



## Clothing for Backpacking

The clothes you bring with you on a backpacking trip must perform 2 important jobs. They must protect you from the elements (rain, snow, and wind) and they must keep you comfortable during a variety of activities and weather conditions.

The best way to choose backpacking clothing is to build a "system" of clothing layers that can be mixed and matched to handle different trips and different conditions.

### Some Basic Definitions

- Layering - is the practice of dressing in a number of lightweight clothing layers instead of 1 or 2 heavier layers. Layered clothing systems provide loft, are versatile so you can add or remove layers in response to changing conditions. This type of efficient system will be warmer than 1 or 2 thick layers, and take up less room in your pack.
- Wicking - Certain clothing layers enhance comfort by pulling sweat from the surface of your skin and transferring it into other clothing layers. This process, called wicking, it keeps you dry and comfortable in warm conditions. It also keeps you warmer in cold conditions by reducing evaporative and conductive heat loss.
- Breath ability - To stay comfortable when temperatures rise or your activity-level increases, you need clothing layers that let your sweat and body heat escape. A garment's ability to do this is referred to as its breath ability. Breath ability is affected by the materials that a clothing layer is made out of and the design of the layer itself.

### **Layers that will be needed**

Backpacking clothing can be grouped into 4 basic categories: inner layer, mid layer, insulation layer and outer layer. Each type performs a specific task within a clothing system. Whether or not you need them depends on your backpacking plans.

- **Inner layers**  
Inner layer clothing is worn right next to your skin. Its job is to keep you comfortable by wicking the sweat from your skin and providing an extra layer of insulation. Inner layer clothing is usually worn in moderate to cold conditions when a little extra insulation is needed and the chance of aerobic activity is high. It's available in a variety of thicknesses for different activities and weather conditions.
- **Mid layers**  
Mid layer clothing consists of the items you use every day such as shorts, T-shirts, lightweight pants and long-sleeve shirts. The primary function of mid-layer clothing is to provide basic insulation and protection in warm conditions. Mid layer items are often worn alone on short trips in good weather conditions. The pieces you choose should be comfortable, lightweight and built to last.
- **Insulation layers**  
Insulation layer clothing is designed specifically to provide additional warmth. It's typically worn whenever mid layer and/or inner layer pieces are not warm enough for the current conditions. The insulation layers you use should be warm, lightweight and as non-bulky as possible. They should also breathe well to let sweat and body heat escape.
- **Outer layers**  
The primary job of outer layer clothing (both tops and bottoms) is to protect you from the wind, rain and snow. It needs to be somewhat breathable as well, to let sweat and body heat escape. Backpackers should always carry protective outer layers.

## **Fabric Options**

### Inner Layers

- **Cotton** - is comfortable when it's dry, but it absorbs sweat and holds it right next to your skin (which can lead to significant heat loss). Cotton also takes a long time to dry, which can cause discomfort. For these reasons, cotton is not recommended for inner layers used in cold conditions.
- **Silk** - is an effective wicking and insulating material. It's extremely comfortable and lightweight, but not as durable as the options below. Some silk layers require special care when washing and drying.
- **Polypropylene** - One of the very first man-made wicking materials, Polypro wicks sweat away from the skin effectively. Early versions tended to retain odors and become scratchy after repeated washings. Newer Polypro fabrics have overcome these difficulties.

- MTS 2® (Moisture Transport System) - MTS 2 is a durable, reliable polyester-based fabric that wicks sweat like polypropylene--without its drawbacks. It's comfortable like cotton, and it's available in a variety of "weights" for different conditions.
- Capilene® - Capilene is another comfortable, reliable polyester-based wicking fabric. It performs like MTS 2®, with a special chemical treatment to help spread sweat throughout the fabric so that it evaporates quickly.

## Mid Layers

Cotton - Cotton is a common choice for warm-weather backpacking clothing. It's comfortable, lightweight and it keeps you cool. Cotton is best for warm weather uses because it takes a long time to dry and is an ineffective insulator.

## Insulation Layers

- Wool - Wool is a great natural insulator. It's available in knickers, pants, long-sleeve shirts, pullovers, sweaters and jackets. It insulates when wet but can take a long time to dry. Can be heavy/bulky.
- Pile/Fleece - These popular man-made insulation materials are available in a wide variety of styles and thicknesses. They are comfortable, warm (even when wet), fast drying and lightweight (half as heavy as wool). Pile/fleece products are available in shirts, pants, vests, jackets, pullovers and sweaters. Traditionally, pile/fleece layers have provided only minimal protection from the wind. But new pile/fleece garments are available today with wind- and weather-stopping liners built right in.

## Outer Layers

Outer layer clothing can be divided into 3 basic categories (see below). Each has its own set of characteristics, and each protects backpackers from precipitation, wind and sweat build-up to different degrees. To choose the right outer layer clothing, focus on the general category that sounds best for your needs. Then consider the design features listed at the end of this section to choose a specific model.

- Water-resistant/breathable fabrics (e.g. REI, Columbia Northface)
  - Positives: These repel wind and light precipitation while providing excellent breath ability. They tend to be less expensive than other options.
  - Negatives: They are not waterproof enough to protect you in harsh weather conditions or extended periods of rain.

## Typical Uses

Water-resistant/breathable fabrics are perfect for backpackers who travel in arid and/or warm conditions where good breath ability is important and the chance of heavy precipitation is low. They are popular among backpackers who plan short trips in good weather and those who enjoy strenuous activities like trail running.

- Waterproof/Non-Breathable Fabrics (e.g., Columbia Sportswear Ibex rainwear)
  - Positives: These are completely waterproof, and they're less expensive than waterproof/breathable fabrics.
  - Negatives: They provide very little breath ability, which can be extremely uncomfortable if it's hot or if you're working hard on the trail. ◦ Let moisture out, layers using waterproof/non-breathable fabrics have to be cut extremely loose (like ponchos) or they must have special vents or openings built in to let the heat and sweat out.
  - Typical Uses - Because of the lack of breath ability, most backpackers stay away from waterproof/non-breathable outer layers (unless temperatures are very low or the chances of heavy precipitation are very high). They are used occasionally in moderate conditions in inexpensive rain pants and emergency ponchos.
- Waterproof/Breathable Fabrics (e.g., REI Elements®, Gore-Tex®)
  - Positives: These fabrics are both waterproof and breathable (to a degree). They are good performers in a wide range of weather conditions.
  - Negatives: Even waterproof/breathable fabrics heat up and trap sweat during strenuous backpacking. Exact performance depends on the specific type of fabric used, the outside temperature, the amount of activity and other factors. Waterproof/breathable fabrics are more expensive than other types of outerwear.
  - Typical Uses - More and more wilderness enthusiasts are choosing waterproof/breathable fabrics for their outer layers. These fabrics are comfortable in a wide variety of situations and conditions. Also, performance levels keep improving all the time.

## A Note on Outer Layer Design

There is more to choosing the right outer layers than just deciding on a type of fabric to use. You must also consider the design features included in different jacket and pant models. When you start comparing different styles head-to-head, consider the following:

- Fit - Outer layers should be roomy enough to fit over your clothing layers but snug enough to cinch down tight in nasty conditions. They should also allow for a full range of motion.
- Access - Full-zip jackets and full-zip pants are easier to get in and out of than pullover tops or pull-on pants. However, more zippers mean a higher chance of leaks.
- Specific Features - Specific features can have a significant effect on an outer layer's performance and comfort:
  - Adjustable Openings - The waist, cuffs and neck should seal tight for bad weather but open easily for extra ventilation.
  - Vents - Vents enhance breath ability no matter what type of fabric an outer layer is made of. Larger vents are typically more effective than small ones, but they may leak more. Typical vents include under-arm zips, side zips, mesh-lined pockets and draft flaps.
  - Pockets - The more pockets an outer layer has, the easier it will be for you to store essential gear items. Keep in mind that pockets increase the weight of the layer. Pockets should be easy to reach, easy to open and close, and well-protected against leaks.
  - Hoods - Any outer layer top you use for backpacking should have a hood to keep your head dry. Integral (permanently attached) hoods offer the best resistance against leaks. Hoods that can be rolled up and/or folded away when not in use are easier to deal with in changing conditions.

Storm Flaps - Storm flaps cover zippers, pockets and other openings to protect against leaks. They are commonly found on front zippers, under-arm zips and external pockets.

Sealed Seams - Sealed seams are a must for any waterproof outer layer. They're not necessary for water-resistant ones.