



# SHADOWMOOR WEAPON CONSTRUCTION GUIDES

## Weapons and Equipment

### Allowed Weapon Physreps

The following types of weapon physreps are legal for use at Shadowmoor. Please read this list carefully, as Shadowmoor's combat style is specialized high speed light-touch which does not safely support the use of mass-produced latex, EVA, or other "foam combat" weapons. If you can buy it online from a name-brand store or website, it is not a valid weapon for Shadowmoor.

### Boffers

Shadowmoor permits use of "boffers" (weapons constructed of a PVC core, 5/8" pipe foam padding, and tape), constructed in accordance with the the Shadowmoor Weapon Guide.

These weapons are relatively low cost to construct, but require some special materials which are not commonly available at local hardware stores.

### EVA Weapons \*

Shadowmoor permits use of EVA weapons constructed as per the Shadowmoor Weapon Guide. Shadowmoor only permits use of these weapons if they are made by a certified Shadowmoor approved weaponsmith. EVA weapons purchased from a mass-market vendor are not permitted for Shadowmoor use.

These weapons are typically more expensive, but are also lighter and can be constructed with more detailed designs.

All EVA weapon makers seeking approval must go through a process of submitting a fully constructed weapon for heavy safety testing by Game Management, including complete and destruction to inspect the weapon core and components. This is a process which is not conducted on-site, and therefore requires at least two events to complete.

### **Specific Bows and Arrows \***

Specific Bows and Arrows which meet Shadowmoor's safety standards are discussed in the Shadowmoor Weapon Guide. Especially regarding mass-produced arrows, only specific arrows detailed in that document and certified through Game Management are permitted.

### **Spell Packets**

Spell Packets are small (~2" wide) rounded packets of cloth and birdseed, tied off with rubber bands, which are used to represent spells and poisons. The construction of these packets is covered in the Shadowmoor Weapon Guide.

## **Purchasing Shadowmoor-Legal Weapons**

There are many Shadowmoor community members who are willing and able to provide both of the above types of Boffer/EVA weapons for purchase. Again, there are no third-party or mass production vendors who sell these weapons legal for use at Shadowmoor.

Guidance on sources for Shadowmoor-legal mass produced bows and arrows can be found in the Shadowmoor Weapon Construction Guide.

### **Borrowable Weapons for New Players**

Note that new Players may borrow standard boffer weapons from the game, for free, through their third event. After their third event they may no longer borrow weapons and must instead provide their own weapons for use at the game. More information on this process is available in the Shadowmoor New Player Guide.

## **Weapon Safety**

All weapons must be safety checked at each event, and passed for safe play by weapon safety marshals. Weapons degrade over time and, if they no longer meet the minimum safety standard, must be replaced before they will be legal for use in combat at any event.

# Weapon Construction

As stated elsewhere, safety is the foremost concern of Shadowmoor. Because of this, weapons must be constructed to the exact specifications presented below. Keep in mind that even if a weapon is properly constructed, the possibility still exists of causing injury if the weapon is not used correctly.

## Weapon Dimensions

The chart below lists all the pertinent dimensions for each weapon in inches. The blade length of a weapon is measured from the top of the crosspiece to the end of the thrusting tip. Players should remember to keep the length of the thrusting tip in mind when cutting the PVC for a weapon.

		Blade Length		Overall Length		Damage
Weapon	Max Handle Length	Min	Max	Min	Max	
Waylay Widget	-	-	-	6"	12"	-
Dagger/Small Weapon	7"	8"	17"	12"	24"	1
Thrown Weapon	-	8"	18"	-	-	1
One-Handed Shortsword/Claw	10"	18"	24"	26"	32"	2
One-Handed Longsword	10"	25"	36"	34"	44"	2
One-Handed Hammer, Mace	10"	18"	26"	26"	44"	2
One-Handed Axe	10"	12"	18"	26"	44"	2
Staff	1/3 Overall Length	-	-	60"	72"	2
Javelin	-	-	-	36"	36"	2
Spear	1/3 Overall Length	8"	8"	48"	66"	2
Polearm	1/3 Overall Length	18"	24"	60"	72"	4
Two-Handed Sword/Axe	15"	40"	48"	50"	62"	5

Two-Handed Blunt	15"	38"	48"	48"	62"	5
Shortbow	-	-	-	24"	42"	2
Longbow	-	-	-	43"	84"	6
Crossbow	-	-	-	-	-	6
Hand/Mini Crossbow	-	-	-	-	-	2

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## Special Material Coloring and Decoration

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Weapons may be decorated in a number of ways, but there are certain colorings that denote special kinds of weapons made from specific materials. All weapons must conform to the following color restrictions.

Material	Color	Material	Color
Adamantite	Black	Meteoric Iron	Black with white flecks
Arushan Steel	Gray	Mithril	White
Bone	Ivory with brown Cracks	Obsidian	Black with silver lines to show sharp facets
Cold Iron	Gray with black flecks	Otok	Brown with green vines, as per living plant
Coral	Vibrant pink, blue, and green in coral patterns	Poison/Acid	Green with dripping patterns
Crystal	Gray with white lines to show sharp facets	Primal Crystal	Green with white lines to show sharp facets
Driftwood	Dense/twisted woodgrain stripes in brown and gray	Silver	Metallic silver
Fire	Red, orange, and yellow in flame pattern	Steel/Iron	Gray
Gemstone	As per gemstone color with lines to show sharp facets	Stone	Gray with fluid or patching stone patterning

Gold	Metallic gold		Volcanic Bronze	Rust red with metallic copper highlights
Jet	Completely black stone with facets (jewelry ONLY)		Water/Ice	Blue with white drops, waves, or snowflakes
Lightning	White or light blue with sharp yellow lightning branches		Wood	Brown with (optional) woodgrain

Note that unless obtained in-game, a Character cannot construct a weapon of any type of material other than bone, steel/iron, wood, [bronze, copper, or stone – requires physrep approval]. Weapons of other material types must be accompanied by the appropriate tag for the physrep.

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# Boffer Weapon Construction

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## Materials List

- 3/4" PVC pipe (400 PSI/schedule 40 must be used for weapons over 44") or 1/2" PVC pipe for weapons 24" and under
- 5/8" thick pipe foam (the wall of the foam MUST be 5/8" thick)
- Open cell foam
- Duct or Gaff tape
- PVC pipe-cutter or hacksaw
- Knife, razor blade, or scissors to cut foam
- Electrical tape for the cross piece, grip, and pommel

All of these materials can be purchased at most hardware stores. The most difficult to find might be the pipe foam. Due to the climate in the southeast, most places only carry pipe foam with a 3/8" thick wall, and thus it must be specially ordered from a supplier.

Guidance on some specific sources and product numbers for these items can be found at [https://drive.google.com/drive/u/2/folders/1FQo-44CH5H7mvW1YhvFrepQi\\_Wq61vLY](https://drive.google.com/drive/u/2/folders/1FQo-44CH5H7mvW1YhvFrepQi_Wq61vLY)

## Boffer Weapon Safety Requirements

Many different types of weapons can be made to simulate medieval weapons, and Shadowmoor encourages players to experiment, provided the weapons adhere to the basic safety rules. A player should not be put-off by an experiment that did not pass inspection.

All thrusting tips must have two (2) to three (3) inches of open-cell foam padding. Any less and someone might get stabbed by the PVC; any more, and it is likely to break off during combat.

Any portion of a weapon that may come in contact with another player must be padded with pipe foam. This includes the blade area of a weapon (e.g., Sword, Dagger, etc.), as well as a good portion of the shaft of a Polearm or Spear.

The handle of any one-handed weapon may not be longer than ten (10) inches while the handle of any two-handed weapon may not be longer than fourteen (14) inches. The unpadded handle length of Spears, Staves, and Polearms may not exceed one-third (1/3) the overall length of the weapon.

All weapons must be fairly rigid so they do not whip when swung quickly. This is especially important with Polearms. When making Polearms, thicker PVC pipe should be used. The thickness of the PVC is denoted by the amount of pressure it can hold (PSI) or by the "Schedule" of PVC. The higher the number, either PSI or Schedule, the thicker the PVC.

All foam on a weapon must have some give when it makes contact. If not, the weapon will hit too hard. Some common mistakes that lead to this are:

- Using foam with a smaller diameter than the pipe. If the foam diameter is too small, it can be split and a smaller piece of foam can be padded to make it fit.
- Taping the foam too tightly or spiral taping the foam. All weapons should be taped lengthwise. This decreases the chance of compacting the foam and uses the least amount of tape.

All pipe foam should slide easily over the pipe, yet fit snugly enough to keep the weapon from rattling if shaken.

In combat, it is possible for any part of the weapon, including the pommel and cross guard, to strike an opponent; thus, all ends and tips must be padded and taped. It is permissible to use electrical tape on the areas that will not normally contact someone.

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# EVA Weapon Construction

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## Materials

- 3/8" Fiberglass core (and optional end cap)
- 2# Density EVA Foam sheet
- Electrical Tape
- Gaff Tape
- DAP Weldwood
- Dremel with cutoff wheel (unless your fiberglass is 100% pre-cut to length)
- Utility blades
- Belt sander
- Brushes
- Goggles
- Respirator with organic vapor filter (DO NOT breathe the DAP and PD fumes)
- Metallic Sharpies
- Rulers and straight edges

## Basic Instructions

### Cut and Cap Fiberglass Rod

1. Cut fiberglass rod to a length 4" shorter than your total desired length.
2. Cap off one end by wrapping it in electrical tape. (Optional: you may also apply an end cap here.) Make sure the end is not jagged or it will chew through the foam with repeated pressure.

### Cut Foam Pieces

1. From your foam sheet, assuming it is 3/8" thick, cut three pieces at the length you want the blade to be. Each piece should be 2" wide.
2. On one of the three pieces, use your utility blade to cut a channel up the middle about 3/8" wide (the width of your fiberglass) that starts at one end of the piece and stops 3" short of the other end. This channel will go all the way through your foam, leaving you with an elongated "n" shape if the tip of the weapon is facing away from you. It will be where your fiberglass rod sits and is glued, so it should be the right width to seat the rod snugly. It should position your fiberglass to sit exactly at the center of the weapon body.

From Chris Hayes, on his technique for this step:



I measure out a line up the center, then take my yardstick and draw two more vertical lines, each roughly 1.5/8" off the center. Then I take a fresh razor blade and cut out the channel. It doesn't have to be exactly perfect as long as there's not too much variation and the width is correct. If it's really widely tapering or getting wider or has big gaps in it, it won't be usable, but you don't need machine precision.

(Editor's note: a FRESH, SHARP blade is critical here. Dull blades result in torn foam and uneven contact for glue.)

## Glue the Core

1. PUT ON YOUR ORGANIC RESPIRATOR and go somewhere with good ventilation. Don't do this in your kitchen or apartment. Go outside!
2. Using DAP Weldwood and a disposable brush, spread a thin layer over the fiberglass rod, covering the entire area that will be inside the blade. Then do the same thing on the foam, covering the inside edges and top edge of the channel you cut in the foam strip. You don't want to use too much - enough to get full coverage but not so much that it's really goopy. Wait about 2 minutes so that the glue is dry but still slightly tacky,
3. Seat the fiberglass rod. You basically get ONE SHOT at this and this is one of the easiest parts to go wrong, so be careful! Once the glue is tacky, take the rod and insert it in the channel so the foam is stuck to both sides.
  - a. You want it to be as straight and even as possible - this is where your core becomes centered in your weapon.
  - b. You want it to be entirely adhered to the rod with no gaps on any sides, including the tip.
  - c. The rod goes up the channel, with the tip of the rod that is wrapped in electrical tape (with optional end cap) touching the top edge of the channel.

Now you've got the centerpiece of the blade. You don't want any chance whatsoever of it separating. And once the DAP sets, the only way to get it off the core is to physically shred the foam - this is basically impossible after the next few steps.

## Reinforce the Core Tip

1. Once you've got the core together, lay it flat on one side.
2. Spread a thin layer of DAP over the spot where the end of the rod meets the top of the channel. When it's dry enough to stick, take a small piece of gaff tape and cover over the seam between the rod and the foam at the top of the channel.

3. Take another one of your three foam strips and lay it flat as well. Spread DAP over both the face-up side of the strip and the face-up side of the core, and when it's properly cured, stick the two glued faces together.
4. Once that's done, flip the core over and repeat the same steps with the gaff tape and gluing the third piece of foam on the other side of the core. The edges won't all be perfectly lined up, but it is important to take care to get them as close as you can and to make the sheets as consistent and straight as possible.

## Remove Air Bubbles

Immediately after gluing you need to remove the air bubbles by flattening out the blade. You can do this by stepping on it, but a rolling pin works well for consistent pressure along the entire blade.

Place it so the non-striking surface is on the flat surface and press it out with your hands, feet, rolling pin, or whatever. Just be thorough. Air bubbles mean safety issues with separation later!

Now you essentially have the fiberglass core sandwiched between three sheets of foam, via a channel up the middle sheet. If you did the DAP right, it's 100% impossible to get the rod out without destroying the blade, and the tensile strength of three layers of foam all essentially fused together makes that impossible without incredible strength or a razor blade.

If you are able to pull your weapon layers apart easily at this stage, something has gone wrong and your glue has failed to cure properly - your weapon is not safe, and you will want to cut out/clean the core and start over with fresh foam.

## Shape the Weapon

From here, the process requires specific external equipment, primarily a belt sander. This step is VERY DIFFICULT to do evenly by hand!

1. PUT ON YOUR GOGGLES. Keep your respirator on. It's all fun and games until you get foam dust in your eye or lung.
2. Place the striking edge of the blade on the belt sander carefully, grinding it down so it's flat and even.
3. Shape the blade. You must maintain at minimum  $\frac{5}{8}$  thickness on the striking surface but can go as low as  $\frac{1}{4}$  or  $\frac{1}{2}$  on non striking sides. You may want to make some depth marks on your blade to indicate your desired "stopping point" before you begin sanding freehand.
4. Bevel the edge to the desired shape. This should NOT come to a sharp point, but be somewhat rounded or wide so that it doesn't become a hard/narrow of impact once the weapon is sealed and stiff.

5. Curve tip of the blade so it isn't too pointy. You'll put your eye out!

## **Add Details, Crossguards, and Pommels**

1. Add any detail work to the blade with a Dremel or woodburner
2. Carve and attach the crossguard. Using DAP, ensure it is glued onto the core well and to the blade above, using similar methods to how you inserted the fiberglass core to ensure even adhesion.

While the crossguard is not a striking surface, it may come into contact with other players during combat, so not much more than 3# foam density is recommended to give it a little flexibility. Also, be mindful of your design/crossguard size to ensure it is not becoming a functional part of the 'striking surface' and can be wielded safely.

## **Heat-Seal the Foam**

Using a heat gun, heat-seal the foam to smooth it out and seal the pores. Careful not to apply too much heat as it will melt the foam and also unbind the DAP! Check your weapon carefully or any layer splitting after you've completed this step.

Practice with a piece of scrap foam if you are not experienced with this - when the foam is heated a little, you'll see the surface contract to close up its pores, and become a little smoother and more shiny. This prepares it to accept the Plasti-Dip and paint.

## **Apply Plasti-Dip**

You will want to apply exactly 8 solid coats of Plasti-Dip, leaving adequate drying time between them.

It's very easy to tell when you have a solid coat - if it's pooling and dripping, it's probably too much. If it's not covering every bit of foam, it's not enough. You will most likely use an entire can on a single blade.

## **Paint and Seal**

From here on it's smooth sailing. Plasti-dip makes an excellent base layer for acrylic paints. Using spray paint over PD works sometimes, but some propellants can interact poorly. Any craft store acrylic paint will go on beautifully.

Seal with Kamar Varnish or clear non-yellowing acrylic, 1-2 coats. (You have many options here. Choose something durable and flexible, to avoid cracking!)

## **Handle and Pommel**

There are various methods of constructing the handle and pommel area including drilling out wood, shaping more foam, flattening PVC and attaching it with expanding foam, etc.

Because this is not a striking surface, what you really need to be concerned about is that your handle is attached very securely and is made of something sturdy enough to survive combat. Also, keep your pommel within “eye socket minimum” size guidelines.

The fiberglass at the pommel should be taped off (optionally end capped) and glued securely into the foam pommel with DAP. Again, because it is not a striking surface, you have some flexibility with materials and methods here provided it is firmly attached and has a few inches of foam between the fiberglass and the end of the weapon

# CREDITS

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