

## How to Choose a Backpack

### QUICK READ

1. Start by knowing your intended trip length and gear-carrying preferences.
2. What's your style of backpacking? We categorize our gear as minimalist, ultralight, lightweight or deluxe. Think in systems to optimize weight and function.
3. Good fit is a must. To achieve this, you need to know your torso length.
4. To quickly narrow down your pack choices, try our [Backpack Finder](#).

## Pack Basics

These days, almost all backpacks feature an internal-frame design. The body-hugging nature of an internal frame enhances your balance and freedom of movement. This is ideal for many activities, such as mountaineering, skiing, scrambling and hiking in rough terrain.

Whatever your pack model, you should put about 80% of the load where it can be most efficiently carried: on your hips. To do so, most packs offer suspension systems with padded, contoured shoulder straps, load-lifter straps, a sternum strap and a padded hipbelt.

Note: Packs not covered in this article include [travel packs](#), urban/school packs and dog packs.



## What's Your Hiking Style?

To answer this, first decide on a category of pack based on the kinds of outings you want to take.

- **Extended trips (five days and longer).** These packs hold more than 70 liters (4,200 cubic inches) of gear. They feature substantial load support and ample suspensions. Though designed for long trips, they are also well suited for shorter spring and fall trips when you need to carry additional clothing.
- **Multiday (two to four days).** This popular category includes packs ranging from 40 to 70 liters (2,400 to 4,200 cubic inches) of gear capacity.
- **Technical daypacks.** Designed for trail use, these packs tote the Ten Essentials and more. Some are set up to haul climbing tools or snowsports gear. Many offer water bottle pockets and/or a sleeve for a hydration reservoir (usually sold separately) and an exit port for its sip tube.
- **Hydration packs.** These provide hands-free drinking while hiking or biking. Such packs include the reservoir, usually two or three liters in size, and some room for gear. A 2L (70 fl. oz.) reservoir is a popular, all-purpose choice. If you're often active in warm or dry conditions, consider a 3L (100 fl. oz.) reservoir.

Next, think about comfort and weight. REI divides core gear (pack, bag and tent) into four usage categories.

- **Minimalist:** Low weight overrides all other concerns (such as comfort, durability and convenience).
- **Ultralight:** Gear for those willing to forego some conveniences to reduce pack weight.
- **Lightweight:** Most packs fall in this category. These packs offer a nice balance of features and low-weight materials.

- **Deluxe:** For "maximalist" explorers who put a higher priority on comfort and convenience than they do on weight.

Obviously, individual views on comfort and weight vary greatly. Just keep in mind that you want to keep your pack's weight low, but without jeopardizing comfort or safety.

## Fit: The Most Important Feature

The key to comfort is a good-fitting pack. To get started, have a friend help you [measure your torso length](#). Torso length is measured from your shoulders (at the C7 vertebra, the one that protrudes farthest out from the spine) to the top of your hip bones. Once you have this measurement, look at the torso spec provided with each pack to make sure you're within the range.

Your waist size also matters, though most hipbelts can be adjusted to fit a wide range of waist sizes. Just make sure the hipbelt is comfortable when you try it on; on some packs, hipbelts are replaceable.

**Fine tuning:** Many packs allow you to fine-tune their torso fit via easily adjustable suspension systems. The alternative is a fixed-suspension pack. This type is non-adjustable, but offers the advantages of being less complex and thus lighter than a comparable adjustable model.

**Women-specific packs:** These packs have narrower shoulder yokes, conically shaped hipbelts and shorter torso lengths specifically designed to fit women. Men with narrow frames sometimes find these packs are also a good fit for them.

To ensure your pack is adjusted properly, check out our [Backpack Fit](#) video and article.

## Other Key Features

**Loading (top or panel):** Virtually all packs let you access the main compartment at the top of the pack or via a front panel. The top-loading design minimizes weight, while the panel-loading design offers easier access to your gear. Some models combine top- and panel-loading features for maximum access to pack contents.

**Support (stays or framesheet):** Typically, one or two aluminum stays are used to transfer the weight of the load to your hipbelt. Stays are typically a rod or bar, though some now feature a tubular design to reduce weight. Other packs use a stiff plastic HDPE (high-density polyethylene) framesheet for load support. This thin sheet helps prevent objects in your pack from poking you in the back. A number of packs now offer a stay/framesheet combo.

**Suspension system:** This broadly refers to the load-supporting system of shoulder straps, load-lifting straps, a sternum strap and belt-stabilizer straps. These items, and tips for adjusting them, are discussed in our [Backpack Fit](#) video and article.

More specifically, packs offer one of two types of suspension.

- **Adjustable suspension:** This type allows you to fine-tune the fit of your pack to match your torso size. Many feature a ladder-type system of rip-and-stick closure that let you move the shoulder harness up or down in small increments.
- **Fixed suspension:** This style allows no fit adjustment, but offers the advantages of less complexity and weight than comparable adjustable models.

**Ventilation:** Some frame designs are now using tensioned mesh to create a cooling air space between your back and the pack. Other packs feature a channel design to provide a similar cooling effect.

**Packbag:** The materials used in packbags seek to find a balance between durability and weight. Nylon packcloth and Cordura®, a burly nylon fabric with a brushed finish, both emphasize abrasion- and water-resistance. Cordura is tougher and a bit heavier. For minimalist and ultralight travelers, newer fabrics such as silicone-coated nylon are used to trim precious ounces at the cost of some durability.

**Top lid:** This top pocket offers extended capacity, as do expansion collars. Some lids detach to double as waistpacks for day trips from base camp.

**Hydration compatibility:** Most packs have a compartment designed to hold a hydration reservoir, plus a port (opening) on each side to route the sip tube. Reservoirs are typically sold separately, except on hydration-specific packs. Other packs have elasticized mesh "holsters" on their sides to hold water bottles.

**Hipbelt:** The hipbelt should straddle your "iliac crest" — the two prominent bones on the front of your hips. This is the area where your pelvic girdle begins to flare out. When evaluating hipbelts, consider their comfort and adjustability. Some packs offer interchangeable belts, permitting a more customized fit, and even belts where the angle of the fit can be adjusted. An increasing number of hipbelts have pockets for easy access to your energy food, digital camera, GPS or similar items.

**Extras and attachments:** **Lash points** allow you to attach more gear to your pack if you have the need. Climbers and early-season hikers should look for **ice-axe loops**, **daisy chains** (a series of small loops where you can dangle gear, such as carabiners) and **crampon patches**. A **shovel pocket** holds a snow shovel or other items tight against the back of your pack; it's a good place to stash wet things. All of these extras, of course, add weight to a pack.

## Optional Add-Ons

**Rain covers:** These shelter your pack from bad weather and help prevent lashed-on gear from snagging on brush.

**Accessory pockets:** These are an easy way to expand capacity. Some accessory pockets are sized and padded to hold a GPS unit or digital camera.

**Stuff sacks:** Stuff sacks and mesh bags help organize your items inside cavernous pack compartments.

**Trekking poles:** These are especially helpful when hauling a good-sized pack. Trekking poles help you maintain balance, add a little thrust to your step when hiking uphill and ease jolts to your joints when descending.

# How to Choose Hiking Footwear

Choosing the right footwear may be the most important decision you make as a beginning backpacker. The shoes or boots you choose must be comfortable, durable and protective, mile after mile.

## QUICK READ

1. Select the appropriate boots or shoes based on your planned activity. Mountaineering boots must be much heavier and more substantial than day-hiking boots.
2. Learn about the materials used in hiking footwear. Do you need heavy, waterproof materials or lighter-weight, breathable ones?
3. Consider how boot construction will affect your activity.
4. Get your feet measured properly and then try on the boots with the appropriate socks. Take a test walk on a flat surface and then an incline and check for any slippage or discomfort.

## What Kinds of Trips do You Have Planned?

Outdoor footwear can be divided into 3 basic categories. Begin your search for the right boots or shoes by focusing on the category that best matches your hiking or backpacking plans.

- **Lightweight hiking**—These boots (and trail shoes) are designed for day hiking and very short overnight trips only. They stress comfort, cushioning and breathability. As a result, they are less supportive and durable than the options below.
- **Midweight hiking/backpacking**—These boots are designed for on- and off-trail hiking with light to moderate backpacking loads. They are more durable and supportive than lightweight hiking boots, but they are still intended primarily for short to moderate trips over easy to moderate terrain.
- **Extended backpacking/mountaineering**—These boots are designed for on- and off-trail hiking with moderate to heavy backpacking loads. They are designed with multi-day trips in mind. Durable and supportive, they provide a high degree of ankle and foot protection. Some of these models are designed specifically for rough terrain with heavy backpacking loads. They offer the very best in durability, support and protection. Some are stiff enough to accept crampons for snow/ice travel.

## Choose the Appropriate Materials

The materials used in a given boot or trail shoe will affect its weight, breathability, durability and water resistance. Since boots made of different fabrics can be very similar in performance, however, personal preference is often the key when choosing between them.

- **Nylon mesh and split-grain leather**—Nylon and split-grain leather boots are lightweight and breathable, which makes them perfect for warm to moderate weather use and short to moderate backpacking trips. They tend to be softer on your feet, they take less time to break in, and they are almost always lighter than full-grain leather boots. They also cost less. Unfortunately, nylon/split-grain boots tend to be less water resistant than full-grain leather boots (although styles that feature waterproof liners can be just as watertight, if not more so).
- **Full-grain leather**—Full-grain leather is extremely water resistant, durable and supportive (more so than split-grain leather or nylon). It's used primarily in backpacking boots designed for extended trips, heavy loads and hard terrain. Not as lightweight or breathable as nylon/split grain combinations, but it typically lasts far longer. Full-grain leather usually requires a break-in period.
- **Waterproof barriers**—Lightweight, waterproof barriers (like Gore-Tex®) are built into many hiking boots to enhance their water resistance. These barriers are available in a variety of boot styles, from lightweight hikers to extended backpacking models. Waterproof performance depends upon the type of barrier used, the materials protecting it and how well the boots are taken care of. If cared for correctly, these waterproof barriers often last longer than the boots themselves.

NOTE: Be careful when shopping for backpacking boots to differentiate between the following:

- **Waterproof leather** —This is leather that's been treated to be waterproof. It's great stuff to have, but remember —leaks may still occur, if the boot pieces are not put together well.
- **Waterproof (or watertight) construction** —This refers to construction techniques designed to keep leaks out (like seam-sealing, special stitches and precise designs). Water-tight construction is typically combined with waterproofed materials.
- **Waterproof liners** —These are the special waterproof barriers described above that are built right into the boot to protect you from whatever leaks make it through the boot materials. These liners typically do a great job of keeping you dry. But remember, Gore-Tex and others waterproof liners don't last forever.

TIP: The waterproofness (or water resistance) of your hiking boots depends significantly on how well you treat them. Be sure to follow all care instructions that come with your boots so that they can perform well and last a long time.

## Pay Attention to Construction

## Upper construction

The more seams a boot or shoe has, the higher the risk for leaks and blow-outs. Leaking occurs when water seeps through the needle holes or spaces between the boot panels. Blow-outs occur when general wear, repeated flexing or a snag causes a stitch to break and 2 panels to separate. In general, the fewer seams an upper has, the more water-resistant and more durable it will be.

## The connection between the upper and the sole

Hiking boot soles are either stitched or cemented to the rest of the boot.

- **Stitching**—Durable, reliable, can be undone to replace the sole once it has worn down. Different techniques (Littleway, Norwegian) result in different strengths and stiffnesses.
- **Cementing**—Faster and less expensive than stitching, resulting in lower boot prices. It hasn't always been reliable, but most modern methods produce durable, long-lasting bonds (depending upon the process and specific glue used). Most cemented boots can now be resoled just like traditional stitch-down models.

## Get the Right Fit

Once you've narrowed down your options to a handful of boots or shoes, the best way to decide between them is to try them on and give them a test drive.

[Read more about boot fitting.](#)

## Boot Care Basics

Keep your boots and trail shoes clean between uses by brushing off dirt and mud as both can ruin leather over time. Most fabric boots and shoes can be washed on the outside with mild soap and water. Avoid using detergent.

If your boots get drenched, stuff them loosely with newspaper and dry them in a warm place. Never rush the drying process by placing them near a fire, heater or other heat source.

Boots need to be conditioned from time to time, especially if they're made of leather. This is true whether you hike in dry, hot conditions or wet, temperate ones.

[Read more about basic boot care.](#)

## How to Choose Backpacking Socks

The socks you wear on the trail can have a significant effect on your backpacking experience. Like footwear, socks must be chosen carefully to match the kinds of conditions you expect.

### Step #1: Consider the Kinds of Trips You Have in Mind

Backpacking socks are designed to provide warmth, cushioning and abrasion resistance in a variety of conditions. The right sock for you depends on the kinds of trips you have planned and the weather conditions you expect. Here are the basic categories you have to choose from:

- **Liners** - Sock liners are thin, lightweight wicking socks designed to be worn right next to your skin. These liners wick sweat away from the surface of your foot to keep

you dry and more comfortable. Liners also limit the amount of abrasion between your outer sock and your skin. They are designed to be worn under other socks.

- **Lightweight hiking/backpacking socks** - Designed for warm conditions and easy trails, lightweight backpacking socks stress wicking performance and comfort over warmth. These socks are thicker, warmer and more durable than liners alone. They also provide more cushioning. But they are relatively thin so that you can stay comfortable on warm weather trips. Because most lightweight backpacking socks are made from wicking materials, they can be worn with or without liner socks.
- **Midweight hiking/backpacking socks** - These socks are designed to provide reliable cushioning and insulation in moderate to cold conditions. They tend to be thicker and warmer than lightweight hiking socks. Many models have extra padding built into high-impact areas like the heel and the ball of the foot for maximum comfort. These socks should be worn with liners.
- **Mountaineering socks** - Mountaineering socks are the thickest, warmest and most cushioned socks available. They are designed for long trips, tough terrain and cold temperatures. Usually, mountaineering socks are too thick and warm for basic backpacking journeys in warm conditions.

## Step #2: Consider Your Material Options

- **Wool** - Wool is an extremely popular natural sock material. It is warm, cushioning, and retains heat when wet. Unfortunately, wool can take a long time to dry and it can be scratchy next to your skin (NOTE: many new wool options, including mohair, do not have this problem). It can also wear out quickly if not reinforced with other materials. Wool blends (combinations of wool and synthetic materials) are extremely popular because they address many of these problems.
- **Synthetic insulating materials** - REI offers a number of man-made materials designed to insulate like wool and wick moisture, without the negatives mentioned above. These materials (Hollofil(R), Thermax(R), Thermastat(R)) trap warmth like wool, but they are softer on the skin. They also dry more quickly and are more abrasion resistant. These materials are available in a variety of sock styles and thicknesses.
- **Silk** - Silk is a natural insulator. It's comfortable and lightweight, but not as durable as other options. It's occasionally used in sock liners for reliable wicking.
- **Synthetics wicking materials** - The synthetic wicking materials (like polypropylene and Coolmax) used in wicking sock liners are often woven into thicker

backpacking socks as well, to enhance wicking performance.

- **Cotton** - 100% cotton is not recommended as a sock material for backpacking. Cotton absorbs sweat, dries slowly, provides no insulation when wet and it can lead to discomfort and blisters out on the trail. However, cotton is extremely comfortable. And when combined with wool or other wicking and insulating fibers, cotton can be a great choice for light hiking in summer.

**Cushioning materials** - Many backpacking socks provide extra cushioning around the heel, the ball of the foot and the toe area to increase comfort. The padding is created either by increasing the density of the weave in those areas, or in some cases by weaving long-wearing materials like acrylic into those areas. This extra padding can be a real foot-saver on hard trips over rough terrain.

**Support materials** - Many of today's hiking socks include a small percentage of either stretch nylon or Lycra(R) spandex. These elastic materials help socks hold their shape and keep bunching and wrinkling to a minimum.

### **Step #3: Take a Test Drive**

When possible, take a quick walk in the sock styles you are considering to get a feel for how much cushioning they have. And be sure to buy the right size--your socks should fit snugly. Bunched up sock material can make any backpacking trip an uncomfortable one.

## **How to Choose a Sleeping Bag**

On a cool evening in an unfamiliar place, a good sleeping bag seems to work like magic. Slip inside one after a few post-sundown shivers have rattled your body and, within minutes, the chill in your bones is replaced by a warm glow. It's a sweet sensation that assures you of a comfortable night's sleep. Here are some tips to help you make a smart choice when selecting your own sleeping bag.



1. Match your bag's comfort rating with the coldest nighttime temperatures you expect to encounter—and maybe even exceed that number for a little security.
2. Bags using down insulation are lighter (providing a higher "warmth-to-weight" ratio) than bags using synthetic fill. They also compress into smaller shapes and last longer.

3. Synthetic-fill bags can provide some insulation even when wet, and they dry out fairly quickly. Plus, for the same temperature rating, they cost less than down bags.
4. A bag's shape matters. Mummy-style bags insulate most effectively and are your best choice for colder, high-elevation conditions; rectangular bags give you more room to change sleeping positions but offer more space that your body must heat up.
5. A good sleeping pad is essential. Your body weight compresses a bag's insulation when you lie on it, so you need a reliable buffer between your bag and the cold ground.
6. Want immediate sleeping bag recommendations based on your needs? Use our handy [Sleeping Bag Finder](#).

## How Do Sleeping Bags Work?

Sleeping bags keep you warm by trapping and holding a layer of "dead" (non-circulating) air next to your body. This air, which is warmed by your body heat, forms a barrier between you and colder air or cold surfaces.

When evaluating bags, consider these key factors:

- Comfort rating
- Insulation (down or synthetic fill)
- Weight
- Size when compacted
- Shape
- Personal sleeping tendencies (are you, for example, a "cold sleeper"?)

## Comfort Rating

A sleeping bag's temperature or "comfort" rating identifies the most extreme temperature the bag is designed to accommodate. When you hear a bag described as a "+20 bag," it suggests most users should remain comfortable if the air temperature drops no lower than 20 degrees Fahrenheit.

Are such ratings infallible? No. Humans all have different metabolic rates, and no industry standards exist that uniformly determine sleeping bag comfort ratings. Instead, each manufacturer assigns a rating to its bags based on its own research. Therefore, use these numbers as a guide, not a guarantee. If you have trouble deciding between two bags, it's not a bad idea to select one that offers a little more warmth than you think you might need.

Many factors affect your ability to keep warm inside a sleeping bag:

- The insulating **pad** beneath your bag (when sleeping on frosty ground at high elevation, you need a full-length pad to keep you separated from the cold; when sleeping on snow or frozen ground, two pads are recommended)
- The presence/absence of a **tent** (a tent or bivy shelter traps an extra layer of dead air, warming it by up to 10 degrees)
- Your **metabolism**; you might be a "cold sleeper" (and thus one who prefers extra insulation when sleeping) or a "warm sleeper" (someone who kicks the covers off at home)
- Your **gender** (women frequently prefer bags with lower temperature ratings since they tend to "sleep colder" than men)

- **Clothing** worn while inside the bag (dry long underwear and clean socks are good choices on cold nights, plus they help keep body oils off your bag; a cap and neck gaiter keeps body heat from radiating away; fleece pants and jackets help on colder-than-expected evenings)
- **Adjustments** you make while in the bag (keep the bag zipped up and the hood cinched on cold nights; be careful to not breathe into the bag, since moisture has a negative effect on the insulation)
- **Food** in your stomach (the process of digestion helps produce warmth)
- **Hydration** (if you're not well hydrated the food won't help much)

Even experienced campers and backpackers can be surprised by unexpectedly cold overnight conditions, particularly during trips in the spring and fall. It's smart to be prepared.

**Tip**—To be ready for those extra chilly nights, select a bag with a temperature rating that slightly exceeds the low end of the temperature range you expect to experience. If a +20° F bag sounds right for you, a +10° bag would probably work well, too. On warm nights, you can always vent a bag (by using the double zipper to open the area near your legs) or simply drape it over you, unzipped. It never hurts to be a little over-prepared.

Recognizing that comfort ratings are merely general guides, REI organizes sleeping bags in the following categories:

Bag Type	Comfort Rating (°F)
Summer Season	+35° and higher
3-Season Bag	+10° to +35°
Cold Weather	-10° to +10°
Winter/Extreme	-10° and lower

Please note: Even in summer, a +35° bag may leave you feeling chilly when sleeping in the high country. If you think of yourself exclusively as a warm-weather camper, yet plan to routinely camp at higher elevations (3,000 feet and up), choose a bag with a comfort rating at least in the 20s.

## Down or Synthetic Insulation?

The insulation or "fill" inside a sleeping bag largely determines a sleeping bag's:

- Weight (and thus its "warmth-for-weight" ratio)
- Compressibility
- Durability

### Down

Down is the wispy, fluffy undercoating found just beneath the outer feathers of geese and ducks. This natural fiber is an extraordinary insulator. Goose down is preferred to down from ducks, prized because it is believed its plumes offer a higher "fillpower" (explained below).

Down's positives include:

- It offers tremendous warmth for surprisingly little weight (thus offering a superior "warmth-to-weight" ratio).
- It can be compacted into very small sizes.
- Its effectiveness outperforms synthetic insulation by years—even decades.

Down, though, does have a *downside*:

- If it gets wet, it is of no value until it dries—and in the field, that can take a long time.
- It is more expensive (keep in mind, though, that its resistance to deterioration makes it an outstanding long-term value).

Down is graded according to fill power—meaning the number of cubic inches one ounce of down will displace. The higher the number, the better the insulation.

### **Synthetic Materials**

Synthetic materials are basically plastic threads (extruded polymers, to be technical). The threads are most commonly a continuous filament (a long, single strand). They can also be arranged in short "staples" up to four inches long. Usually the threads are hollow, reducing their weight and enabling them to trap more air.

The advantages of synthetic fill include:

- It still provides some insulation when wet; plus it dries fairly quickly.
- It's less expensive than down.
- It's non-allergenic.

The shortcomings of synthetic fill are:

- It's bulkier than down (so it takes up more space when you're carrying it).
- It's heavier (it takes more weight to get the same warmth down provides).
- The filaments gradually degrade over time.
- The insulating "batts" of filaments are stiffer than down and do not drape over the contours of your body as effectively.

### **Which is Right for You?**

Down works well for just about everyone except people who frequently find themselves in rainy conditions.

Synthetic insulation is a good choice for kids and newcomers to camping and backpacking. It costs less than down and dries out relatively quickly if it gets wet.

Many women's bags are cut to accommodate a woman's body shape and preference for extra insulation.

Down always wins in terms of weight, compressibility, warmth and durability. Yet the value and performance of synthetic bags makes them very popular. Synthetic bags are improving each new model year, and they're champs when rain is a threat or cost is a factor.

What about length? Do you need a "regular" or "long" model? The general rule is as follows: If you are no taller than 6 feet, choose a "regular" length bag. If you are up to 6-feet-6, you want a "long" bag.

## **How to Choose the Right Sleeping Pad**

Sleeping pads perform 2 important functions -- first, they keep you comfortable when you're sleeping on hard, uneven ground. Second, they provide an important layer of insulation between you and the ground (to cut down on conductive heat loss).

### **How do they work?**

Sleeping pads insulate the same way that sleeping bags and clothing layers do. They trap and hold a layer of dead (non-circulating) air between your body and the cold (in this case, the cold ground). Your body gradually warms this layer of dead air and it becomes an insulating barrier.

The insulative performance of a pad depends upon how much air it holds inside and how free that air is to circulate.

### **Step #1: Consider Your Plans**

The primary variables to consider when choosing a pad are:

- Insulation

- Comfort
- Weight/Bulkiness
- Durability

To decide which of these variables are most important to you, consider your outdoor plans. Think about:

- **The kinds of weather you expect** - if you're a fair-weather camper/backpacker, comfort will probably be more important than insulation. But if you hit the trail year-round or enjoy early spring or late fall trips, make sure you get a pad that provides protection from cold and wet conditions. It is recommended that you use two pads in snow or frozen conditions.
- **The level of comfort you want while sleeping** - some people prefer to save money, space and weight by sticking with very basic pads. Other prefer to spend (and carry) a little more to stay as comfortable as possible in the wilderness.
- **How much extra weight you want to carry with you** - Thicker, more comfortable pads can be heavy, which can cause problems on long backpacking trips. But if your trips are short or you're a car camper, weight will be less of an issue.
- **How much space you have for storage** - If you're backpacking with a full gear load, a light, compact sleeping pad will be far easier to pack. Space will be less of a problem if you're carrying all of your gear in your car, or boat.

### Step #3: Consider Your Options

- **Air mattresses** - basic, inflatable air bladders

*Positives* - They're comfortable, adjustable and inexpensive.

*Negatives* - They tend to be heavy, bulky and they can be punctured/ripped easily. Air inside is free to circulate, so they tend to be poor insulators.

- **Open-cell foam pads** - sponge-like foam pads made up of tiny, open air cells

*Positives* - They're comfortable, lightweight and inexpensive. The tiny foam cells restrict air circulation, so they are also more effective insulators than air mattresses.

*Negatives* - Open-cell foam is absorbent, which can cause problems in wet conditions. It's also less insulating than closed-cell foam (it must be cut about four times as thick to get the same insulation). Open-cell foam tends to be bulky, difficult to compress (for packing) and not very durable.

- **Closed-cell foam pads** - pads made out of dense foam filled with tiny closed air cells

*Positives* - They're cheap, durable (won't pop when tromped on) and extremely insulative (almost no circulation of air in pad, so they can be cut thin yet still provide good insulation). Closed-cell foam is also non-absorbent.

*Negatives* - They're relatively stiff and firm, with far less cushioning than open-cell foam (so you'll need a thicker, heavier piece to be as comfortable).

- **Self-inflating pads** - open-cell foam pads wrapped in air-tight, waterproof nylon shells.

*Positives* - They're as comfortable as open-cell foam, but much more insulating (the nylon shell limits air circulation, while also protecting against water absorption). They're adjustable (built-in air valves let you control the amount of air inside and thus the firmness of the pad) and they're extremely compact when rolled up.

*Negatives* - They're more expensive than the options listed above. Can be punctured or ripped (though field repairs are not difficult). Heavier than open- or closed-cell pads.

### Step #4: Try Before You Buy

Sleeping pads come in a variety of styles, shapes and lengths. If possible, try out a number of different pads before deciding on a single model. This will help you get a feel for:

- How much cushioning you need to be comfortable
- How long and/or wide you want your pad to be (many models are cut short to save weight and packing space)
- How easy the pad is to inflate, deflate, and/or pack away

### Step #5: Consider the Extras

Finally, consider any extra pad features that might affect your decision -- like multiple air chambers (for a more custom adjustment), built-in pillows (for comfort), textured pad surfaces (for better insulation, less slip and more comfort) and tapered pad shapes that cut down on weight and bulk.

If you'll be traveling with a close friend, consider pads that can be attached together to form a larger sleeping area for two. Also, chair kits that work with inflatable pads offer a great deal of comfort without a lot of weight and bulk. See our selection of [pad accessories](#) for more great ideas.

## How to Choose a Backpacking Stove

You've hiked all day, snacking on energy bars and peanuts. Now as you shed your pack and finally take a rest, you're ready for a nice, hot meal! Whether you whip up a three-course meal or simply boil water for your freeze-dried entree, you're going to need a reliable backpacking stove. Understanding a bit about stove sizes, features and the fuels they burn will help you choose the best one for your needs.



1. Determine the kinds of trips you'll be taking and places that you'll be traveling most often.
2. Choose the lightest, most compact stove that will still meet your needs.
3. Decide which fuel will work the best for your trip. Factors include cost, burn time and availability.
4. Consider the stove's handling characteristics and ease of use.

### What Kind of Trip are you Planning?

To find the right backpacking stove, focus on two things—the kinds of trips you want to take and the kinds of meals you want to enjoy.

Try to figure out how many people you'll be cooking for (which will affect how big a stove you'll need), what kinds of temperatures you'll be cooking in (which may affect the kinds of fuels you burn) and how complex your meals will be (which will affect how adjustable your stove will have to be).

### Select the Right Size

Backpacking stoves come in a variety of sizes—from lightweight micro-stoves that fit in your pocket to two-burner platforms that barely fit in your trunk. In general, stick with the lightest, most compact model you can find, unless your plans include short trips, big meals and large groups of people.

To save space and weight in your pack, look for stoves that:

- Can be disconnected from their fuel supply—Many stoves can be unhooked from external fuel bottles for easier storage in your backpack and less chance of breakage.
- Fold up or collapse—The legs, base supports and pot holder arms of many backpacking stoves can be collapsed or folded for easier packing.
- Fit inside of cookware—Some stoves are designed to fit inside of popular cook sets. This can be a great space-saver. (Be sure to bring a plastic bag to put your stove in so no fuel spills onto your pots and pans.)

## Consider Fuel Options

Before you look at specific stove models, take a few minutes to decide which type (or types) of fuel will work best for you. This will help you narrow down your options:

### Butane, Propane or Isobutane Blend Canisters

- **Positives**  
Convenient, clean-burning and easy to light. Burn hot immediately and do not require priming. Can be adjusted easily for simmering. Can't spill.
- **Negatives**  
More expensive than other fuel types. You must carry and dispose of the fuel canisters, and most are non-recyclable. Performance may decrease in temperatures below freezing, however blended alternatives - butane/propane and isobutane - work better than straight butane in cold conditions. Pure propane works well down to 0°F. Butane will not work below 32°F.
- **Overall Review**  
Great for warm- to moderate-weather campers who want easy adjustability, few hassles and who don't mind carrying a little extra weight in their packs.

### Kerosene

- **Positives**  
Inexpensive, easy to find (throughout the world), high heat output, spilled fuel does not ignite easily.
- **Negatives**  
Somewhat messy (burns dirty, smelly). Priming is required (easier if a different priming fuel is used), tends to gum up stove parts. Spilled fuel evaporates slowly.
- **Overall Review**  
A cheap, versatile fuel choice, especially for backpackers who plan on traveling outside of the United States (where white gas and butane blends may not be readily available). Not as clean or easy to deal with as butane or white gas.

### White Gas

- **Positives**  
Inexpensive, easy to find throughout the United States. Clean, easy to light, spilled fuel evaporates quickly.
- **Negatives**  
Volatile (spilled fuel can ignite quickly), priming is required (fuel from the stove can be used). Can be hard to find outside of the United States.
- **Overall Review**  
A great overall performer, perfect for travel throughout North America in just about any weather conditions. Reliable, inexpensive and efficient.

### Denatured Alcohol

- **Positives**  
A renewable fuel resource, low volatility. Burns almost silently. Alcohol-burning stoves tend to have fewer moving parts than other types, lowering the chance of breakdown.
- **Negatives**  
Lower heat output, so cooking takes longer and requires more fuel. Fuel can be hard to find outside of the U.S. and Canada.
- **Overall Review**  
A viable, environmentally-friendly option for travel in the U.S. and Canada, especially if you crave peace, quiet and a slow pace on your backpacking trips.

### Unleaded Gas

- **Positives**  
Very inexpensive, easy to find throughout the world.

- **Negatives**  
Burns dirty/sooty, can lead to frequent stove clogs. Extremely volatile.
- **Overall Review**  
Usually used as a last resort only. Price and availability make it an attractive option for backpackers traveling in extremely remote areas.

**NOTE:** Never use oxygenated gasoline in your backpacking stove. Sold in many parts of the U.S. in the winter months, its additives can destroy rubber stove parts and seals.

## Multi-Fuel Stoves

Many of the backpacking stoves that REI carries are designed to burn more than one type of fuel. They tend to cost more than single-fuel models, and they can be more difficult to maintain. But if your plans involve visits to a wide range of destinations, the added flexibility will be worth the extra cost.

## Look for a Stove Design that Works for You

Backpacking stoves come in all kinds of shapes, sizes and designs. Once you've decided on a general size and fuel type, take a look at your options and ask yourself (or your REI salesperson):

- How easy is the stove to set up? Does it require assembly every time it's used? If so, is the assembly easy or complex?
- Is the stove sturdy? Is it stable on uneven ground? How hard is it to balance a pot on top?
- If a gas canister is used, is it easy to attach and remove? Can it be detached before it's completely empty?
- How easy is the stove to light? Does it require priming? Can it be primed with fuel from the stove itself?
- How easy is the stove to control? Can the heat output be adjusted easily? Will the stove simmer?
- How easy is the stove to maintain in the field? Can I handle basic maintenance myself?

## Consider Performance

Finally, once you've narrowed down your stove choice to a handful of specific models, consider their overall performance. A good way to do this is with REI's in-store printed comparison chart or stove test centers. Consider variables like:

- **Average boiling time** - Measures how hot the stove burns.
- **Water boiled per pint of fuel** - Measures how efficient the stove is. It's like comparing cars based on how many miles-to-the-gallon they get.
- **Burn time at maximum flame** - Measures how long the stove will burn on a given supply of fuel before it has to be refilled.

Hints for improving your stove's performance:

- Use a lid when cooking.
- Use a windscreen.
- Use a heat-exchanger on trips of more than a few days (to improve fuel economy).
- Use alcohol for priming (this will help keep your stove soot-free).
- Learn how to clean and maintain your stove properly.
- Use a coffee filter to filter all of your liquid fuel before use.
- Use the sun or body heat to melt snow (rather than your stove).

# How to Choose a Tent

Wind. Rain. Cold. Bugs. Dust. Creepy crawlers. If someone asks you why you feel the need to carry a tent into the

backcountry, those are 6 good reasons.

Tents also provide a place of privacy in the middle of wide open spaces, plus an intangible feeling of security once you're zipped inside for the night. It's impressive how much comfort and reassurance we humans find between a few well-stitched panels of nylon. Which model is right for you? Here are some guidelines:



1. Pick a tent equipped to withstand the harshest conditions you might encounter. Example: If you're a three-season backpacker who hikes late into the fall, you might want a four-season tent or a convertible model.
2. Four-season tents are roughly 10 to 20 percent heavier than three-season models (typically due to extra poles). Convertible tents allow you to add or omit poles and adjust ventilation as conditions dictate.
3. Freestanding tents (those that can stand without the aid of stakes) are very handy. You can move them easily or lift them to shake out debris. Very lightweight tents are rarely freestanding.
4. Capacity ratings, assigned by individual manufacturers, sometimes tend to be optimistic. A two-person tent may be a tight squeeze for two large adults and their gear.
5. Use a tarp, ground cloth or footprint to extend the life of a tent's floor.
6. Want immediate tent recommendations based on your needs? Use our handy [Tent Finder](#).

## Types of Tents

Backpacking tents fall into two general categories: three-season (general backpacking) and four-season (winter/mountaineering) models. Here's a look at how tents differ:



Lightweight **three-season tents** are intended for spring, summer and fall usage in temperate climates. They perform well in wind and rain, though their designs are not suited to handle significant snow loads. A three-season model won't collapse if two inches of snow fall on it, but 20 inches could be a problem.

Super-sturdy **four-season** tents usually integrate one or two additional poles into their designs to fortify walls and help them stand firm against severe wind or heavy snow loads. Winter tents feature some type of rounded dome design, thus eliminating flat spaces on a tent's rainfly where snow can accumulate. Of course, these winter/mountaineering tents work just fine during mild conditions. Their extra poles will make them a touch heavier than their three-season cousins.

**Convertible tents** are four-season models that can be converted into three-season tents. This usually involves shedding one or two poles from the tent's four-season design. Models may also offer zippered panels that can be opened during milder conditions or feature a detachable vestibule.

Warm-weather tents are lightweight shelters, usually designed for one or two people, that feature large mesh walls for superb ventilation. They can be used in three-season settings, but their special appeal is their usefulness in warmer, humid climates.

Single-wall tents are designed with the minimalist in mind. Essentially, they are rainflies equipped with a few vents you can zip open during warmer conditions.

**Bivy sacks** are minimalist solo shelters that offer little space for anything but you and your sleeping bag. (If you're a climber and plan to spend nights on steep rock faces where tents would be impractical, a bivy is definitely the way to go.) If saving weight is your chief priority, a bivy is worth considering. If you like room to move inside your shelter, look elsewhere. Is a bivy right for you? We offer a [separate clinic](#) on bivy shelters for your consideration.

**Sleep screens and tarp tents** are ultralight shelter options. Sleep screens, including screen houses, are useful in warm conditions and offer mesh coverings, some fully enclosed, some not, to keep occupants shielded from bugs, but not rain. Tarp tents offer minimalist shelter, at a minimal weight, for three-season usage.

**Family (or basecamping) tents** and shelters can accommodate large groups (between four and six usually, sometimes more). Dome-style models can be transported into the backcountry, as long as group members are willing to carry a share of the load; house-like models are intended for campgrounds and basecamps.

## A Few Terms Explained

- **Dome Tents:** Most four-season tents involve some form of rounded, geodesic-dome design. Domes avoid flat spots and shed snow more easily. They stand strong in the wind and provide generous interior headroom.

- **Tunnel Tents:** Many three-season models use this narrow, linear design, typically involving a rectangular floor plan. Also called hoop tents, these models use fewer poles, less fabric and often have wedge-like shapes. Their rainflies, which lie flatter, can collect snow. A heavy snow load could flatten them.
- **Freestanding Tents:** Domes are freestanding, meaning they do not require stakes in order to stand up. You can pick up a freestanding tent (it's like a huge beach ball) and move it to a different location. You can also easily shake it out before you disassemble and pack it.

## Which Type is Right for You?

Questions worth asking:

Q: What times of year will you use your tent?

- Winter campers need a four-season tent, period. If you have an Arctic expedition in mind, consult with people who have already made such trips and get their advice.
- If you're a three-season hiker who heads out in March or tries to squeeze in late trips in October and November, give yourself an extra buffer of security—get a four-season tent or at least a convertible.
- If you're a recreational traveler and do the bulk of your camping between May and September, choose a three-season model.

Q: How many people usually travel with you?

- Do you consistently travel with a partner? You need at least a two-person tent. Are the two of you large people? You might need to bump up to a 2-to-3-person model or even a three-person tent.
- Does your group size vary? You'll probably need more than one tent to fulfill your needs. If your budget is tight, buy the size that fits most of your trips; when your group size changes, rent a tent.
- If you're sharing a tent at the end of the day, share the load as you hike. Someone can carry the poles, another person the rainfly, and so on.
- Do you travel solo? If you demand lots of space, look for a compact two-person model. If you count every ounce, select either a bivy or a very light one-person tent.

Q: Won't a cheap tent from a discount store work just as well as a brand-name model?

- Department-store tents are typically mass-produced items that supply less attention to details. Example: Examine the stitches of a quality tent. You'll find a greater number of stitches per inch in that tent than you'll find in the discount tent, and you'll often find seam sealing. This means a stronger tent is at work for you when the weather turns nasty. Quality tents use high-grade aluminum poles. Bargain tents often rely on fiberglass poles, which are less shatter-resistant. Top-brand tents often give you more ventilation options as well.
- Inexpensive tents use large panels of coated nylon on their canopy (side walls). That material is not breathable, so if it's a balmy night, you might swelter inside.

### Understanding Tent Specifications

When surveying REI's online selection of tents, you'll find a general description and a list of specifications that accompany each model. These "specs" look technical, but the information is really quite helpful. [Click here](#) to learn the details behind each entry.

## Tent Capacity

Manufacturers classify their tents according to sleeping capacity: solo tents, two-person tents, three-person tents and so on. You'll also find references to items such as 1-to-2-person tents or a 2-to-3-person model. To better understand what all this means, [click here](#) and we'll "go inside the numbers" to explain some terms in detail.

### Getting a Good Fit

How do you know if a tent is a good fit—physically—for you?

Here's one technique—not perfect, but certainly useful—to help you envision how you might fit into a tent: Measure your backcountry sleeping pad and use its dimensions as a general guide when you consider a tent's measurements.

- **Example:** The popular Therm-a-Rest standard model from Cascade Designs is 72" long and 20" wide. Width is the crucial measurement. To fit two people inside a tent, you will thus need at least 40 inches of width to feel even marginally comfortable—if you don't mind sleeping close. If you need a few inches of separation, then add a couple of inches to your measurement. If you thrash around a lot at night, you might need to add several inches.

Compare your numbers with the **floor dimensions** provided with each tent. That gives you some idea of how snug, or spacious, a tent might feel. Floor dimensions, of course, indicate only the maximum width a tent offers, typically the spot where your shoulders lie. Tents often taper in the foot sections, and walls angle in toward the ceiling. All of this impacts the amount of space found inside a tent's walls. Roomy tents are nice, but tend to weigh more.

**Tip:**—Looking at two-person tents? Consider one that could adapt well to some of your other travel plans. Maybe you're anticipating future solo hikes, or a long-distance bike trip. If so, a 1-to-2-person model might be a good choice. If you're a couple and you sometimes invite along a friend or relative, consider a 2-to-3-person, or even a three-person model. You'll like the flexibility, plus the extra bit of space, these models give you.

### **Additional Considerations**

Do you camp often in rainy climates? Take a look at roomier tents, and consider adding a gear loft. That's basically a piece of interior netting that stretches out, hammock-like, near the ceiling of your tent. Overnight you can dangle damp items from a loft and hasten their drying process.

A tarp, ground cloth or footprint can help protect the floor of a tent and extend its life. Plus, it gives you a clean place to fold your tent in the morning.

For some thoughts on ventilation and a list of other helpful tips and reminders, [click here](#).

## **Does Everybody Need a Tent?**

Some hardy souls will argue that a tent is a burdensome luxury. Ultralight advocates point out that a tarp, a little cord and some ingenuity are all people need to create sufficient shelter in the wilderness.

In many situations, that's a valid point. But then an unexpected overnight weather front blows through, or skeeters arrive by the thousands, or you're not really sure if a nearby ant hill is inactive after all. A night or two like this is usually all it takes to convince most recreational hikers that the full enclosure a backpacking tent provides is worth a little extra bulk and weight in their packs.

Chosen wisely, a tent will add only a modest amount of weight to your load. In return, it will give you the confidence to know you are equipped to take shelter from just about any rude surprise nature may dish out during your trip.

### **Quick Review**

- Tents serve both a physical and psychological function; they protect you from the elements and surround you with a sense of security.
- Anticipate what awaits you in the backcountry—the weather, number of people in your party—and seek out a tent equipped to accommodate your most demanding ambitions.
- General backpacking (three-season) tents are excellent, lightweight performers; winter/mountaineering (four-season) tents are good year-round and give you extra stability during harsh conditions.