A Step-by-Step Guide on Choosing the Perfect Floor for Your Tent

Why Would You Need Flooring for a Tent, Anyway?

Perhaps you are an event planner coordinating a large concert in the wilderness. Or maybe you are a military commander searching for more efficient ways to construct and deconstruct field tents. In any case, you face an unusual challenge. You need to set up a tent or a shelter outdoors. What portable flooring, if any, should you get?

In this white paper, we will walk you through exactly how to research and choose the ideal flooring. We will start by examining the big picture and refine our criteria as we go along.

The simplest option (obviously) is **no flooring at all.** Depending on your needs, this may be just fine. Maybe you are pitching a tent on grass or hard-packed dirt. The weather is good. The terrain is even.

But what if it rains? What if you are setting up camp in a muddy area or on a place where the vegetation is ragged? You could encounter problems. The next step up might be **fabric flooring**. This solution is frankly not that common in commercial rental markets. However, it has its uses. Fabric can seal your tent, and it provides more protection against the elements than no flooring at all.

However, if the ground underneath the floor is soft and muddy, fabric can't prevent you from sinking in with every step—a sensation comparable to walking on top of a waterbed. Also, what happens when people track water or mud or debris into the tent? There is no drainage system. The liquid will pool and create a nasty mess.

Your final option is **some sort of modular hard flooring.** This solution can provide substantial support; create a barrier between you and the ground; and establish a firm foundation for solid footing.

So You Need a Hard Floor. What Material Suits Your Job?

Whether you need to store heavy vehicles in a remote location; build military tents and shelters; or just pitch a tent for a wedding or special event in a muddy field, you need some kind of hard flooring solution.

There are three main material options: plywood, concrete, and plastic. How do they compare and stack up? Let's crunch the numbers:

Plywood and 2x4 Modular Flooring

Some builders use 3/4" thick, 4'x8' sheets of plywood in tandem with 2x4s to construct platforms. This process is labor intensive—it requires more than just throwing down sheets of plywood. For a 28'x16' area—a common tent dimension—you will need 450 square feet of this high-grade plywood. At approximately $50 per 32 square feet, that's $700, plus labor expenses, which estimate $77/hour or more. Bear in mind as well that the *good* 3/4" plywood tends to be more expensive than the cheaper stuff found at places like Home Depot. Plus there is the cost of the 2x4s, nails, etc. Say it takes 2ish hours per tent. And what if you have multiple tents? The costs quickly multiply.

Plywood's big pluses—at least in eyes of some civilian (and even military) builders—are the **modest upfront costs** and the fact that it is lightweight **and can be moved relatively easily**.

However, plywood absorbs water readily, becoming warped and heavy when it does, and it must be replaced regularly incurring these costs again and again. There are also hidden risks—irregular boards can be cumbersome to transport, and splinters are not a trivial matter, especially when people are on the move and tired (and thus more vulnerable to infection).

Concrete Flooring

Depending on the type, quality, finish type and other factors, concrete ranges from $2 to $30 per square foot. Some plusses—the material is **sturdy**, capable of supporting heavy vehicles, does not conduct electricity, and is **easily molded to create ad hoc structures**.

However, Concrete Flooring has its challenges, too. You need to do more than just buy the concrete. You need relatively skilled labor; you have to do site/sub-floor preparation; you need to transport the concrete; and you need to mix, pour and cure it. In addition, there are disposal costs to get it out of the ground. Abandoning or deconstructing installations creates environmental hazards. Re-pouring at new locations creates new costs.

General Thoughts So Far

Plywood and 2x4 Flooring as well as Concrete Flooring both leave things to be desired for tenting and sheltering applications: **durability**, in the first case, and **flexibility**, in the second.

Both also have other drawbacks. For instance, installing outlets and threading/taping cords can be a bear when using either material. It is almost impossible not to create tripping hazards and an ugly, distracting flooring environment.

Plastic Portable Flooring—Best of Both Worlds?

Depending on your application, plastic flooring might be superior for several reasons:

- It is **load-bearing**. Bike Track's product—one of several options on the market—is capable of up to 80,000 pounds/square foot given standard parameters.
- **Plastic lasts**. However, not all plastic tent floors are equally durable. At Bike Track, we guarantee our modular flooring for 5 years—and customers say they last for 15+ years.
- **It is portable**. Plastic can be put down and pulled back up quickly—for example, 14 to 42 square feet of Bike Track can be installed per minute, per person.
- Viewed over the long term, plastic tends to be **more cost effective**. You save on labor (no more ripping up old plywood);

material costs (no need to pour and re-pour concrete); and transportation costs (plastic is easy to stack and stash).
- **It eliminates common annoyances. With certain models;** there is space to run cords, so say goodbye to tripping.

Plastic Flooring: Durability, Speed and Security of Connection

Let's assume that, out of your three options—plywood, concrete and plastic—plastic makes the most sense for your application. You will need to consider three critical attributes:

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1. **Speed** (how long it takes to set up the floor)
2. **Durability** (how long the floor components last)
3. **Security of Connection** (how well the modular flooring pieces lock into each other)

Here is the interesting part (and, yes, shopping for plastic floor can be interesting—stay with us!). You might think that the ideal solution would be optimized for all three attributes. It should be easy to put together quickly; it should be durable and rugged; and the pieces should lock together effortlessly. But that is not the reality- at least not any reasonable price point. You can really only optimize for two out of three of these and still expect to afford it. (In some ways, the choice mirrors the "Fast. Cheap. Good." dilemma.)

1. **Installs quickly with good connection security** → do not expect much durability.
2. **Installs quickly and durable** → connection security is sacrificed.
3. **Durable with good connection security** → slow installation**.**

Where does Bike Track fall on this map?

Our 2-inch plastic flooring installs rapidly, and it is incredibly durable. However, we do not currently include locking mechanisms (e.g. bolts or cam locks). This is by design, because if we did include them, we'd

have to sacrifice on the other dimensions. This is not to say the pieces are not held together. There are friction-fit U channels molded into the modular flooring. But if you pitch a tent on very hilly terrain, it is possible that the connections could come undone. We do have a few workarounds. For instance, you can stake down flooring pieces through 3/8-inch drainage holes (sacrificing speed of install). You can also connect sheets of flooring by connecting drift pins on the underside of the panels. The latter is something of a pain however, because the connectors are on the underside, and so we do not typically recommend that workaround.

Our 1-inch floor, by contrast, comes with optional-use stainless steel locking arms to connect multiple sheets together. The durability remains the same, but speed of assembly is slowed if you elect to use the locking arms. Instead of simply dropping a piece in place, you need to spend a few more seconds getting the locking arm into place.

Bear in mind that all plastic tent flooring products exist on a compromise on this triangle. Some products excel in one dimension; some in two; but no one is perfect on all three. In fact, if a product is balanced on the triangle, it is not going to excel in any of them! Therefore, most manufacturers focus on one or two dimensions. Many commercial market suppliers favor the secure connection and speed, while a handful optimize for durability and secure connection (Bike Track's 1" Flooring falls in this category if the locking arms are used). That's what makes Bike Track 2" Flooring (and 1" Flooring if the locking arms are not used) unique. We've invested a lot to maximize durability and optimize speed, enabling faster setups while ensuring our customers will not need to buy new flooring every few years.

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1" Flooring Vs. 2" Flooring: What's the Right Choice?

Which thickness is right for you? To find out, follow this process.

First, Clarify Your Needs

At Bike Track, we have **two basic product profiles**: of our three flooring products, two are 2-inch, and one is 1-inch.

Before we recommend any product, we first look at the big picture. What are you doing, and why? Is your use military or civilian? What is your budget? What are your transportation constraints?

There are two key categories to look at:

1. Intended use
2. Logistics (e.g. price, storage space, transport)

2-Inch ICM

The 2-inch ICM (Integrated Cable Management) has a very specific use. You only need it if you have **wires or cables or air/water lines that you must string and manage**.

Our **military clients** often opt for the 2-inch ICM. For **humanitarian relief, special events or commercial applications**, we don't find it to be as big a draw, because these clients generally do not need that many wires/cables, and the density does not come close to what you find in a military operations center—which is often stuffed to the brim with tables of computers, Ethernet connections, phones, etc.

In other words, if you just need a few power cords or air/water lines, you probably *do not* need the 2-inch ICM. If you are looking at a significant density of wired equipment, however, it is likely the right solution.

Plain Flooring vs. the ICM?

You should opt for plain portable flooring over the ICM if you do not have a lot of wires and if you are looking for a firm, stable platform for inside your tent or to support your tent or a walkway.

Do You Need Our 1-Inch or 2-Inch Plain Flooring?

To answer this question, we need to look at several parameters:

Intended Use

The **1-inch solution** is probably more appropriate if:

- The ground is firm: there is limited chance of the floor sinking.
- There is not a lot of mud—for instance, you are building on a parking lot or hard packed stone or dirt.
- There is not much water/rain expected (e.g. you are setting up in a desert in the dry season).

The **2-inch solution** is generally superior if:

- You need to get further off the ground for some reason.
- The ground is muddy.
- There is a high likelihood of rain or snow.
- There is a chance the flooring could sink in.

Weight Capacity–Ground Pressure

When considering weight, ground pressure—in other words, how much force is applied per unit of ground—is what matters. So things like tire size and quantity are key factors. For example, an M1A2 Abrams tank weighs approximately 72 tons (144,000 pounds), but because that force gets distributed over all the tracks in contact with the ground, the tank only exerts approximately 2,160 pounds per square foot of ground pressure. On the other hand, a 1,250-pound

horse standing still exerts approximately 3,600 pounds per square foot of ground pressure—66% more than the tank!

So what does this mean when it comes to choosing a type of Bike Track flooring? The honest answer is: *you probably don't have to worry about it.* Given a solid subsurface and a static load, our 2-Inch Flooring can withstand up to 47,500 pounds per square foot, while our 1-Inch is rated up to 80,000 pounds per square foot. So unless you have an extreme amount of weight being concentrated over a very small section of ground (called a "point load"—think an elephant doing a headstand, with all of its weight supported by the tip of its trunk), any Bike Track product should be able to do the job.

But what if you're worried about point load applications, such as jacking up a vehicle for maintenance? Instead of spreading your vehicle's weight evenly spread over four (or more) big tires, what if you concentrated it all on the jack-stand? Now we have a more complicated formula. Now things like the diameter of the jack-stand and the firmness of the subsurface come into play. In these instances, we recommend placing a supporting plate underneath the jack-stand prior to applying the load. You do this to spread the weight across multiple ribs of the flooring, thereby decreasing the ground pressure.

Type of Ground

If you are building over rolling ground or undulating terrain and do not need a flat surface, the 1-inch is best. It is more flexible, and it will bend and conform to the ground.

If you need, for instance, to turn a pitted field into something flat, go with the 2-inch—a much more rigid product. However even the 2-inch will not span large ditches and gullies. But it is firmer than the-1 inch.

Irrespective of your choice, you will still need to get all big rocks and mountains of dirt out of your way—work you would have to do with

any portable flooring. You will not need a commercial grade grader with a mechanical leveler. But you will need to clear big plants and make the ground relatively level, so the flooring has a fighting chance.

Logistics

1-inch flooring stores and ships in half the cubic volume that 2 inch does. When we ship it on a pallet, you get 32 sheets for 2-inch or 64 sheets for 1-inch. In other words, you can get twice as much 1-inch.

When and how does this fact matter? The Marines for example, tend to have more limited storage and shipping capacity on boats than the Army does. So the 1-inch tends to be more popular in the Marine Corps for that reason—they can pack away twice as much flooring. If cubic volume is a driving factor for you, the 1 inch is the cheapest and most shipping-friendly option.

Longevity

Both types can withstand tons of punishment and last 15+ years. They are both up for the challenge!

Summing It All Up

In this short white paper, we have covered everything (hopefully!) you need to know to choose the right tent flooring for the job. To recap:

- We explored your **three basic portable flooring options**—do nothing (no floor); use a fabric floor; or opt for a hard floor.
- We offered a **comparison of the three most common hard floor materials for tents**—plywood, concrete and plastic.
- We examined the **three key elements of all plastic flooring solutions**: durability, speed and security of connection.
- We took you on a **tour of Bike Track plastic flooring solutions** and discussed when and how to use our products.

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We hope this quick review was helpful!

Our team is standing by to answer your questions and help you make the best modular flooring choice for your needs. Call 888-663-8537, or read more to learn about how to buy our tent flooring.