

## How to Choose a Backpacking Tent

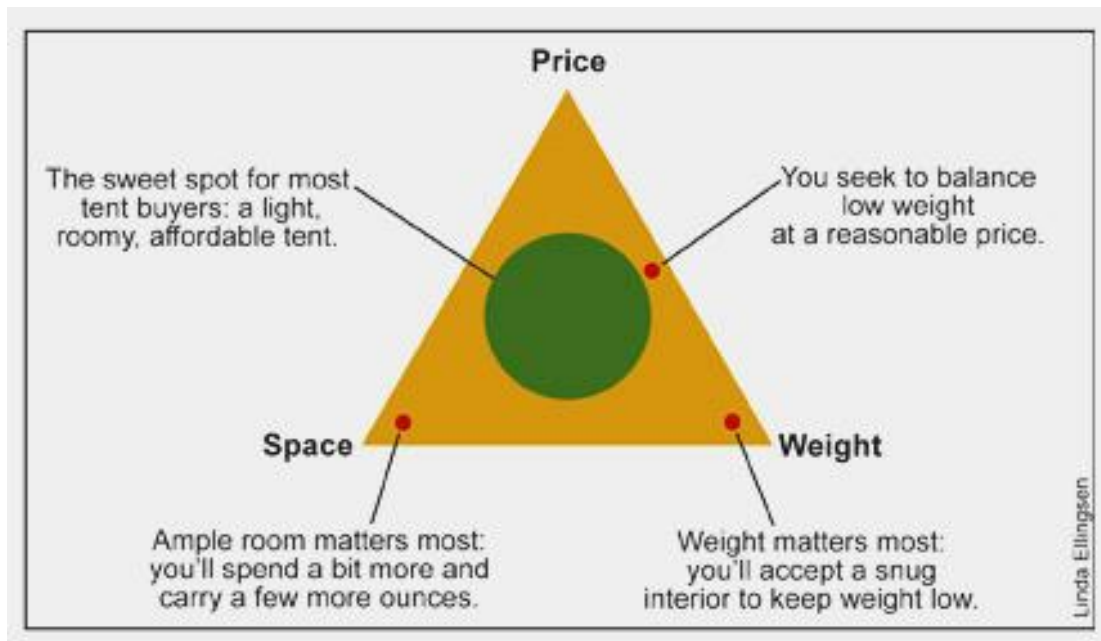
**Note:** The following article is from REI and can also be found on their website.

A backpacking tent offers so much—a cozy dry zone when raindrops fall, a patch of privacy in wide-open spaces, a fabric fortress that buffers you from ill-mannered insects.

Choosing the right one for you involves:

- Evaluating your personal preferences and the conditions you commonly experience.
- Finding the right balance among a trio of factors: space, weight and price.

Imagine those factors mapped out as a triangle. Where would you fit inside its parameters?



Secondary factors can also play a role in your decision:

- Weather expectations
- Design features
- Ease of setup

Once you compare your preferences to these factors, you can narrow your choices.

# A Quick Guide to Backpacking Tents

Backpacking tents are categorized at REI according to:

- Sleeping capacity
- Weather-readiness (seasonality)

Here are some questions to ask yourself:

## ***SPACE: How many people will usually sleep in the tent?***

**A:** Backpacking tents are categorized by their per-person capacity: 1-person (solo), 2-person, 3-person and 4-person. Tent names often include a number (the Big Agnes Seedhouse SL 2, the REI Half Dome 2) that indicate their maximum capacity.

To keep weight low, tents are usually designed to fit snugly. The resulting space is often a little more compact than many people prefer. A snug space often suits cozy couples just fine, though we find that 2 larger people typically wake up friendlier if they spent the night in a 3-person tent or a roomy 2-person model. Backpacking with a dog or a small child? Generally it's a good idea to go plus-1 with your capacity choice.

If possible, visit an REI store and examine tents in person. Often stores have several tents already set up so you hop inside and judge how well they match your size, your companions and your sleeping style. Usually REI staff can set up additional models for you to inspect. Evaluating tents in person is a superb way to shop for a backpacking tent.

## ***WEIGHT: What is a desirable weight for a backpacking tent?***

**A:** Solo tents range between 2 and 3 pounds. Two-person tents commonly range from 3 to 5 pounds, but may reach up to 6 or drop almost to 2. Aim for a per-person weight of less than 3 pounds. Getting close to 2, or even less, is excellent. Realize, though, that a low per-person weight usually results in a snug interior.

## ***PRICE: What can I expect to pay for a quality backpacking tent?***

**A:** Two-person tents range from \$100 to \$500; the majority are priced near the middle of that range. A higher price tag usually buys you extra refinements and lower weight. If you backpack infrequently, aim for the lower end of that range. The REI Half Dome 2, REI's best-selling tent, sells for under \$200.

## ***WEATHER: What are the conditions I expect to encounter?***

**A:** Most backpackers choose a 3-season tent, meaning it's suitable for the moderate weather of spring, summer and fall. If you often camp in warm or humid conditions, search out tents with lots of ventilating mesh panels. Several tents have canopies (upper sections) that use 100% mesh. Mesh panels are nice for stargazing on mild nights when a rainfly is not needed.

Often face chilly, windy nights? You are a candidate for an extended-season tent. Expecting to face sustained winds or planning to venture out in winter months? You'll need an

expedition/mountaineering tent, also known as a 4-season tent. Learn more about these burly designs in the Extended-Season and 4-Season Tents section later in this article.

Overall, the wise move is to carry a tent equipped to handle the worst conditions you expect to encounter. Naturally, the feathery weights of summer-oriented tents are very appealing. But if you are planning a late-autumn trip at high elevation where snow and high winds are possibilities, you're better off equipping yourself with a more substantial tent engineered to withstand harsher conditions.

It is not unusual for serious backpackers to own 2 or more tents to suit the weather they expect to face.

### ***FEATURES: What "little things" matter most on a tent?***

**A:** Two stand out:

- **Doors.** Very light tents often include a single door at the head end. That's fine, but many tents offer 2 doors in 2-person tents, giving each sleeper a separate entry and exit point so each individual can come and go as they please. Two doors are nice, for example, if your companion wants to turn in early while you want to make a late entrance after enjoying some stargazing.
- **Vestibules.** These are extendable sections of a tent's rainfly (requiring stakes and a maybe a few guylines) that create a sheltered dry zone outside your tent for stashing footwear and other gear. Nearly all tents offer at least 1, though they vary in size by tent model. If vestibules are important to you, look for high square foot numbers in tent specifications.

### ***SETUP: How easy is it to pitch?***

**A:** Most tents offer freestanding design, meaning a tent can stand without the use of stakes. This generally results in a fast setup. If the need arises, freestanding tents are simple to relocate—just lift them by their poles and carry them to a new spot.

In general, the more pole sections a tent includes, the more complex its setup might appear. After a couple of setups, though, the steps of erecting a backpacking tent become an automated, almost instinctive process.

**Tip: Practice setup at home** before your first trip. Any tent setup can appear challenging on the first try. It's easier to grasp not-immediately-obvious setup techniques when you're not pressured by a setting sun or approaching storm.

So there you have it; the basics of tent shopping. For first-time buyers, this might be all the information you need. If you're an experienced backpacker who may be looking to upgrade, read on as we take an in-depth look at the finer details of tent design and construction. Often the factors that distinguish 1 tent from another lie in the subtle details explained here.

## **Tent Size and "Livability"**

Ideally, the interior of a backpacking tent should deliver "Goldilocks dimensions"—not too snug, not too roomy (since lots of room usually results in higher weight). The perfect tent should feel just right.

## ***Sleeper Capacity***

Here is a truism worth remembering: Not all 2-person tents (or 1- or 3- or 4-person tents) are created equal. No industry standard exists that defines per-person tent dimensions. So it's possible, even likely, that Brand X's interpretation of a 2-person tent may vary noticeably from Brand Z's.

Within the REI brand, the design standard for 2-person tents requires that a pair of 72" x 20" sleeping pads must fit side by side with no overlap. Most tents from top outdoor brands adhere to similar guidelines.

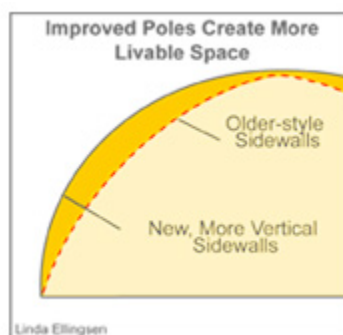
Of course, if you and a friend have ever hopped inside a 2-person tent and remarked, "Y'know, this seems a little tight," you are not alone. To keep weight low, backpacking tents use space-efficient designs that many times cause walls to slope steeply toward the crown of a tent. The weight-savings achieved are terrific, but sloping walls reduce sit-up space and can make a tent's interior feel cramped.

Yet most time people spend inside a tent is spent lying down. Does sit-up space really matter? It can if a storm confines you to your tent for a day or longer. During the time you're not snoozing, some extra room is a nice thing.

When evaluating tent capacity ratings, our general advice is this: Assume a close fit. If you seek more room, consider upsizing your tent capacity by 1 person, particularly if you or your usual tent companion(s):

- are large people
- are claustrophobic
- toss and turn at night
- sleep better with more than average elbow room
- are bringing a small child or a dog

## ***Gauging Interior Volume***



Typically, 3 specifications are provided by manufacturers to help shoppers mentally size up a tent's interior:

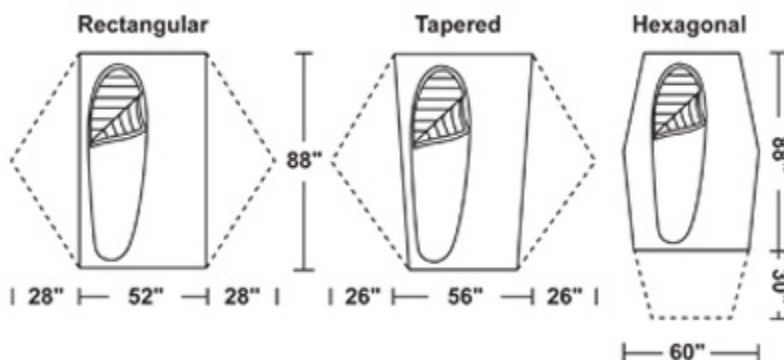
- Floor dimensions
- Floor area (square feet)
- Peak height

These specs, though, cannot help you gauge how a tent's walls are angled. The more vertical the walls, more "livable" space can be found inside a tent. The pitch of walls in each tent is different. Some tents are rounded and dome-like, offering more overall headroom; others are wedge-shaped, with minimal space at the foot end, where sit-up space is reduced but weight savings are gained.

How can you assess a tent's interior volume? Here are 3 options:

- Visit a store, ask to set up a tent and hop inside. That's always the best plan.
- If shopping online, eyeball a tent's photo and study the pitch of its walls. If the walls angle steeply toward the tent's ceiling, you're probably looking at a weight-efficient tent (great!) that offers only modest interior volume (the tradeoff).
- Use the 3 traditional tent specs mentioned previously to mentally size up a tent. Here are some details for doing so:
- Floor dimensions: Tent floor plans show length and width measurements, usually in inches. Keep in mind that floor plans usually list only a tent's widest measurement—at the shoulder end of the tent.

Many tent floors are not rectangular. Some taper and become narrower at the foot end (a weight-saving technique). Some 3- or 4-pole designs create a floor that is hexagonal (wider in the hip area). The extra poles make hexagonal shapes (common in extended-season and 4-season tents) more stable but add weight.



Generally, 2-person tents measure somewhere in the mid-80s to upper-80s for length and mid-50s for width. Since standard sleeping pads are 20" wide, that gives 2 people about 14" to 15" inches of hip-to-hip wiggle room—not spacious, but adequate.

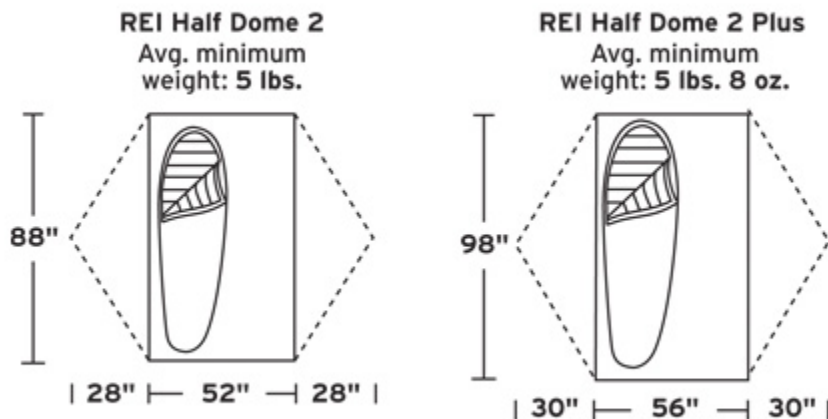
As for length, the Centers for Disease Control and Prevention (CDC) reports that, as of 2002, the average American male stands 5'9½" (or 69.3 inches); the average female is 5'4" (63.8 inches). Most backpacking tents easily accommodate people of such heights.

Yet tall people—6' (72 inches/183 centimeters) and taller—may feel a little cramped inside tents that offer a fairly common length of 84 inches. Why? Because tent walls slope in at the foot and head of most tents. (This I know from personal experience; I'm 6' and too often find my noggin and toes grazing both ends of an 84" tent.)

**Our advice for taller backpackers:** Look for tents with floor lengths measuring at least in the high 80s or preferably 90 and beyond.

Taller backpackers should also take note of an encouraging trend: In 2010 REI introduced "Plus" versions of some of its most popular tents, adding a few inches in width and length to

accommodate people with larger profiles. (The idea mimics the thinking behind regular and long sleeping bags; taller people appreciate some extra space.) Admittedly, weights will rise a few ounces, but a few inches of "plus" space can feel luxurious. Here is how floor plans of an REI Half Dome (standard and Plus versions) compare.



**Floor area (square feet):** Two tents may offer identical floor dimensions but claim different square footage. How can that be? The tent with the smaller floor area number most likely tapers more narrowly at the foot end.

A higher floor area number indicates it offers more floor-level space. (The same goes for the square footage shown for vestibule areas.) This number, however, does not account for the slope of the walls. So floor area is a useful number to know, but a less-than-perfect gauge of a tent's overall livability.

**Peak height:** Generally, the higher the peak height, the roomier the interior. Just realize that peak height is measured at a single spot inside a tent and does not depict the entire interior of a tent and its sloping walls.

Peak height in tents is determined by positioning a ball or sphere, 8" in diameter, at the highest point within the tent. (The technique, used industry-wide, was the brainchild of the REI Quality Assurance Lab.) The ball serves a stand-in for a camper's head, and peak height is measured from the top of the ball. Tents with pointy crowns may technically offer a higher absolute height, but the ball measurement offers a more realistic "functional" peak height.

**A few tent-design footnotes:** To minimize the slope of tent walls, REI was among the first tent manufacturers to make use of "combi-poles." Combi-poles feature pole sections of varying diameters. Thinner pole sections are used near the floor and support thicker upper sections which do not flex. This allows the tent's crown to flatten slightly and create more sit-up space and head room. Other tent-makers use pre-bent pole sections and brow poles to achieve a similar effect.



In 2007 REI introduced another space-expanding design feature, the tension truss, on selected tents. A tension truss is a fabric rib attached to a tent seam that, when tent poles are placed in position, makes the seam taut and optimizes the space it provides. It also strengthens a tent's overall architecture, reducing its "wobble" when shaken.

## Tents and Seasonality



### ***Three-season Tents***

By far the most popular choice among backpackers, 3-season tents are lightweight shelters designed for the relatively temperate conditions of spring, summer and fall. They are usually equipped with ample mesh panels to boost air flow. Mesh panels keep out insects but can still let in powdery blowing sand. Properly pitched with a taut rainfly, 3-season tents can withstand downpours but are not the best choice for sustained exposure to harsh storms, violent winds or heavy snow.

The primary functions of 3-season tents:

- Keep you dry during rain or light snow.
- Shield you from bugs.
- Provide privacy.

## ***Extended-season Tents***

Extended-season (3+ season) tents are engineered for prolonged 3-season usage, suitable for summer use but also trips in early spring and late fall when moderate snow may be encountered. Their goal: offer a balance of ventilation, strength and warmth-retention.



Typically they include 1 or 2 more poles and fewer mesh panels than pure 3-season models. This makes them sturdier and warmer than their 3-season cousins. Heavier, too, but not by huge amounts. Cousins of a vanishing breed known as convertible tents (with removable pole sections), extended-season tents are good choice for backpackers who make frequent trips to exposed, high-elevation destinations. While very sturdy, they are not as fully fortified for harsh winter weather as 4-season tents.

In this category, REI carries the REI Arete ASL 2, Arete ASL 3 (ASL: All-Season Light) and Cirque ASL 2. The Cirque offers 2 doors, the Aretes, 1.

## ***Mountaineering/Expedition/4-season Tents***



Engineered to withstand fierce winds and substantial snow loads, mountaineering tents can be used in any season. Their chief function, though, is to stand firm in the face of seriously inhospitable weather, principally in winter or above treeline.

They use more poles and heavier fabrics than 3-season tents and thus unavoidably weigh more. Their rounded dome designs eliminate flat roof spaces where snow can collect. They offer few mesh panels and rainflies that extend close to the ground. This hinders ventilation and can make them feel warm and stuffy in mild weather. But when foul winds begin to howl, a 4-season tent provides a reassuring place of refuge.



## Minimalist Tents and Shelters

Minimalists, that small but earnest coterie of serious ounce-counting wilderness travelers, can choose from several options:

### ***Ultralight (UL) Tents***



Ultralight tents achieve their low weight primarily through the use of lightweight fabrics. (See the Fabrics section later in this article for a more detailed discussion of fabric weights.) Like other ultralight items, a UL tent is special-care gear that requires conscientious treatment by its owner.

Care must be taken when selecting a campsite, for instance. If a site is rocky, rooty or littered with barbed pinecones, any potential fabric-gouging material must be avoided or cleared away. Otherwise, seek a different site.

Even mesh used for UL tents has become downright wispy—fantastic for minimizing weight, but care must be taken to avoid snagging or strafing the material. Footprints (ground sheets) are usually a wise addition to any UL tent to protect lightweight floor materials. But that means carrying a few more ounces in your pack.

**Pros:** Low weight, less space occupied in a pack.

**Cons:** Relatively delicate when compared to 3-season tents.

### ***Single-wall (SW) Tents***



The vast majority of tents are double-wall designs—a main tent body (with a waterproof floor and a breathable canopy) that, when needed, is covered with a removable rainfly.

Single-wall tents are primarily used by alpine climbers and are designed to shed snow more so than rain. Their walls are constructed of waterproof/breathable fabrics (often Gore-Tex or eVent)

and thus do not need a rainfly. They seal tightly in cold, snowy weather and use vapor pressure to force out condensation.

**Pros:** Lighter than traditional double-wall tents.

**Cons:** Can be stuffy, especially if used in mild conditions.

Search REI.com for Bibler tents or the Marmot Alpinist 2.

## ***Bivy Sacks***



A bivy is a waterproof, breathable barrier for your sleeping bag—a low-profile setup where you and your bag are the banana and the bivy is the peel. A bivy consists of a waterproof floor and a waterproof/breathable upper layer—the same strategy used in single-wall tents, just in a smaller, tighter package.

"Bivy sack" is short for bivouac sack. Bivies were initially made popular by climbers, and minimalist backpackers later embraced them. Some models are basic sacks with nothing more than a face hole; others offer some fully enclosed, pole-supported head space with mesh netting to separate you from bugs.

As long as you don't mind sleeping in what can feel like a confined space, bivies are excellent weight-savers. Their chief downside: no sit-up space. It is challenging (some would say close to impossible) to change clothes inside a bivy. So, if insects are troublesome and you want to change into or strip down to sleeping attire, you will be exposed to bugs as you peel off clothing before you slip into your bivy.

**Pros:** Saves space and weight.

**Cons:** Can feel confining; on models without netting, user is vulnerable to bugs.

## ***Tarp Shelters, Floorless Tents and Tarps***



Tarps are simple rain shields for minimalists—a sheet of fabric strung to trees or sometimes trekking poles. Floorless tents (almost always single-wall types, often in the shape of a pyramid) are used primarily by snow campers.

**Pros:** Few options are lighter or more compact.

**Cons:** Users are vulnerable to bugs; not ideal for harsh or windy conditions.

## ***Hammocks***



Backpacking hammocks are another minimalist favorite. The Hennessy models carried by REI suspend sleepers off the ground between fixed objects (usually trees). They feature tarp-like rainflies, bug netting and a clever, bottoms-up entry point. They are an acquired taste, but they are quite popular among converts.

**Pros:** Light and compact.

**Cons:** Setup requires a learning curve; so does sleeping in midair. Ideal dual-tree setup is not always easy to locate.

## Bug Shelters



Just bug netting and some poles; usually no floor.

**Pros:** Super light and compact.

**Cons:** For rain-free use only; must make sure netting of a bug shelter is tucked under you.

## Tent Terminology

Here are details on a few widely used tent terms:

**Minimum weight:** Use this measurement for comparing tent weight. This is the total weight of the tent body, rainfly and poles only—the bare essentials. You will probably pack more tent-related gear (e.g., stakes, footprint) than just this, but this is the figure all manufacturers present as a tent's "trail weight." Often cited as an average weight, this measurement is supplied by each tent's manufacturer and is not independently verified by REI. Your particular tent's average minimum weight may vary slightly (by an ounce or 2) from the weight the manufacturer claims.

**Packaged weight:** The total weight of all tent components: body, rainfly, poles, stakes, stuff sack, pole sack, instructions and any other items a manufacturer ships with a tent from the factory. This figure is supplied by the tent's manufacturer.

**Packed size:** The amount of space a rolled tent will occupy in your pack. You can reduce this load by splitting up tent components with others in your groups. For example, have someone else to tote the poles or rainfly while you carry the canopy.



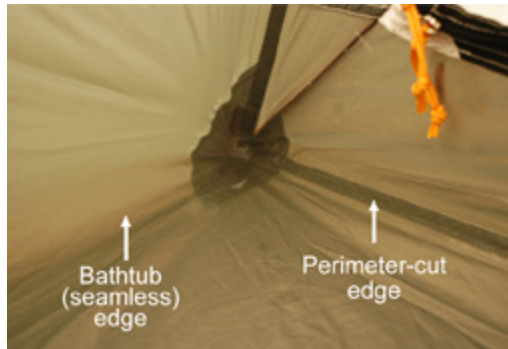
**Vestibule:** An extension of the rainfly that creates a covered storage area for boots, packs or any dusty or damp gear you prefer to keep outside your living space. Some tents offer a pair of vestibules, a nice convenience (though such a tent's ounce count will rise). A few tent brands offer optional vestibules that create even more space than standard ones.

**Guypoints and guylines:** A guypoint is a reinforced, patch-like area on the tent to which a guyline can be (or is permanently) attached. The guyline is then pulled taut and tied or looped to a stake. During rain, this keeps a wet rainfly from sagging onto the canopy. In wind, it can

reduce a fly's proclivity to flap. Keeping a rainfly taut and separate from a canopy aids ventilation and reduces condensation buildup.

Some guylines include reflective materials. It's a nice bonus. It makes skinny guylines more visible while using your headlamp in camp at night, minimizing tripping mishaps.

**Pockets:** Interior stash spots for storing gear. Typically they are flat, envelope-like slots into which you slip gear you want close at hand: headlamp, glasses, watch, multitool. Some serve as stash spots for a tent's door—simply wad up the mesh door panel and stuff it into the nearby pocket. You'll find few (even zero) pockets inside weight-conscious ultralight tents.



**"Perimeter-cut" and "bathtub" floors:** Most backpacking tents are now designed with perimeter-cut floors, where waterproof floor sections (sidewalls and ground-touching panels) are separate pieces of fabric stitched together at the perimeter. Perimeter cuts are alternately known as a Catenary cut, a "cut-in" floor or a "taped insider" floor. The technique creates straight, taut edges along the tent's perimeter, optimizing floor space.

Bathtub floors have more rounded perimeter edges and, other than possible bottom-floor seams, have no stitch marks susceptible to leakage. Their downside: Bathtub floors can potentially curl up around you on all sides in a loose, baggy manner and reduce interior space.

The new REI Half Dome 2, Half Dome 2 Plus and Arete tents feature a "hybrid" floor. The longer side seams feature a perimeter cut while seamless bathtub edges are used at the foot and head ends of the tents. REI's architecture creates a taut pitch even along the bathtub edges, boosting interior space. The redesigned Half Dome 2 door is more V-shape than D-shape, and its proximity to a perimeter-cut floor seam creates a tautness that allows the door to be zipped open or shut with just 1 hand.

## Ventilation

Humans naturally exhale and radiate heat. On a chilly night inside an enclosed tent, the moisture in our breath can cause condensation to form on the underside of the tent's canopy and rainfly. If enough builds up, the moisture could pool into drops of water and start plopping on you and your bag. Not good. The antidote: increased ventilation.

## **Mesh Panels**

Tents intended for milder conditions typically make ample use of mesh. Some lightweight tents, in fact, offer all-mesh canopies—a nice place to spend a balmy, starry night. If you consider yourself to be a fair-weather camper, look for tents with a substantial quantity of mesh in their canopies. They're usually a good choice.



To keep out speck-size pests such as no-see-ums and midges, the grid used in tent mesh (netting, really) is much finer, or denser, than what is found on household window and door screens. Thus it does not offer the same easy-breezy flow of a window screen, but it does much to alleviate any potential stuffiness inside a tent.

On cold nights, of course, sinking chilled air can more easily drift in through mesh. On those occasions your rainfly becomes a key warmth-retaining ally. It is estimated that using a rainfly can add up to 10 degrees of warmth inside a tent.

## **Vented Rainflies**



Some rainflies (often on 4-season tents) are equipped with hooded vents (sometimes called chimney vents) that can be propped open to create a ventilation channel during unfavorable weather. This is particularly valuable in humid, rainy conditions and during still, icy winter nights.

## **Doors: 1 or 2?**

Two doors make entering and exiting a tent much more convenient for a pair of backpackers. No crawling over your partner to come in or go out. Dual doors, usually mesh, also make cross-ventilation easier to achieve.

Two doors are also handy if the weather is bad and the wind is whipping; just choose the door away from the wind. The only downside: 2 doors, with their zippers, can make a tent a few ounces heavier than a single-door model.

## Setup Features

### *Freestanding Architecture*

Most backpacking tents are freestanding, meaning the pole-supported canopy can stand on its own—stakes not required (although it's still wise to use stakes at windy sites).

The key advantage: A freestanding tent is easy to move if you need to adjust its position. If the ground is hard but wind is low, for instance, you can skip the task of driving stakes into unreceptive soil. It is recommended, though, that stakes be used if at all possible. This keeps a tent in place in case an unexpected gust of wind blows through your camp.

Another nice feature of freestanding tents: When breaking camp, you can just pick up a freestanding tent, point an open door at the ground and shake out any debris that migrated inside. Very handy.

**A note on pole configurations:** The simplest dome design involves 2 criss-crossing poles that attach at each of a tent's 4 corners. More advanced designs, aiming to add strength or expand interior space, may include poles with junction hubs, pre-bent pole sections or an extra pole. Such tents may require a slightly longer learning curve to master their setup, but they reward you with greater strength or more interior space.

### *Pole Sleeves vs. Pole Clips*



Poles connect to canopies via clips, sleeves or a combination of the 2.

Pole sleeves help distribute fabric tension over a larger area and thus create less overall stress. Sleeves provide a stronger pitch, but sometimes (particularly during rain) threading poles through them can be a challenge.

Pole clips are easy to attach and usually allow a larger gap between the rainfly and tent body. This improves ventilation and minimizes condensation. Clips are often employed to reduce a tent's weight.



Pole hubs are a recent innovation that pre-connects 2 or more poles for added stability and faster setups. Most often used in conjunction with pole clips, hubs boost strength while creating simpler-to-understand pole structure.

In virtually every case, a tent with fewer poles is lighter and is faster and easier to pitch.

**More terminology:** The tips on the ends of poles are known as ferrules. Ferrules are inserted into metal rings (known as grommets) found in webbing tabs at the corners (and often midpoints) of tents.

Some REI tents offer a few dead-end pole sleeves instead of grommets. They are a small, slide-in pocket, or slot, for pole tips. They speed setups.

### ***Fly/Footprint Option***



Some tents accommodate an ultralight "fastpacking" setup where the footprint, pole structure and rainfly can be pitched together without the tent canopy. This setup is basically a structured tarp. As with tarps, you save weight but lose the bug protection of a tent body.



## **Stakes**

Manufacturers include stakes of their own design with tents; shoppers are not offered a choice. Some are skinny, push-in probes, some have a corkscrew-like skewer pattern on their shafts and others are stouter, pound-in pegs. If you prefer one style over the type included with your tent, a separate purchase will be needed. You know you're a hardcore camper when you and your companions sit around camp and discuss each another's preference in tent stakes.

If you regularly camp in snow or on sandy surfaces, you need snow stakes: wide, scoop-shaped stakes that hold their position by collecting and holding a dense amount of loose material in their scooped-out cores.

**Tip:** What if the ground is so hard that stakes cannot be forced into the turf? Tie cords (or fishing line, even dental floss) around rocks and attach them to the exterior webbing at each tent corner. Leave about 1 foot of cord between the rock and the webbing. Then place a second rock (and a third and fourth, if needed) atop the cord. The second rock pushes the cord to ground level and adds weight and friction for security. No cord? Find some smooth rocks and gently place them atop each tent corner.

## **Poles and Fabrics**

### ***Pole Materials***

Most backpacking tents use aluminum poles due to their high strength-to-weight and durability. Fiberglass poles tend to be heavier and are susceptible to splintering when repeatedly arced over time.

Over the years aluminum tent poles have maintained strength while engineers have found ways to reduce weight by shrinking pole diameter and wall thickness. Most tents (including REI-brand tents) use poles manufactured by Dongah Aluminum Corp. (DAC) of Korea.

The following pole types are commonly found in top-brand backpacking tents:

**DAC Featherlite NSL:** A widely used pole valued for its high strength-to-weight ratio. The original Featherlite pole, introduced in 1997, was an instant hit with tent-makers. It was engineered with thinner walls and pole-to-pole junction points that replaced inserts with extruded pole ends. Pole sets weighed about 15 percent less than traditional aluminum poles.

The poles, however, did not slip through pole sleeves as well as some users wished, so DAC in 2000 introduced modified Featherlite SL poles (SL standing for "sleeve," not "Super Light," as was commonly assumed).

The latest version is Featherlite NSL ("new sleeve"), which uses aluminum inserts to connect pole sections. Rather than glue or crimp the inserts in place, DAC mechanically expands the insert into pole ends. DAC says this bonding process makes pole junction points 20% stronger than the main pole tubes, permitting the use of thin (though strong) tube walls.

DAC also uses a "green anodizing" process on its NSL poles. (Anodized aluminum is more durable and resistant to corrosion.) DAC's anodizing eliminates a polishing stage that required the use of phosphoric and nitric acid, both toxic.

**Yunan Air Hercules:** Features an aluminum/scandium alloy and a "floating connector" that joins pole sections. Both are intended to provide strength and flex at a low weight. Found in Mountain Hardwear's Atlas Pole System.

**6000-series aluminum:** Aluminum is available in various grades, from a 1000 series through 9000. Aluminum uses alloys to make it heat-treatable. In 6000-series aluminum (6061 being commonly used in tent poles), the alloys are silicon and magnesium, resulting in medium strength and good corrosion resistance.

**7000-series aluminum:** Zinc is the major alloying element in this series, which includes poles identified as 7075. Small amounts of magnesium are also used in 7000-series poles, creating a strong, kink-resistant, high grade of lightweight aluminum commonly used in aircraft. 7000-series poles will flex further than 6000-series poles (of the same diameter) before they bend or break.

The latest DAC Featherlite NSL poles in the 7000-series are composed of a proprietary alloy known as TH72M. DAC created it to boost the poles' resistance to what is known in the aluminum industry as stress corrosion cracking (SCC), a key foe of high-strength aluminum.

**Note:** Manufacturers often include a repair sleeve with a tent's pole set. It's a short tube with a slightly larger diameter than the poles. It acts as a splint on a bent or broken pole section. If available, use duct tape to secure the sleeve in place.

## ***Fabrics***

Nylon and polyester are standard tent fabrics. Nylon is fractionally lighter, tougher and more abrasion-resistant. Polyester is inherently more resistant to water and has a reputation for better withstanding degradation caused by ultraviolet rays in sunlight (though no study has verified polyester's UV resistance). Thus polyester is commonly used for rainflies.

The weight of tent fabrics is expressed in denier (D), a measurement of a yarn's weight (in grams) based on a 9,000-meter (5.6-mile) length of that yarn. (Why this length is used is a mystery to us.) Higher numbers indicate coarser, more rugged fabric; lower numbers reflect a lighter, finer material.

A common tent floor fabric is 70-denier (70D) nylon—light but relatively durable. Standard canopies range from 40D to 70D. In the endless quest to deliver lighter tents, though, some canopies dip as low as 20D and floors to 30D.

Ripstop nylon (woven with a doubled thread at regular intervals; it prevents rips from spreading) is often used in tent canopies. It is a touch lighter than taffeta nylon (a common, high-durability floor material) and gets used for floors in low-weight tents.

As stated earlier, the weight reduction of such lightweight engineering is fantastic, but using such feathery fabrics requires users to take extra precautions to minimize (or avoid) highly abrasive use. As a result, backpackers who don't carry footprints (ground cloths) with standard tents often choose to tote the footprints of ultralight tents.

**Coatings:** Tent floors and rainflies come with a waterproof coating (commonly polyurethane) applied to their interiors. Tent manufacturers sometimes apply a coating to the exterior of a rainfly or occasionally coat both sides.

Ultralight tents use low-denier fabrics in floors and rainflies to reduce weight. Often silicon is used to treat such fabrics for waterproofness. Polyurethane (PU) is a fractionally better waterproofing agent, but silicon boosts the tear strength of lightweight fabrics.

Some tents apply PU to one side of a rainfly and silicon to the other to get the optimal benefits of both coatings. Rainflies of the REI Quarter Dome, Arete and Cirque tents employ this 2-sided PU/silicon coating on 40-denier nylon. Other tent brands may use a lower-denier fabric in

rainflys for ultralight tents. REI choose 40D nylon for its UL rainflys to enhance good abrasion resistance. Outside of the ultralight category, REI uses 75D polyester taffeta in its rainflys.

**Technical footnote:** Because nylon has the capacity to absorb some water, polyester is commonly used as rainfly material. Yet silicon-coated nylon resists the absorption of water equally as well as PU-coated polyester.

Nylon treated with silicon is often referred to as "silnylon." Silicon is also used to coat polyester.

## Accessories and Other Considerations

### *Footprints*

A footprint is a custom-fitted ground cloth that goes under your tent floor (usually equipped with grommets that match the tent's pole placements). Tent floors are engineered to last, but twigs, pinecones, grit and dirt are constant abrasion threats.

Footprints buffer your floor from routine scuffing and scraping and can provide just enough of a protective layer to shield the floor from an overlooked sharp rock or stray thistle. A footprint costs less to replace or repair than a tent.

Footprints are sized to fit tent shapes exactly, so their edges do not extend beyond the main floor's perimeter, meaning they don't run the risk of catching and collecting rainwater like a generic ground cloth might. The chances that you'll wake up afloat in a soup bowl of rainwater soup are greatly reduced. Their downside? They add weight and take up pack space.

Footprints typically have a shiny (coated) side and dull (uncoated) side. You should place the dull side on the ground (shiny side facing up) in order to minimize abrasion on the coating.

### *Seams and Seam Sealer*

A tent uses waterproof fabric in 2 places: the floor and rainfly. When panels of that fabric are sewn together, the stitching needle punctures tiny holes in the fabric. Because water can seep through those tiny seam holes, seams must be sealed to ensure a waterproof seal.

Nearly all top-brand backpacking tents today come with factory-taped seams and require no sealing. Some tents, however, may require a manual application of seam sealer. Examples: Some single-wall shelters that use eVent fabrics and lightweight silicon-treated fabrics. (Seam tape does not adhere to a silicon coating.) To be sure, refer to the tent instructions.

As a tent ages, seam tape may become frayed or abraded. If so, apply seam sealer to plug any tiny fissures that appear along seams. How to apply it? Clean the seam. Mask off both sides of a seam with adhesive tape. Using a small brush, thoroughly apply sealer (usually in a tube) on the seam. Dry according to instructions on the tube. Remove the masking tape.

## **Wind Resistance**



If you often camp in areas prone to high winds, consider an extended-season or 4-season tent. The extra poles found in these models ordinarily reduce the shake and shimmy that a 3-season tent might exhibit in high-wind conditions.

No industry standards exist for wind resistance in backpacking tents, reports David Mydans, REI's longtime chief tent designer. Some tent-makers test their tents in wind tunnels (REI is among them, see the example above), but in general tunnel testing is rare.

## **Color**

Should tent color matter? Usually it only does if you become soaked in by a storm and have to spend extended time inside your tent. Rainflies and canopies that use lighter, brighter colors tend to keep tent interiors brighter, something that can lift moods during extended tent stays.

Traditionally, rainflies have featured muted earthtones in order to remain unobtrusive and minimize visual impact on the surrounding scenery for other visitors.

## **Gear Lofts/Attics**

A gear loft (often an optional item) is a mesh shelf that can be suspended from the tent's ceiling (usually via clips) and hold random gear. It can be a good out-of-the-way spot to place damp gear at night.

## **Quality Tents vs. Discount Tents**

Why buy a brand-name tent when bargain tents are available at discount stores?

- **Durability:** Tents designed by quality-conscious brands use better materials (aluminum instead of fiberglass poles, for instance) and are built to withstand demanding use.
- **Design:** Bargain tents sometimes use coated fabric not just on the floor but high up the walls, drastically reducing breathability. (Think sauna.)
- **Interior space:** Efforts to boost wall verticality are rarely seen in bargain tents.

## Tent Tips

- New to camping? Before buying your first tent, consider borrowing or renting one and take it out for a test-rest. See what you like and dislike about that model, giving you insights into what features are important to you.
- Ask friends what matters to them during their nights in a tent. Realize that you may have different priorities, but the insights of others can be helpful.
- Got a new tent? Practice setting it up at home before your first trip.
- When packing up, avoid repeatedly folding a tent along the same crease lines; creases can weaken the fabric.
- When breaking down tent poles to pack them for transport, make the first break in the center of a pole rather than starting at one end of the pole. Doing so lessens tension on the elastic cord connecting the sections.
- During extended stays, choose a shady spot to minimize UV exposure.
- Camping in snow? Build a snow wall on the windward side of your site and position the tent's door downwind—away from incoming wind.
- Never store a tent (or leave it tightly packed) when it's wet; the resulting mildew could ruin it. When not used for a long time, it's best to store a tent loosely, outside of its stuff sack.