# YOUR INTRODUCTION TO FOAMSMITHING

by CaptainGhostly and Cosplayshop.be

## The magic of foam

Hello there cosplayer! Did you know that foam is the preferred material of a wide variety of makers?

The possibilities are endless when working with foam: you only need a couple of tools and a sheet of foam to start. Want to make an epic sword? No problem! Want to make an extremely detailed sci-fi gun? You got it! Want to make an insanely complex suit of armor with electronics incorporated? Guess what, you can do that as well! Cosplayshop "Select Style" has their inhouse made brand of foam, developed especially for cosplay.

This booklet will guide you through the process of choosing the correct foam and give you an introduction on how to build awesome creations with it! For the more experienced cosplayers, we have included some more in-depth tips as well.

## ABOUT THE AUTHOR

" Hi! CaptainGhostly here, cosplayer and member of Team Cosplayshop. I am the author of this foamsmithing introduction guide. Just wanted to let you know that if you have any remarks, questions or need any specific help with your projects, feel free to contact me. I'd love to help you! "

 @captainghostly

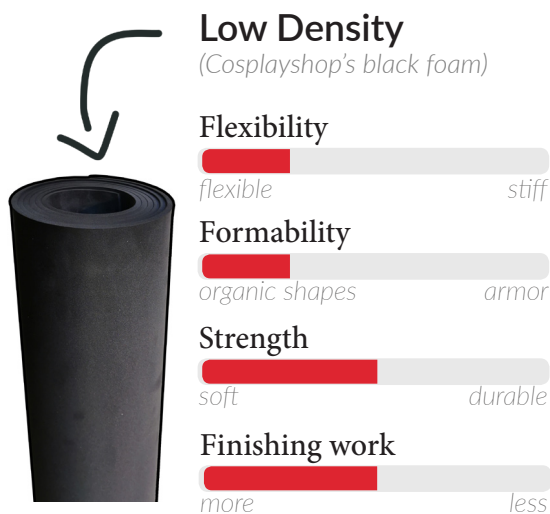 /captainghostly

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# The right tool for the job

*The power of EVA foam is that you can build almost anything with it, without making your wallet suffer. On top of that, it's also very lightweight and flexible, yet durable and strong. However, it's crucial to select the appropriate foam for your specific build. The 2 main aspects to take into account when choosing are density and thickness.*

## 1 DENSITY

Density is usually indicated by a certain value (for example: 100KG). Simply put: the higher the density, the less air is present in the foam. This means that foam with a higher density is heavier, but also a lot sturdier.
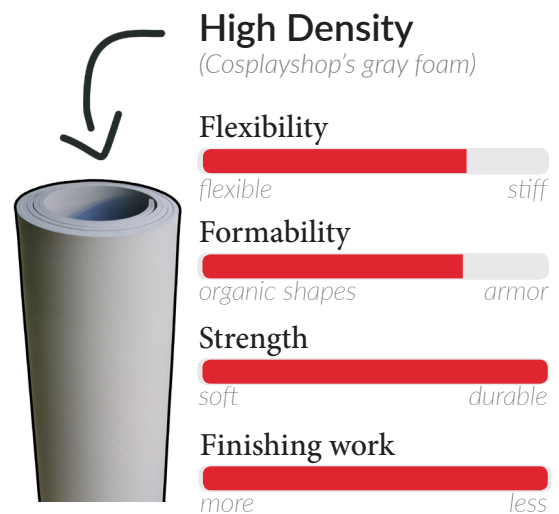
### Low Density
*(Cosplayshop's black foam)*

**Flexibility**

flexible            stiff

**Formability**

organic shapes       armor

**Strength**

soft             durable

**Finishing work**

more            less

*- best for -*

| Complex shapes | Fitted armor | Organic & creature shapes |
|---|---|---|

**VS**

### High Density
*(Cosplayshop's gray foam)*

**Flexibility**

flexible            stiff

**Formability**

organic shapes       armor

**Strength**

soft             durable

**Finishing work**

more            less

*- best for -*

| Light & medium armor | Heavy armor | Props |
|---|---|---|

## 2 THICKNESS

Another aspect to take into account is the thickness. You can make just about any reasonable thickness look good, but there are some guidelines when choosing this.

**2 mm** → Details Layering

**5-7 mm** → Armor base

**7-10 mm** → Props Heavy armor Big 'details'

**(foamblocks) > 20 mm** → Huge props

# Making patterns

*Alright, let's get to work! In this booklet, we will illustrate the typical crafting process with a bracer. But before we can do that, we need exact patterns. This is a very important step, because a bad pattern will often result in a bad ending.*









To make our bracer, we will use the famous 'tape technique'. This is a fast and easy method to create patterns.

Start with snugly (not too tight!) wrapping your arm in cling wrap. Covering body parts in foil is difficult sometimes, it can be very useful to ask someone for help. *[1]*

Carefully cover your foil in tape using small strips. It's very tempting to use long pieces and go for a quick mummy-style wrap, but that is a very bad idea. When wrapping like this, you run the risk of wrapping too tightly. Going slow and steady also prevents wrinkles and a sticky mess. I use duct tape for strength, but masking tape works just as well. *[2]*

In the next step, draw a registration line that indicates where you want to cut open your pattern. For a bracer it is often placed in the middle of your inner arm. Also add some small marks that cross with the middle line. These are called registration marks and are very important to make sure your pattern (and foam later on) lines up correctly. Place them about every 2-4 cm. They are marked with blue in the third and fourth image. Add a start and end for your bracer as well. *[3]*

Lastly, free your arm by cutting open the pattern with scissors. Be very careful to not cut yourself. Add small cuts on the registration marks to trace them onto foam later. *[4]*

## COSPLAYSHOP TIP

Is your armor bigger than your body? Just use anything you can find as padding and wrap your foil around it like usual!

There are a thousand ways to create patterns. Some projects require a combination of multiple patterning techniques. Some other approaches are: freehanding, pepakura (digital), armor smith (digital)

# The 3 steps of foamsmithing

*No matter what you are making, these 3 steps will always come back: cutting, heating and gluing. The order can change depending on your specific project.*

## STEP 1: CUTTING









Getting good clean cuts can make all the difference in the outcome of a project. Especially if you are cutting pieces of foam that will need to be glued edge-to-edge later. However, Getting perfect cuts is easier than most people think. The key is to always have a razor-sharp blade!

Every type of knife gets dull after a while. If you are finding that you need to push really hard to get all the way through the foam, then it's time to sharpen your blade. To easily sharpen a blade, get a blade sharpener and draw your blade at a really shallow angle across the sharpener. Repeat this a couple of times and your blade will be a good as new! This way I made a whole armor with only two blades, by continuously sharpening them! *[1]*

## Cutting technique

I decided to trace my pattern onto paper first, so it is stronger and reusable later. Always keep in mind to trace the pattern about 10mm from the sides to allow some extra space. This is necessary because our foam is way thicker than the tape pattern.

Before we start cutting our foam, we need to transfer our pattern onto the foam. Lay your template completely flat on the material. You can use some pins to keep the template from moving. *[2]*

There are many different techniques and types of cuts when it comes to cutting EVA foam. But in this example you'll only need straight cuts. Place your blade perpendicular (90°) on your cutting mat and cut out the traced shape. *[3]*

For a neat cut, try to make the cuts in one fluid motion, rather than 'sawing' the foam. Additionally, do not tilt your blade to the left or right. This would result in an unclean cut. *[4]*
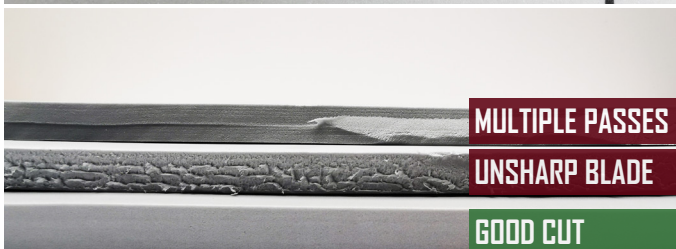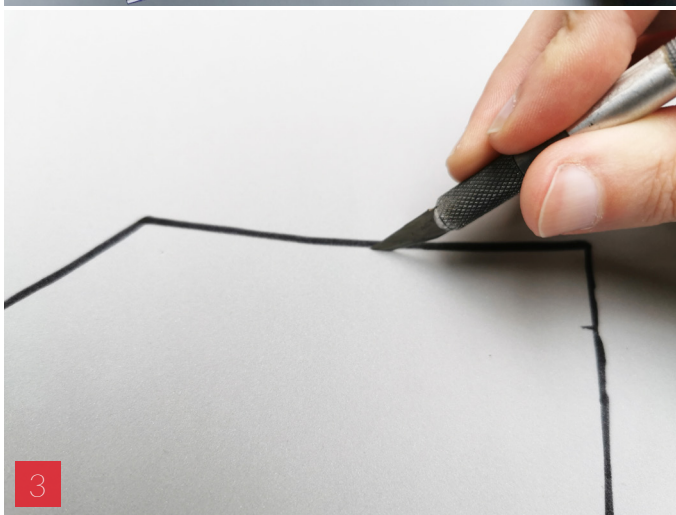
### COSPLAYSHOP TIP

It doesn't matter at all which knife you use, as long as it's razor sharp and you feel comfortable using it.

## STEP 2: HEATING



To heat EVA foam, it is advised to use a heatgun. For example, a normal hairdryer won't work. The reason why it won't work is because it doesn't get hot enough

Take a heatgun and heat both sides of your foam. Don't stay too long in one spot to prevent burning your foam. Keep that heatgun moving.

Your foam will feel softer and smoother while it's hot. While in this state, you can shape the material. When the foam cools off later, it will keep this shape. *[1]* Roll the bracer in a tubular shape and wait untill the material is back at a normal temperature. The bracer will now be round! *[2]* You can reheat the foam to change the shape if you made any mistakes.

### 💡 COSPLAYSHOP TIP

Depending on your build, it is possible that you'll need to glue *(step3)* first and only after that heatshape *(step2)* it. Be careful that you don't apply too much heat on the glued seam.
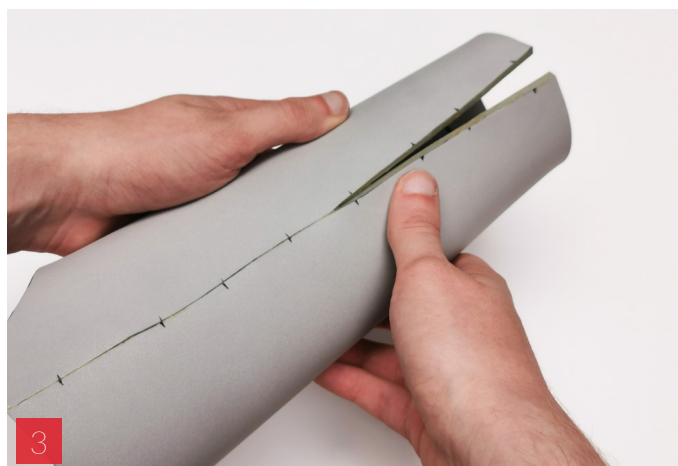
## STEP 3: GLUING



### 💡 COSPLAYSHOP TIP

- Pour your contact glue into a squeezy bottle for easier use.
- Use foam scraps to apply your glue. This way you don't need to use a brush.

Most foam smiths agree the best glue for foam is contact glue. Apply a thin layer to both edges you want to glue together, then wait a couple of minutes. When the glue feels dry but still a bit tacky, you're ready to go. Stick both sides together, assuring your registration marks line up. Careful: this bond is very strong and cannot be undone.

There are many methods to attach bracers (and other armor pieces) like Velcro®, zippers, straps, etc. However, to keep it simple, you can opt for a slit at the side of the bracer where your hand can pass through. Do not do this too close to where you glued. Additionally, strengthen the base of the slit with a piece of foam on the inside to avoid ripping. *[3]*

# Adding details

*Woohooo!! Now that you have a basic bracer, it's time to add some details. It is always possible to use more of that EVA foam in various thicknesses. Or you could use some of our awesome premade products.*

## Dowels & bevels

Foam dowels and bevels are great timesaving and lightweight products. For example, it is a huge pain to sand something perfectly round. [1] They can be cut, heatshaped and glued like regular EVA foam to achieve desired shapes, textures and structures. [2] An example, Blizzard's armors often have triangular bevels everywhere. Following dowel & bevel profiles are available at Cosplayshop:

**Round**
*Ø 5mm, 10mm, 15mm, 20mm, 25mm, 30mm, 40mm*

**Halfround**
*Ø 5mm, 10mm, 15mm, 20mm*

**Trapezoid**
*15mm, 20mm, 25mm*

**Triangle**
*8mm, 10mm, 15mm, 20mm, 30mm*

**Triangle - Low profile**
*10mm, 20mm, 30mm*

## Dremeling & effects

To add more texture to your project and for a more organic or worn look, you can use a rotary multitool, more commonly known as a Dremel®. By using the exchangeable rotary bits, you can achieve many textures, but a full guide on this goes beyond the scope of this booklet. However, there are many tutorials available online.

Feel free to experiment with other texture techniques as well! For example, by pressing some crumpled aluminium foil into heated foam, you can create a realistic leather texture. It's all about being creative and testing things. [3]

1



2



3



4

# Foamclay

Foamclay is a non-toxic, waterbased type of clay that works a lot like normal clay (to an extend), but dries as regular EVA foam. It can be sanded, cut and even heat shaped. It is the perfect solution for complicated shapes, ornaments, details and so much more!

Before you start sculpting anything there are a few tricks than can improve your results. Start with taking an amount of foamclay and knead it until it feels more elastic. *[1]*

If necessary, draw a guide onto the eva foam before you start sculpting. Foamclay doesn't need glue when attaching to EVA foam. Making your working surface a bit damp will help foamclay to stick even better. *[2]*

You can use some tools or just your hands to sculpt. Use a wet finger to smoothen out the surfaces. Additionally, when a 'skin' starts developing or the clay loses its elasticity, adding a bit of water can reactivate the clay.

Leave your sculpture to dry for at least 24-48 hours. Very large objects may take longer. Sometimes the surface may seem set, but the insides can still be malleable and moist. *[3]*

The example sculpt on the bracer is very simple. You can go way more advanced with this. The sky's the limit. *[4]*

## COSPLAYSHOP TIP

Did you know you can fill large holes in your foam or seams with foamclay?



## COSPLAYSHOP TIP

You can use foamclay with molds! Push your clay in the mold, leave it in the freezer overnight. Unmold the next day and let it set.

# Other useful foam products

## LED foam

This foam has like the name suggests, a special ability. It allows light to pass through. The thicker the LED foam, the more it diffuses and the stronger it is. But a higher thickness also results in a lower brightness of the light.

It's possible to sand, heat and glue *(note: super glue can give reactions) LED foam,* just like regular foam. It is recommended to paint this type of foam with an airbrush or with a sponge using transparent paint.

## Foam scales

For all dragons, mermaids, monster hunters and scale clad cosplayers, this one is for you! Save yourself hours and hours of cutting with these pre-cut scales.

Cosplayshop has three different type of scales, in different sizes available. Each scale is double ended so they can be laid in both directions for two completely different patterns. Like all EVA foam products they can be heat formed, glued, cut, sanded and painted.

## Upholstery foam ('squishy foam')

Upholstery foam is soft and squishy, which makes it ideal for padding, muscle suits, creature bases, fur suits, etc.

Like the regular and LED foam sheets, it is available in several sizes and thicknesses.

Up next: Your introduction to foam painting

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**Special thanks**
@captainghostly *(Author & crafter)*
@agape.costumes *(proofreading)*
@fiahblade *(proofreading)*
@hartigan_cosplay *(p1 - gun)*
@sun.gho *(p7 - img4 - Foamclay example)*
@yetiicosplay *(p8 - img1 - LED foam)*

## VISIT US

Webshop: **www.cosplayshop.be**

We have a physical workshop where you can work on your cosplay for free with our tools. Come visit us!