

## Ground Cloth For Your Tent

### Create Your Own Ground Cloth Using Tyvek Sheeting

This isn't an article about camping or tents, per-se. FYI, I've slept in every type of tent known to man, from a simple piece of plastic draped lovingly over my motorcycle (with a tiny bit covering my sleeping bag), to an Army tent with running water and running noses.

I'm not an expert on tents; I won't tell you which one to purchase, which style is better, which one is the best bargain, etc. I won't get into the merits of an internal frame, external frame, inflatable frame, 1-man or 2-man or 3-man sizes, vestibules, domes, free-standing designs, pegged designs, nylon materials, waterproof materials, or other arcane tent details. I already have a tent, you already have a tent, so we're gonna work with what we already have.



I ride motorcycles, and when I do, I usually camp in a tent. Sometimes my camping experiences are beneath clear blue skies and sparkling stars, sometimes they're beneath a heavy rain that wants to soak everything and make my life miserable in every way possible. Usually I win, sometimes I lose.

Rain has a distinct personality – it's devious, it's persistent, and it's invasive. It makes no friends when you're motorcycle camping. Give it an inch and it'll take a mile - which translates to soaking the contents of my tent, including my sleeping bag where I'd planned to spend the next 8 hours in restful slumber, out of earshot of my snoring companions. Yes, I've spent a few nights in a sleeping bag when I was as wet as a sewer rat. Things didn't start out that way; when I went to bed the sleeping bag was warm and dry. Sometime during the night, the rain snuck in, like a thief looking for The Wife's silver spoons or my Bitcoin passwords. Around 3am I awoke to find I was lying in a puddle (not of my own making). As my sleeping bag slowly absorbed water my dreams were filled with images of water sports, river rafting, nearly drowning in a bathtub, and adolescent bed-wetting episodes.

My tent is 2-person (\*) Alps Engineering Taurus Orion Y1105. It's a bit outdated when compared to today's high-tech models. It has multiple zippered closures, mosquito netting, two entrances, a water-resistant floor (\*\*), and an external tubular frame that's relatively easy to assemble. It's free-standing, tall enough to stand on my knees without banging my head, and generally it works pretty well for my purposes. It weighs about 4 pounds and packs nicely into a roll about 18" long and 6" diameter. If I recall I got it on sale at REI for about \$100. Today's tents can easily cost upwards of \$500.

\* A 2-person tent really means it's just big enough for 2 people lying side-by-side, with one person's head nestled between the other person's feet. In spite of my personal bulk, I easily fit in the tent and there's enough room for my riding gear.

\*\*A tent maker's definition of a "water-resistant floor" is somewhat different than you might expect. If I quickly dip the tent floor material into a pail, the water will bead-off and give the impression that the

material is waterproof. However, if I leave the tent floor in contact with anything damp, like a recently-licked postage stamp, water quickly penetrates the material. Somehow that tent material mysteriously multiplies the amount of available water – 1 drop of water against the outside of the tent equals 2 cups of water inside the tent.

There are two features of every tent that prevents rain from making an unwelcome appearance: 1.) a “rain fly”, and 2.) a “ground cloth”. Oh yeah, there’s another factor that determines whether rain gets inside: 3.) proper ground drainage. More on that later.

A rain fly is nothing more than a separate layer of nylon that fits over the main tent, acting as a big umbrella. The fly deflects the rain and drains it away from the tent. This photo shows a fly that doesn’t do a very good job – the fly is too small.



Some tents are made entirely from Goretex or other waterproof material, so they don’t need a rainfly. Mine isn’t that fancy or that expensive. If the forecast is for rain sprinkles anywhere within 400 nautical miles, I’ll put the fly over the top of the tent and hope for the best.

A rain fly can’t be draped over a tent in a willy-nilly fashion. It must be separated from the material of the main tent itself, otherwise water will “wick” through both layers. The fly also must extend beyond the footprint of the tent itself, so any water from the fly will drip harmlessly into the ground. If any water drips right next to the base of the tent, the water will seep under the tent and cause problems.

Most tents also have a ground cloth. A ground cloth is a waterproof layer of material that goes directly on the ground, with the tent resting on top. That additional layer of waterproof cloth prevents moisture in the soil (or in the wet grass) from seeping upwards through the floor of the tent, where it will pool and begin the insidious process of soaking all your gear.



Some tents are sold with a specially designed ground cloth, cut to the exact size for your tent. The ground cloth usually has loops or hooks to attach to the ends of the tentpoles, and those poles keep the ground cloth from moving. My tent didn’t come with a ground cloth; I could’ve bought one but the cost was nearly as much as the tent itself. I figured I could create my own and do it for free. I was wrong.

A ground cloth keeps the bottom of the tent clean. A clean tent is a happy tent. More often than not, the patch of ground I’ve chosen as my resting place is a mass of pine needles, pine cones, pine sap, Pine-Sol, sticks, grass, mud, rocks, bugs, and other ugly bits. If the tent floor gets dirty, when the time comes that I cram it into the stuff-sack, all that crud will be evenly distributed to every square inch of the tent, including the delicate mosquito netting. Also, that second layer of ground cloth material reduces the chance that something sharp will poke up through the floor and puncture my queen-sized air mattress with the vibro-massage option. I take my camping comfort seriously.

Being budget-minded, I figured I could outsmart the tent maker and create my own ground cloth. For a few years I used an old army poncho I'd bought at a garage sale for \$1.25. It did OK (if 50% failure rate is considered OK), but more than once I could swim in the puddles that pooled inside the tent.

Plan B was to use some plastic sheeting, the same type used to create storm windows. That sheeting is ultra-lightweight so when the wind was blowing it was literally impossible to get the plastic into the proper spot beneath the tent. And because the plastic was so slippery it tended to move under tent as I tossed and turned, dreaming of my early motocross glory days. In the morning the plastic sheet was gone, and all the moisture from the center of the earth had wicked upward and drenched my gear.



Remember my comment about proper drainage? If you were in the Boy Scouts (like I was), you learned to dig a shallow trench around your tent, creating a moat where rainwater would collect and drain harmlessly away. I guess I didn't pay attention during that Scouting lesson because I don't recall getting that coveted merit badge. My trenches always seem to act like a gigantic funnel, directing every drop of water to the exact spot where it will do the most damage. The concept of a digging a trench has been proven effective by

generations of campers, it just has to be executed properly, at the right place, in the right configuration. Deep enough to trap water runoff and discourage small mammals, wide enough to prevent invading ant armies from sailing across on makeshift leaf-barges, quick and easy enough to dig that you're willing to do it even when you're dog-tired.

Considering my ground cloth failures, I asked myself these questions: is there a different ground cloth system, or a different material, or different alternatives to what I was using? Yes, yes, and yes.

On a recent North West Passage ride across WA-ID-MT, I spied one of the riders using a large sheet of Tyvek as his ground cloth. He said the cost was minimal (I suspect that sheet of Tyvek was liberated from a building site). It packed small on his bike, which is always desirable. He'd been using it for years and he claimed the Tyvek never let a drop of water get past the gates of his castle. Maybe he was on to something. Maybe I could learn from him and replicate his success...



Tyvek is a synthetic material made by Dupont. According to their website, "For 50 years, DuPont™ Tyvek® has provided a protective barrier so people need to worry less, so they can focus on accomplishing bigger things. Tyvek® is a family of tough, durable spunbonded olefin sheet products that are stronger than paper and more cost-effective and versatile than fabrics." (Spunbonded olefin? That sounds high-tech.)



Tyvek's microscopic weave allows water vapors to pass through, but it rejects liquid water like a high school prom-queen rejects the class nerd. Tyvek is also used for haz-mat suits, food processing, clean room applications, vehicle covers, and much more. Tyvek is even used for a variety of garments, including my Frogg Toggs rain gear. If Tyvek can keep my body dry it can keep my tent dry.



A quick search on Amazon revealed a huge assortment of Tyvek sheeting. I measured my tent, then chose a package containing 3 meters (3.2 Yards) of Tyvek 43-gram 1443R. (Amazon Part B00G28H9QW). Note that Tyvek also comes in heavier 55-gram rating but I figured the lightweight stuff would work OK and have the least amount of bulk. The sheet measured 118 x 60" and weighed 7.2 ounces. I paid \$17.90 (including shipping). A plain brown package arrived a few days later and I retrieved it from the mailbox under cover of darkness. (Product development is best carried out in secret.)

At Home Depot I purchased a grommet making kit for \$10 (SKU 1000030533), and 10 feet of 1" wide Velcro Extreme Titanium Tape (adhesive backed) for \$20 (SKU 734658). Ten feet was more than I needed but I can always find a use for self-adhesive Velcro, especially the sticky, high-bond type.

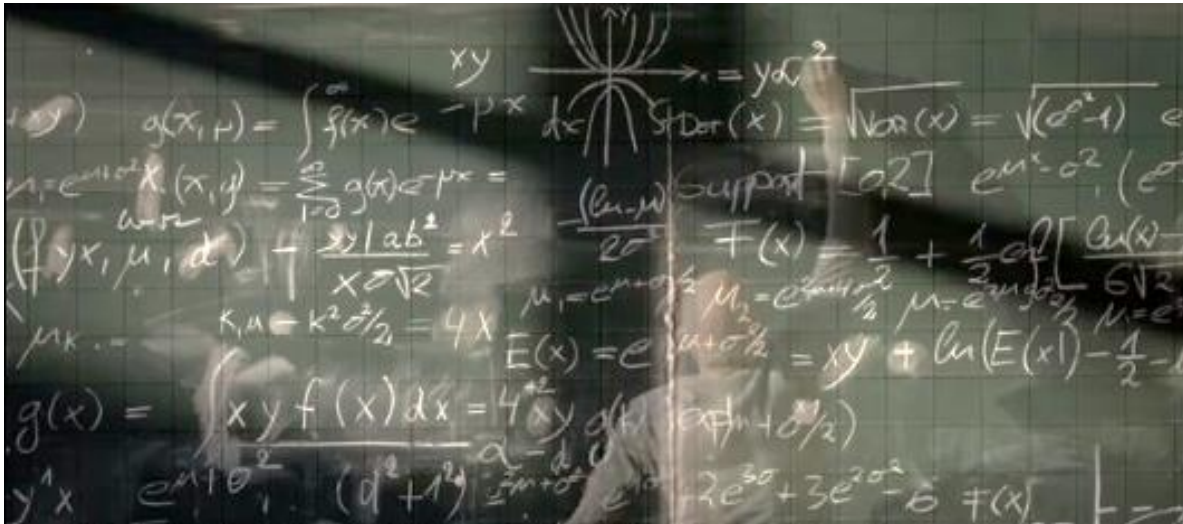
Back at the BestRest Products Development Lab in Napavine, WA, riding buddy Steve Irby and I erected the tent in middle of his living room. We took careful measurements in preparation for cutting the Tyvek to exactly the proper dimensions so it to work as intended. Not too big, not too small.

We also had to figure a way to attach the corners of the Tyvek to the four corners of the tent. The attachments had to be something simple, something foolproof, something that didn't require conscious thought at the end of a long day of motorcycle riding. Something even < I > could remember after the terrific mental and physical strains of riding a motorcycle. I'm not getting any younger.

We spent several hours discussing this attachment problem. The more beer we drank, the better our planning session progressed. We drew up a number of plans, including a series of ratchet straps, a 12-volt winch, air-operated pistons with a remote high-pressure air tank, a series of pulleys and levers, and a few other creative ideas. We even considered using a water-powered hydraulic system that would stretch the Tyvek into place as a water tank filled with the runoff from the rain fly. Why make it simple when complexity is so much more fun?



As with most of life's complex problems, the solution lies in a proper application of mathematics. We used a proprietary algorithm to calculate the exact size needed for the ground cloth. It had to be wide enough and long enough to protect the underside of the tent, but not so large that it would catch any of the water dripping off the edges of the rain fly. One miscalculation and I'd wake up wet (again). The chalkboard came out and we began the laborious process necessary to any new invention.



We then laid out the Tyvek and discovered the width of the sheet was exactly the width of my tent. Luck was with us, so far. Taking a deep breath, I made The Cut, using as much care as a surgeon digging for a deadly tumor. Steve hovered nearby, mopping my brow and speaking words of encouragement.

To attach the Tyvek to the tent we settled on a hybrid strap system that used four pieces of the adhesive-backed Velcro tape, with brass grommets on the ends of the Velcro.

Those grommets would fit onto the ends of the tent poles, and because poles were captured by a pin that went into the end of the poles, the straps couldn't move.



The Tyvek would remain in place as long as the tent was still standing. Should I wish to relocate the tent, all I had to do was pick up the poles where they crossed, lift the tent, and the Tyvek would remain in perfect alignment as I searched for a better camping spot.

I cut 4 strips of Velcro into 12" sections. (I used the soft loop piece of Velcro, not the hook side.) I folded each section in the middle, then installed a 3/8" (hole) with the grommet near that fold.



What I ended up with was 4 straps, folded over and 6" long, with a grommet on one end, and sticky adhesive on the insides of the two loose ends. Then I carefully adhered the Velcro to the 4 corners of the Tyvek sheet, arranging them so they pointed outwards at a 45-degree angle. Not trusting to the adhesive backing of the Velcro to hold it on the Tyvek, I installed another grommet, trapping the Tyvek between the two pieces of strap.

To attach the straps to the 4 corners of the tent, I ran each strap thru the metal ring that also holds a pin.



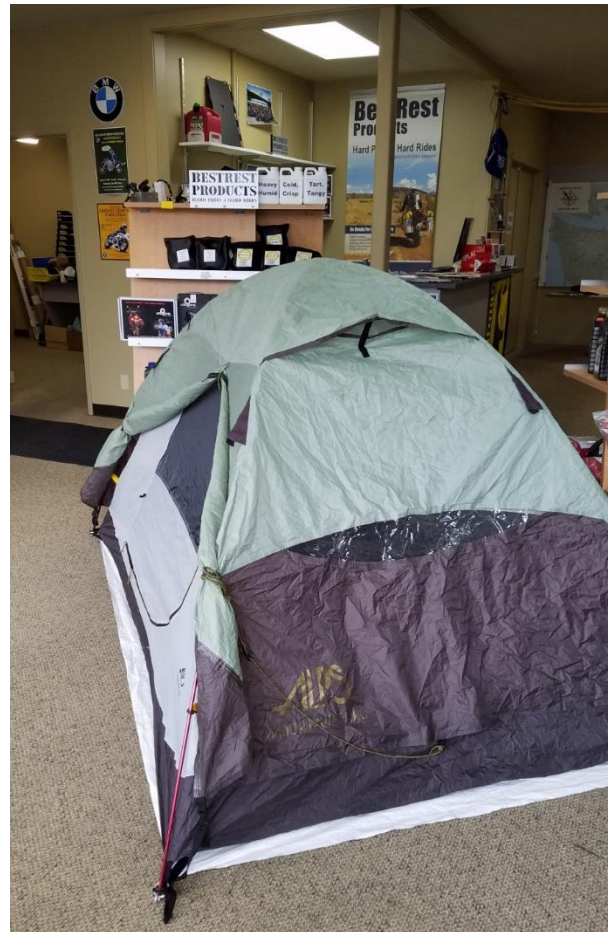
That pins run into the end of each tent pole and holds the poles where they belong – at all 4 corners of the tent.

All we needed now was to see if the system actually worked. Drum roll please. Back at the shop I set everything up. Success!



In these photos you can see the Tyvek peeking out from beneath the corners of the tent. No, that's not a problem, because when the rain fly is extended the "drip line" will be several inches beyond the Tyvek, and that's where I'll dig my trench.

When the ground cloth project was done, Steve and I realized we had a left-over piece of Tyvek measuring 57x30". "Waste not, want not" is our motto, so we decided to put that extra piece to work. We installed grommets at the corners and the middle, and now it serves as either a doormat in front of the tent, or for something even more important: a rain cover for





the bike. Nothing worse than starting the morning out with a wet saddle. I can also use it for a tablecloth on a picnic table, or as a seat cover for a bench.

Of course, this home-brew Tyvek ground cloth project is purely hypothetical. What works in the laboratory doesn't necessarily work in the field. I won't really know how well it works until next season when I start camping again. When that happens, I'll give you an update. Until then, why don't you work on your own Tyvek ground cloth using the things you've learned in this article.



P.S. You'll need to make corrections based on your own tent design, and you may need to modify the pole attachment system. When we meet on the trail we'll compare notes.

David Petersen

Mr. BestRest

<https://bestrestproducts.com/>

**Want to see more articles like this?**

**Click this link – it goes to our website NEWS PAGE**

<https://bestrestproducts.com/news/>



That's me, on top of Cooper Mountain, which is Camp 1 of the North West Passage Adventure Route.

<https://bestrestproducts.com/product-category/northwest-passage-nwp/>

On the following pages I show a few more photos from the ground cloth project.





*Figure 1 – Installing grommets. Watch your aim with that hammer! The grommet kit included everything needed to cut holes in the material, plus the mandrel needed to peen the brass together. I suggest you get a refill kit of the grommet rings. You'll need more than what's provided in the kit.*



*Figure 2. Weight 6.5 ounces, measures 57x88"*



*Figure 3 – Packs small and narrow.*

The doormat/bike cover measures 30 x 57" and weighs a mere 2.2 ounces. (no photo)