was readily available. It was ugly, and fairly expensive, but very good. Today the explosion of colors and various weaves has made this one of the most popular insulators today. Fleece has the same insulation as wool at half the weight. It is much more comfortable, and dries very quickly. Fleece is easily washed, and survives years of use and abuse.

Unfortunately fleece does have its problems. It doesn't compress well. Wind blows right through the fabric. For industrial and military applications it is important to remember that fleece will melt and burns at low temperatures causing serious burns to the wearer. The material can also pack out after prolonged use.

This is a terrific material for jackets, pants, mitts, and toques. Because it breathes well and dries quickly it is well suited for active sports.

Thinsulate

The miracle fabric that almost was. Thinsulate was originally advertised as the synthetic replacement for down. It resists becoming wet, maintains most of its warmth when soaked, and is very warm in surprisingly thin bats.

The problem was mainly compressibility. Thinsulate does not pack down very well. A sleeping bag would be completely unmanageable and clothing tends to be a bit bulky when packed. The life span for thinsulate is under five years of heavy use.

Thinsulate is a good material for gaiters, mitts, warm-ups, and jackets.

A new hybrid of thinsulate called primaloft or liteloft is now being used in sleeping bags and various clothing. It is very warm, compressible and affordable. Time will tell if it is also durable.

Wool

More and more wool is taking a back seat to synthetics. Wool wears well and does not compress like fleece under heavy use. Oiled and tightly weaved it is windproof, virtually waterproof, and breathable. Wool does not melt or burn at low temperatures.

If wool didn't itch so much it would probably be more popular. The extra weight, and poor drying properties don't help. Wool socks remain my personal favorite. Wool mitts are also preferred in winter climbing. A good stiff wool mitt or sock can transmit much of the "feel" lost in any other material. Funky granola toques must be made of wool to truly cool.

Polypropylene Underwear

Made of the same material as fleece jackets this is a thin fabric designed to wick moisture away from the body. A good material, but it tends to wear out after a few years. This stuff melts easily. Overall a fine head to toe material. Gloves are particularly useful for outdoor work that requires intricate and delicate work such as photography or equipment repairs.

Synthetic batting

This includes Dacron 2, Hollofill, Polarguard. Good general purpose insulation. Relatively inexpensive. Standard insulation in most coats, and synthetic sleeping bags. These fibers maintain most of their



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insulation when wet and dry quickly.

Like most synthetics this stuff does not compress too well. They have a limited life span. Several other synthetic fibres such as polyester batting, and qualofill are similar but have shorter life spans. Personally I have never really enjoyed the way these materials conform to the body.

Coats, pants mitts, hats and sleeping bags of high quality can be made with these insulators.

Neoprene

A unique insulator use primarily for wet suits, neoprene has a few limited but excellent applications. For extreme cold a neoprene face mask is unaffected by moisture and maintains superior insulation. Socks Mitts, and overboots are other possible uses for extreme conditions.

Cotton

A favorite for comfortable casual wear. As an insulator cotton is the worst possible choice. It absorbs moisture and fights to keep it. Wet it is worse than useless. For any kind of remote or back country travel don't rely on cotton for insulation.

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