ADVANCED COSPLAY ARMOR MAKING

HELMETS & PAULDRONS

BY SVETLANA QUINDT

DEAR FELLOW ARMOR MAKER!

Please visit my website and check out my previous books:

www.kamuicosplay.com/store

If you've read "**The Book of Cosplay Armor Making**", the first volume in my long running cosplay crafting book series, you already know how to make basic patterns and shape thermoplastic materials. By being able to create bad-ass sets of armor you've gained valuable knowledge that will definitely become handy while preparing for the inevitable zombie apocalypse!

Most basic armor designs should be no problem anymore. There are others however, more complex and distinct designs that will require experience and a different set of skills. To help you master these new projects I think it's about time to show you a few new tricks! They will be helpful when you're trying to create some of the more difficult armor pieces you can come across: helmets, masks and pauldrons.

Bracers, breastplates and leg armor often share a similar design and can sometimes even be made using the same basic patterns. Decorative shoulder armor and mighty helmets, however often don't care much about logic, movement or general laws of physics. Who needs to fit through doors anyway?

Well, if you are looking for help in building those pieces, this book was the right choice!

Please note that this title is a sequel to my first armor making book, so if you're not familiar with the basic techniques, I recommend starting there. I'll try to refresh a bit and maybe repeat a few important things here and there, but don't worry - I'll keep it short and entertaining!

ABOUT THE AUTHOR

Svetlana Quindt

Hello there! My name is Svetlana, but most of you probably know me as ***Kamui Cosplay***. I live in Germany and make costumes since 2003. I write these instructional books to support you in creating awesome costumes. It's great fun and an awesome way to express your fandom.

Thank you for your support by buying this book! Hopefully you will find it helpful and inspirational!

Content

Some useful tools

As an experienced cosplayer you'll automatically gather more tools over time. Luckily you won't need a whole master builder workshop to create some cool armor. Here are just a few necessary items you will need to get started!

Dremel

When it comes to sculpting, carving and smoothing materials like EVA foam, Worbla or even wood, a basic rotary tool like a dremel is an absolute must-have for your tool collection. For around 40 USD you'll get a good product that you can then add more tips, attachments and tools to. By using an extension (around 20 USD) you can improve your control over the tip, which lets you hold it like a normal pen. Use it to carve very tiny and intricate details. A dremel is clearly a tool you will instantly fall in love with. It will probably make you buy even more professional tools!

Box cutter or hobby knife

In the upcoming pages I'll explain how to bring foam into shape. For that job the most basic rule is to have a nice and sharp blade next to you. A great tool for that job is a simple hobby knife with replaceable blades. Stop at your hardware store depot and just grab a few for your next project. As long as you keep your hobby knives sharp and clean they will cut through foam like butter. Just beware that they will get dull quickly when working, so it's recommended to have enough of them in storage.

Hot air gun

You already know that a strong hot air gun is your best friend working with thermoplastics. A quality product with a good amount of Watt will heat up your Worbla in a very short time and will last for a lot more projects. If you have as little patience as me it's also worth it to invest in a second tool that you can use both at the same time. Not only is dual-wielding totally bad-ass; with some practice it speeds up your work immensely and allows you to finish your costumes in a much shorter time.

Necessary materials

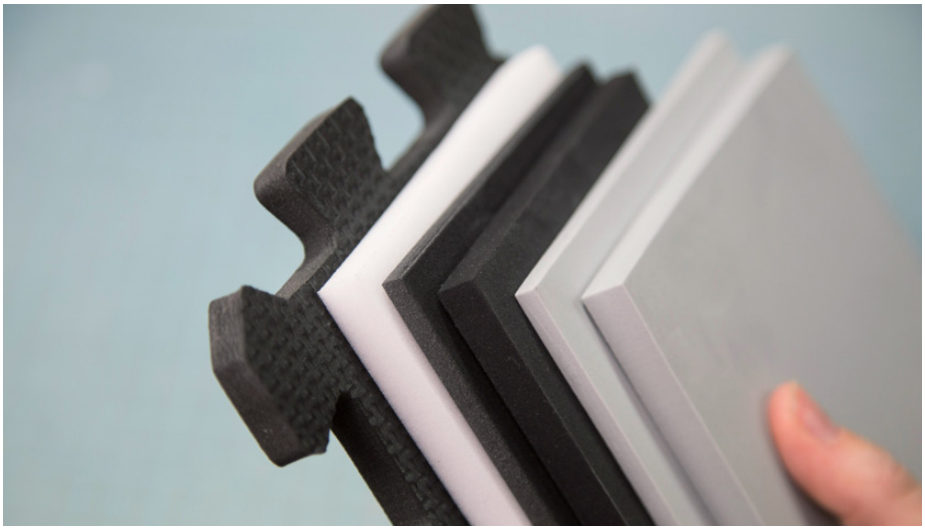
If you've followed my previous books or are an avid costume builder, it's very likely that you have most of these materials lying around in your workspace already. If not, make sure to buy plenty, since we will use them quite a lot.

Worbla

The thermoplastic „Worbla's Finest Arts" (or just Worbla) is my favorite material and it's great for making solid and durable armor. I've already talked a lot about it in my previous books, so I'll keep it short: Heat it up and it gets soft and sticky, cool it down again and it will stay in the shape you gave it. It bonds to itself and other plastics, so no glue is required. Always have enough of it at home so you don't have to run out in the middle of a big project.

Craft foam

You have probably heard of craft foam before. Most hobby shops offer it in small sheets that are usually one, two or three millimeters thick. With some luck you can find even larger rolls on the Internet (and in big crafting shops) which are easier to work with. I use craft foam as base for many of my armor builds, so prepare to see a lot more of it. It's a very flexible material and I've already seen people creating whole costumes out of it.



EVA foam

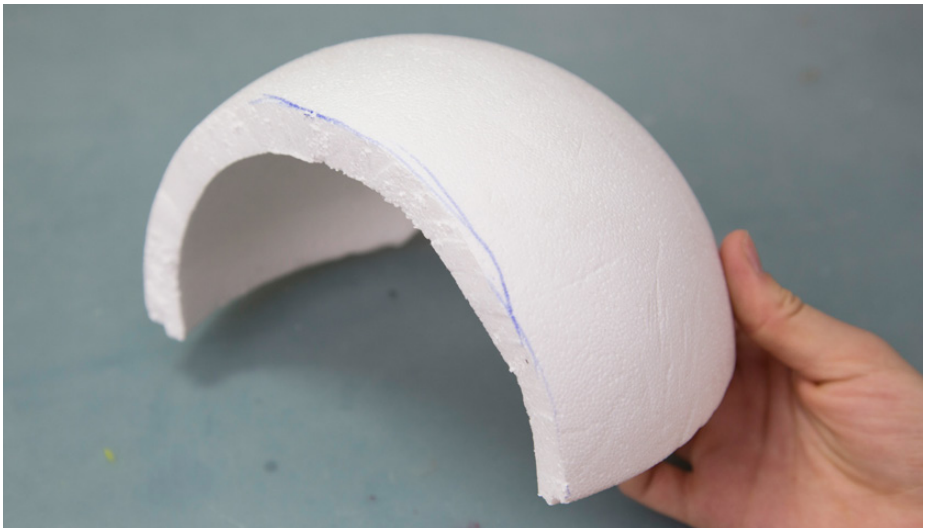
EVA foam is hard to describe as it is basically just a word for countless different foam based products. The most common shape you can find are black puzzle yoga mats with a texture on one side. With some luck you can also find EVA foam that is smooth on both sides. All come in different densities and weights. Sheets with 5mm (0.2inch) and 10mm (0.4inch) thickness should always be in a cosplayers storage. You never know for what you'll need them for! Perfect for making armor, props or to give your Worbla more thickness.

Pink insulation foam

Pink insulation foam is normally used for insulating walls in houses. It should be relatively easy to find in your local hardware store. Compared to other foams it is pretty solid but at the same time very lightweight, which makes it perfect for carving three dimensional shapes. Also keep in mind that pink insulation foam is not always pink, since it can come in many different colors and thicknesses depending on where you look.

Styrofoam

Styrofoam globes are a great base for many different types of pauldrons. You can get them in many local and online crafting stores. They come round or oval and in different sizes. Just place them on your shoulder to find a fitting size for your upcoming armor piece.



Expanding foam

Like pink insulation foam, expanding foam is also used to insulate walls when building a house. Once sprayed out of the can, it needs some time to harden before it's ready for carving. Be careful however, the fumes are supposed to be toxic, so work in a well ventilated area and don't forget your respirator.

On my website I've put together a detailed list of products, tools and shops and other interesting links that you can check out if you ever need help finding anything.

www.kamuicosplay.com/links/

Caution:

Even if creating costumes is super fun, there is nothing more important than your health. Please don't ignore safety instructions, always wear a respirator, protective gloves and work in a well ventilated area when sanding or spraying foam and paint.

Now that we've got all preparation out of the way let's jump right into building a few armor pieces.

We will start by making a simple helmet as well as a pauldron. A big part of creating complex armor pieces is getting the patterns right.

It may be pretty hard at the beginning but over the time you'll get a feeling of how two-dimensional patterns work in a three-dimensional space.

With a bit of experience you'll be able to draw complex patterns just by looking at your reference.

But now, let's begin!

Let's create a cool helmet!

Building a helmet by yourself is no small task. There is no „standard head size" and face shapes vary a lot. Luckily it really isn't that hard when you know what you're doing and have a friend that can help you out. All you need is some plastic wrap, painters tape, a pen and scissors.

First things first: Getting wrapped and wrapping someone else is a lot of fun, especially when your helper puts in air holes to make sure you survive. Get a friend or family member **(1)**, sit down and grab a roll of plastic wrap. Now your head has to be covered in it **(2)**. Make sure you are still able to breathe and don't wrap too tightly.

Once your friend is done, let him add tape on the top **(3)**. I prefer painters tape for that job, but duct tape works as well. You need several tight layers to get an even surface. This guarantees that you'll get a perfectly fitting pattern in the end. Don't forget to make zombie noises during this step for additional fun.

The next step is finding and drawing the right shapes and fitting seams around the head. Since you will mirror your pattern, it's not necessary to draw on both sides. It is very important to find a near exact middle line **(4)**. After lining out the basic shape your assistant will need to separate the pattern into sections. A good rule of thumb is to use three or four. I chose four parts for this example **(5)**.

Now free yourself! For this step it helps a lot to press one finger under the plastic wrap to create space. Cut carefully along the middle line **(6)**. Once the tape is loose enough you can just slip out of it and thank your friend for the help by wrapping her or his head next.

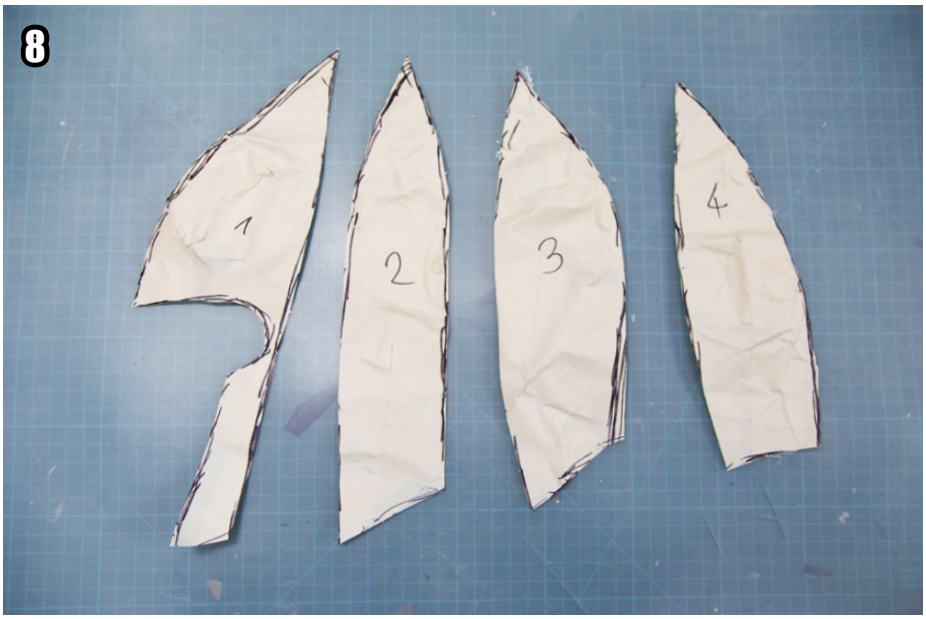
The result you got now is a great rough cast of your head **(7)**. Cut your pieces along the lines and press them until they are flat. That way it's easier to transfer your pattern on the material you want to work with later. The more pieces you have, the more exact is your build. But remember: A bigger puzzle is harder to put together.

Note:

This is an example that you can adjust as you wish to any of your projects. Use this technique for making hats, superhero masks or full face covering helmets. All you need to do is to place your cutting lines a little bit different and you'll have a great base for a complete new costume piece in no time!

Note:

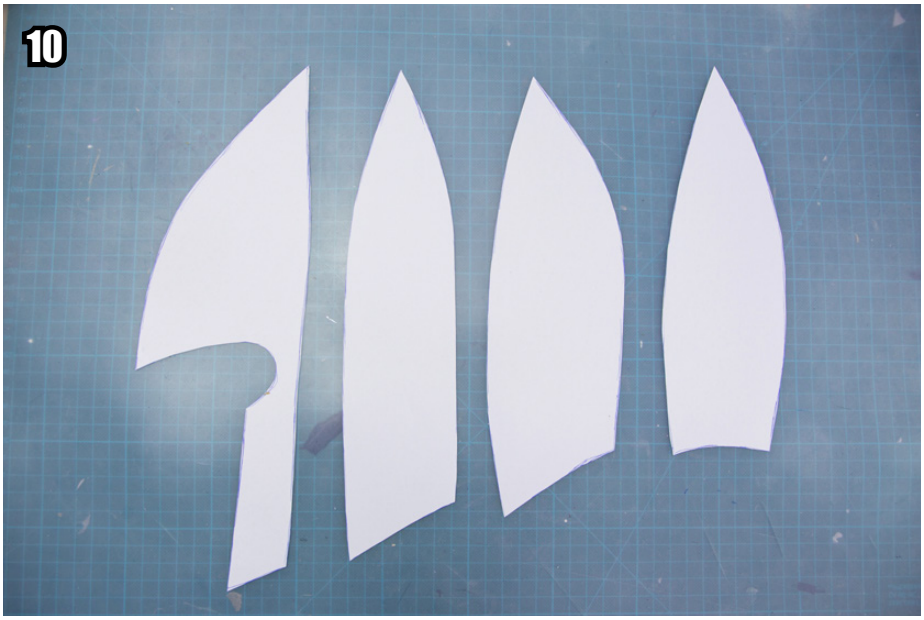
Keep in mind that every head is different! So even if your upcoming helmet fits perfect on you, your friend may have trouble using your new self-made pattern.



Mark your pattern pieces with numbers to avoid getting lost in your puzzle **(8)**!

Now it's time to transfer our tape pattern to clean paper. Press them down gently and trace them with around two additional millimeters of space around the borders **(9)**. This way you will make the helmet a bit wider to get your head in and out without problems later. If you have a lot of hair to hide or you're planning to wear a thick wig, better add a few millimeters more.

After cutting out your final paper pattern **(10)** copy them to a sheet of craft foam **(11)**. Since we want to mirror our parts (remember, you only drew one side) you will have to transfer each piece twice. Once you are done, find a safe place to store your originals. You can alter them into countless other shapes and use them for many more costumes in the future. There is nothing more useful than having a good collection of armor patterns at home.



Note:

Before working with expensive thermoplastics, it's a good idea to test your patterns. Just grab some painters tape and connect all pieces together to get an idea about your final build.

The next step is just standard procedure as previously shown in my first armor making book: Cut out the foam and cover it from both sides with Worbla **(12-13)**.

Now it gets tricky: Let's put the helmet together! I definitely recommend starting small. Slowly heat up two neighboring pieces and carefully press them together along their borders **(14)**. To add another part, you will need to keep the first ones warm while at the same time you're activating the next. The same step needs to be done for all other remaining slices. For this work stage it can be very helpful to have a friend around. You can also try to use a wig head or lay down your build to keep it steady.

It's always tempting to separate your helmet into many small slices but here you will notice that the more pieces you have, the harder it will be to put them all together again. Since Worbla is really stretchable, you are still able to get a perfectly round shape even with only two pieces per side.

As long as your material is warm, you are able to bend and stretch it. To do this evenly, an acrylic sphere and a bit of steady pressure helps a lot **(15)**. Stay very patient during this process and constantly check and correct your shape while the material slowly cools down. This will help finalizing your shape until it's spot on. You can always heat it up again to correct any bumps or make final touch-ups. So don't worry if you don't get it right on your first try!

Note:

To avoid a huge mess during this difficult step, it's quite helpful to build a small dummy before you go big. Try creating half a sphere to get a feeling of how the material stretches and behaves.

Don't panic if your pieces do not create a perfect straight line at the bottom of the helmet **(16)**. You can always trim your edges with scissors. By heating up the freshly cut border carefully, the foam core will shrink a bit. That way you will be able to close the gap again by pressing the two Worbla sheets together with your fingers.

If you do not like the visible seams, you can use additional stripes and a dremel to hide them. Just heat up the area gently, press it into the border **(17)**, let it cool down and dremel over it until it is perfectly smooth **(18)**.

At this point the basic helmet shape is done and we can finally add additional detail layers as well as a nice paint job.

Note:

Even if your helmet pattern is flawless, there is a chance that all of your pieces will not fit perfectly together in the end. If you end up with a big hole at the top, you can close the seam gaps by applying more Worbla which you can then dremel smooth **(19)**. This is only one reason why getting a dremel is a good idea. This tool is super handy!

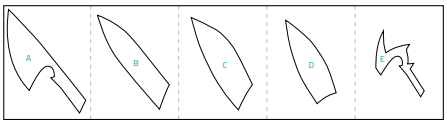
And it's done!

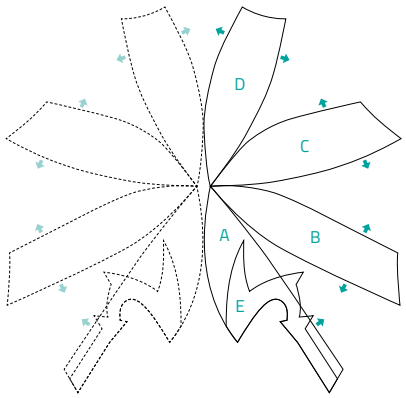
Yay, here is our finished helmet! I added only one more layer to complete my design. Simple enough right? As you can see, making a pattern and building a bad-ass armor piece out of it is really not that complicated.

If you still need a little bit of help, I uploaded the pattern for this example to my website. It is based on the head of my husband Benni, so it might or might not fit you. Try making a paper dummy first and adjust the pieces to fit your own head shape and size. ■

You can download the free pattern here:

www.kamuicosplay.com/product/free-supervillain-helmet-pattern/





Help, my shoulder needs protection!

Sadly you're not able to warp yourself in tape and get a perfect instant pattern for any costume. In fact it takes a good amount of experimentation, patience and knowledge. Luckily there are a few tricks that will help you find the right solution! Here we go!

To keep it simple, we will start small. The shape we are creating can work as a pauldron itself but can also be used as a support for bigger pieces. In any case it's important to make this part as comfortable as possible because you are going to attach it directly to your body. Just use the same pattern making technique I introduced in the previous example.

Keep your shoulder relaxed and let your arm hang down. Now cover your skin with plastic wrap and try to keep everything as tight as possible **(1)**. Wrap the entire space from your upper arm over your shoulder and to your neck.

Once you are done with this part, add tape by using short instead of long strips. Try to recreate the exact shape of your shoulder without too many wrinkles **(2)**. It won't be easy reaching your own back, so get your friend to help out again. The first layer of tape probably won't be that tight, so just add more and more until it feels right.

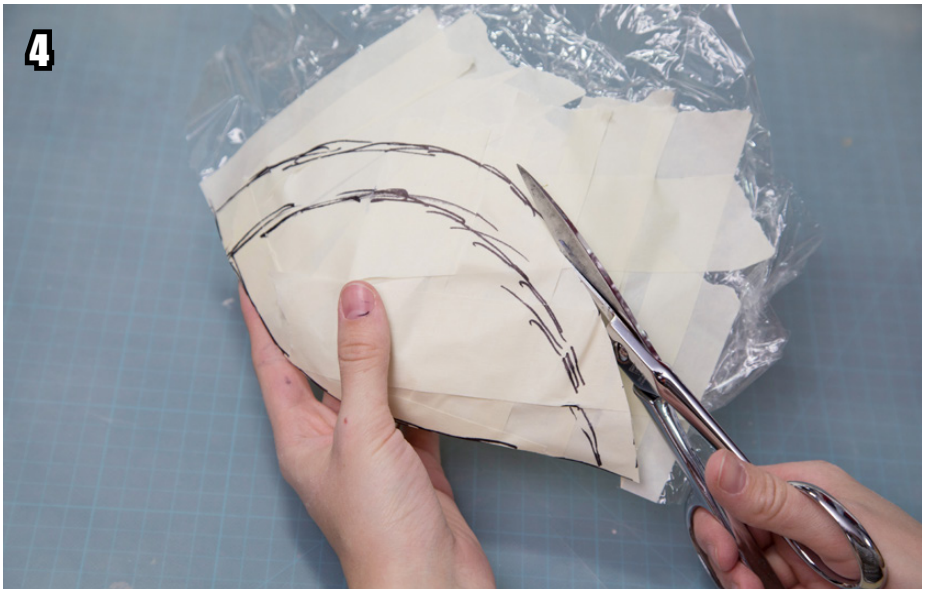
Note:

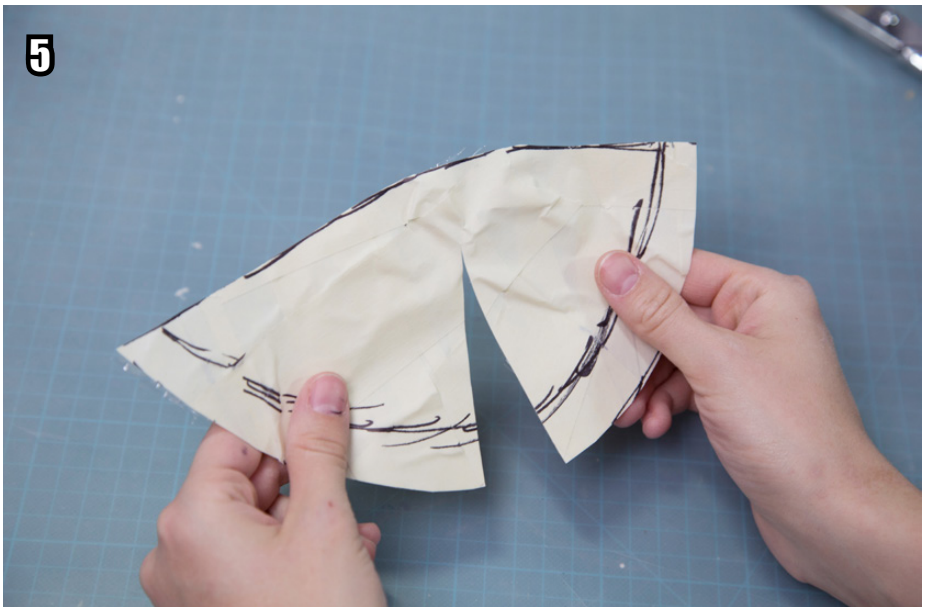
For this technique painters tape and plastic wrap is not really essential. You can also just use duct tape on an old t-shirt that you can then cut into pieces.

Once you got a nice round shape, grab a pen and draw some lines similar to the ones in picture number **(3)**. You don't necessarily have to mirror this part as your front and your back might have a different shape. I still recommend drawing a middle line for better orientation. For this example it's okay since the shape is not too complicated and will fit well enough to both sides.

When you are satisfied, you can free yourself and begin to cut along the lines to get your newborn pattern **(4)**!

Since our round shape needs to be flattened, you can cut into the side to open up the pattern **(5)**. This makes it easier to transfer it to your material and will be closed afterwards anyway. All you need to do now is to copy it to whatever you want to work with! This might, of course, be Worbla, but can also be EVA foam, leather, sintra, fleece or even simple card board. You probably guessed my favorite choice already. Since I prefer my armor durable and solid, my material of choice is a combination of Worbla and craft foam.





Note:

Worbla and craft foam are stretchable, so patterns without a cut inside work as well. However this way it's easier to shape curves.

Trace both patterns onto the foam, cut them out and cover everything with Worbla **(6)**. Easy! As long as the material is still hot, you're able to connect both parts by pressing them together as well as shaping the pauldron directly on your shoulder **(7)**.

To quicken the cooling process, just hold your armor piece under cold water. If everything worked out, your basic pauldron is done **(8)**!

What you've created now can be used in many ways: By adding details you can upgrade it to a nice looking costume piece or you can use it as support inside of larger builds. This will help you place and stabilize your bigger constructions properly. Just attach it inside your larger pauldron by building a pillar out of Worbla leftovers. The longer the pillar, the more it will „hover over your shoulder". This can be quite useful for many kinds of fantasy armor designs that do not care much about the laws of gravity. Thank you crazy armor designers!

I will show you a few more examples that use this same technique in a few pages! ■

Note:

The shoulder piece we built for this example might look pretty easy and boring but remember: as long as you have a good base to work with, creating interesting armor pieces and details is a cakewalk! Most of my own pauldrons started the same way. So don't worry if you piece does not look like your reference picture right from the beginning.

Adjusting patterns and adding details

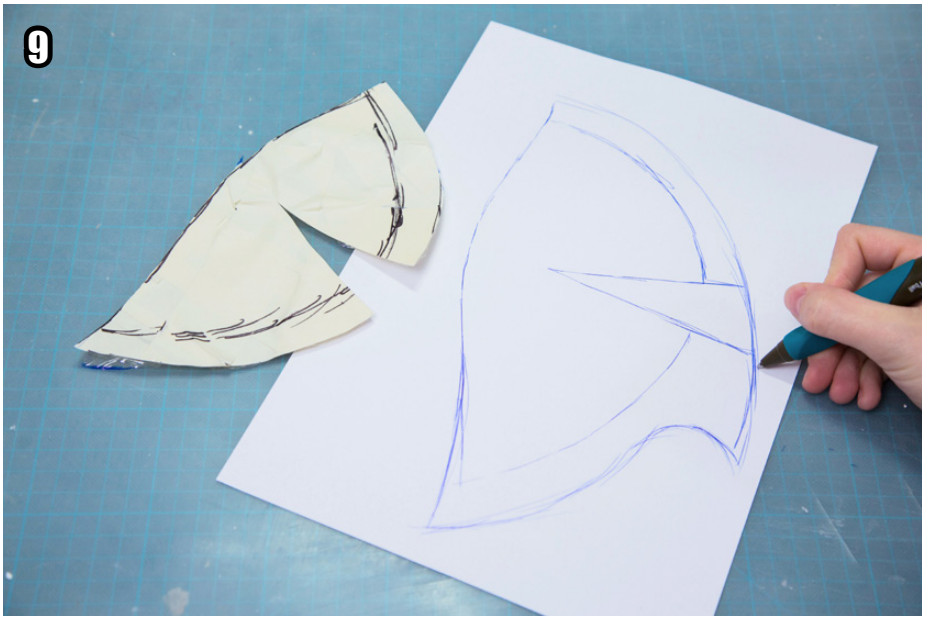
We already had tons of fun wrapping ourselves in plastic wrap, right? With a very basic pattern, let's go even further by making it more interesting!

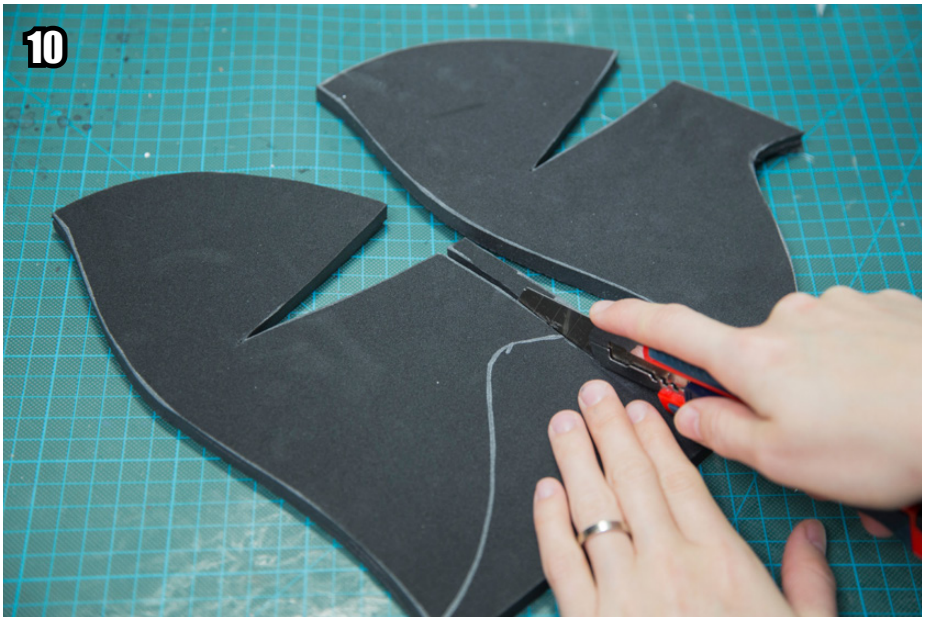
Our super cheap "body molds" are just the first stop in a row of work steps to get cool costume pieces. It's already a good help to find the right base and lines. Since you don't need to settle with your first draft, I also want to show you that you have options in the choice of your material. No need to create everything with pricey Worbla - let's work with foam only this time!

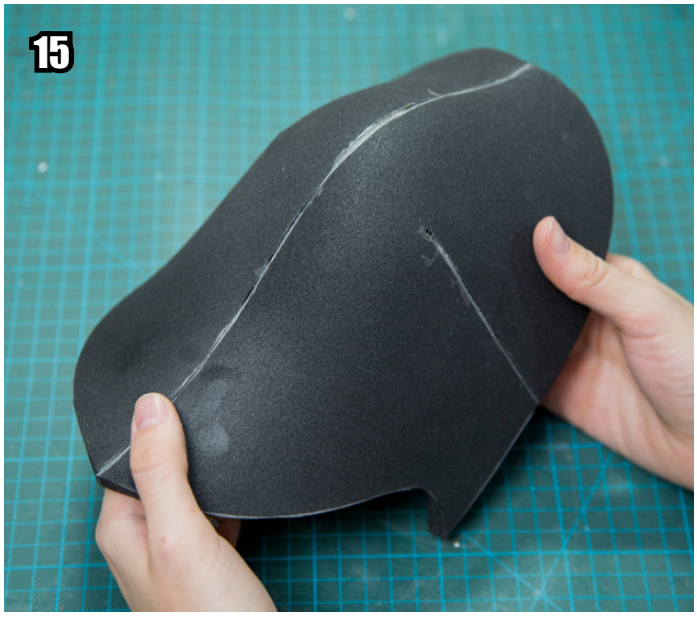
We are going to use our simple mini-shoulder pattern and alter it a bit. So grab a piece of paper, transfer the outlines and adjust them to a more interesting shape **(9)**. If you cut out the new pattern and hold it to your shoulder, you will get a better image of the final armor piece. This not only allows you to test your designs, but also gives you a better feeling for upcoming armor projects over time.

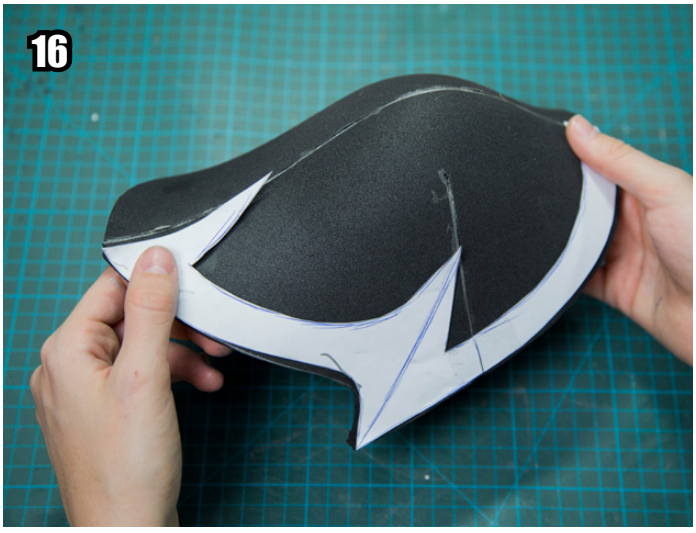
Next, copy the final pattern onto your foam. Think about which thickness you want and choose your sheet accordingly. I used 10mm (0.4inch) for my example. It's even possible to stack several layers of material to get more volume if you want to. Use a hobby knife to cut out all pieces in a nice 90° angle **(10)**.

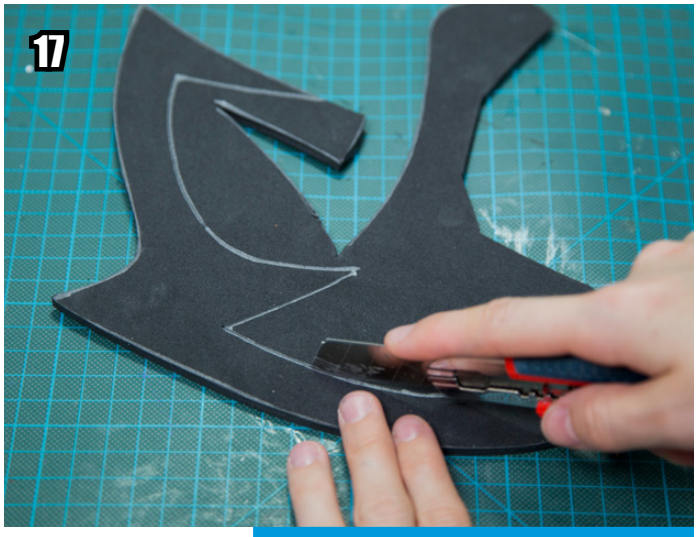
Depending on the country you live in, finding the right glue can be tricky. Research on Google and ask friends. You will have to find an adhesive that connects your foam pieces properly. Contact cement for example, works wonders. Use a brush to apply it to both sides of your pieces **(11-13)**. Wait for a couple of minutes until the surface is dry and sticky. Then let your pieces make sweet sweet love by pressing them together.











Like Worbla, EVA foam also reacts to heat. So, if you still need to bring your shoulder piece into the right shape, heat it up carefully and bend it until it's cold again. It's actually easier if you just apply some tape and wait for a few minutes **(14)**.

If you have some trouble with messy seams or cuts, just use your dremel and sanding paper to get rid of them. Your heat gun is able to smooth out rough surfaces as well. The pauldron you've created could still use a few more details, right **(15)**?

An easy way to create lines, upper layers or any other kind of decoration, is to use your original pattern as a base. Just alter the shape, hold it over your piece and adjust it until you like it **(16)**.

Experiment a bit with different thicknesses for your details and cut them out when you are satisfied with the look **(17)**. Easy enough right?

Note:

At this point, don't be scared about combining different materials. Thicker and thinner foam works great for beveled edges, while modeling clay allows you to apply sculptings. Also keep in mind that your dremel, soldering iron or your hobby knife are great to create cool textures and amazing details.

Note:

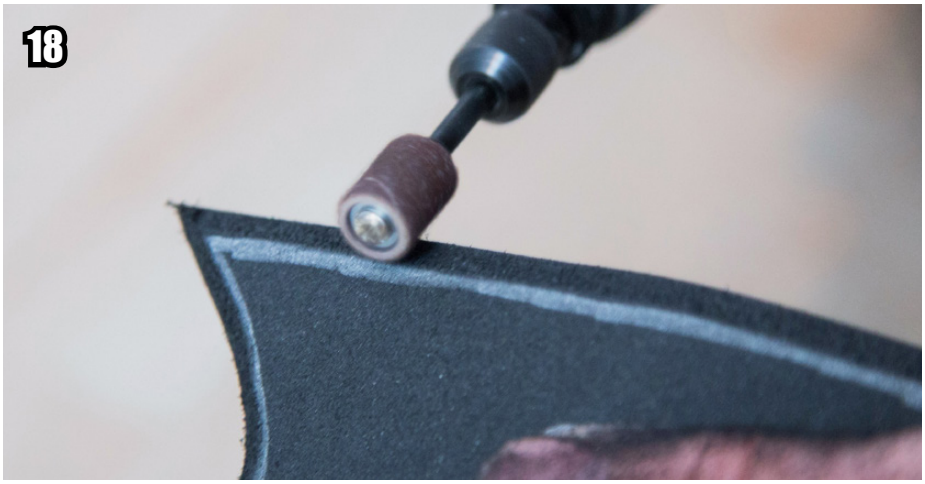
You see how important it is to keep your original patterns. Use them again for additional pieces, details and also upcoming costumes.

Before applying any glue, think about if you would like to have your foam at a certain angle. Until now we only had 90° cuts but sometimes it looks more natural to have beveled edges. If so just mark your angle and then remove the material between the line and the border by using a dremel or a hobby knife **(18)**.

Ready to sniff some glue again? Don't forget to open a window! Trace your detail layer and apply a thin coat of glue on both foam pieces afterwards. Once the adhesive has dried, press both layers together slowly and carefully **(19)**.

Before the paint job, it's necessary to prime our pauldron to make it more robust. You probably want it to survive at least a full convention weekend, right? So if you prefer to keep your armor as lightweight as possible or just want to keep it affordable, a good primer would be a mix of white glue (wood glue) and water. Mix with a ratio of 1:1 and apply a thin coat using a brush **(20)**. After a while the foam will absorb it completely and become harder. Repeat this step a few times until your material is durable enough and you are ready for the paint job!

By now you know what the pattern of a tight shoulder armor looks like. If you need something with larger scale, just use your original drawing as a reference. Having an idea of how your own shoulder is shaped, helps a lot to create new curves, lines and shapes. Even pieces with completely ridiculous designs are hopefully easier to realize. ■

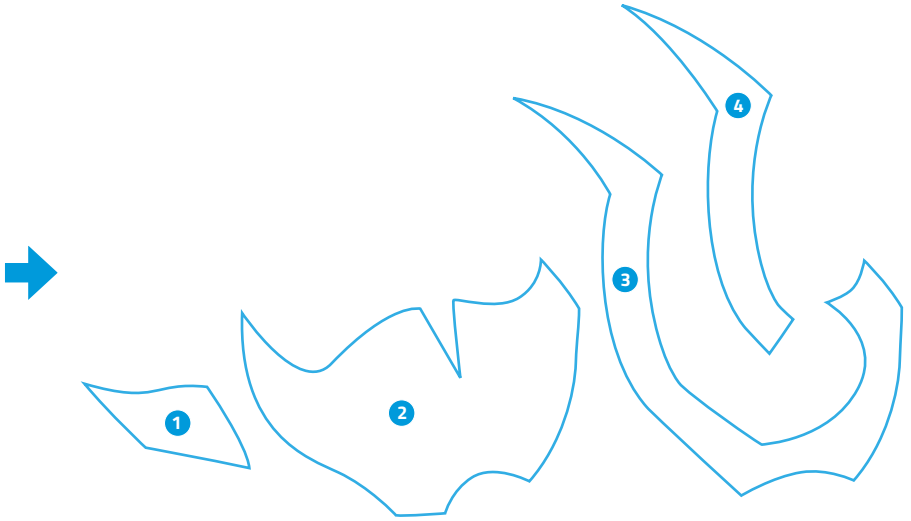


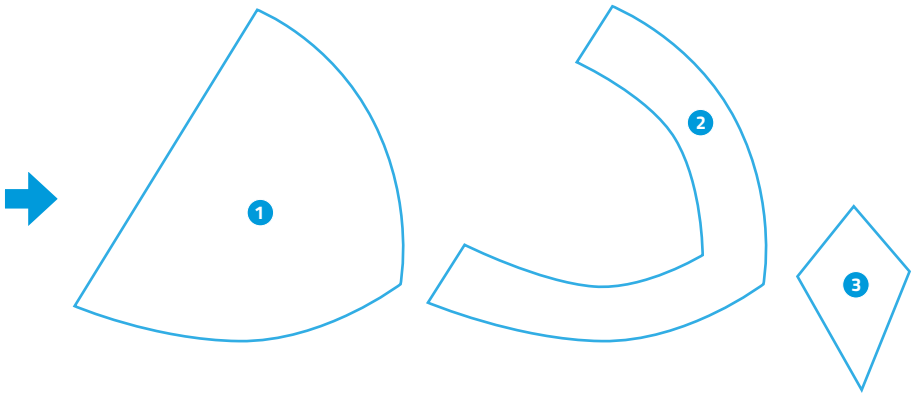
Note:

Don't forget that even if you've applied several layers of glue, it is still foam you are working with. Foam is soft and compared to other materials quite more fragile **(21)**. A more durable solution would be to apply a final coat of Worbla. I'll show you how this works later in this book.

Understanding pauldron patterns

The most difficult part in making good patterns is to actually understand how three-dimensional objects look when they are flattened to a two dimensional level. Here are some simple examples:





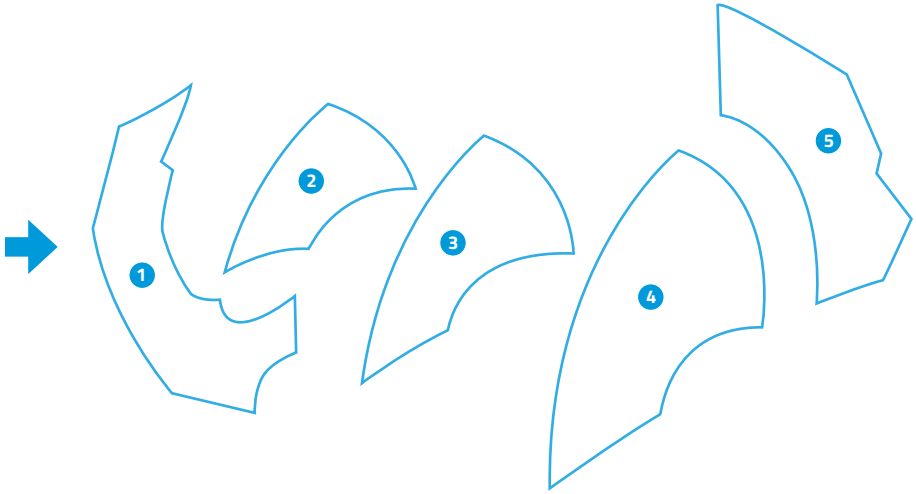
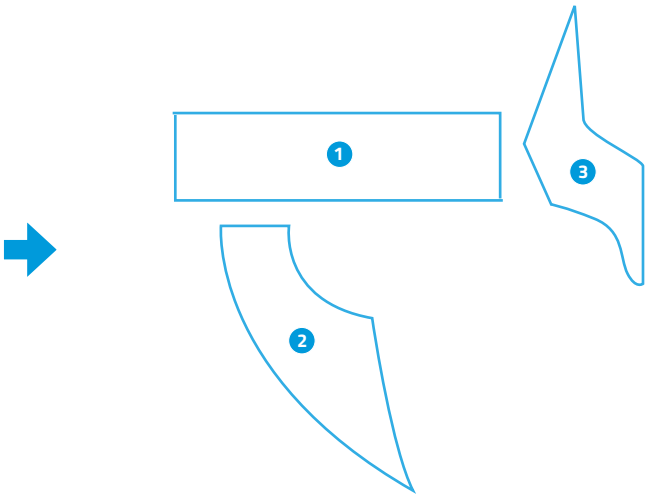


Photo by Hemlep Fotografie

Understanding mask patterns

Let's take another look at some mask examples. As you can see the original patterns are not really complicated but once you start layering them on top of each other, things start to look really interesting!



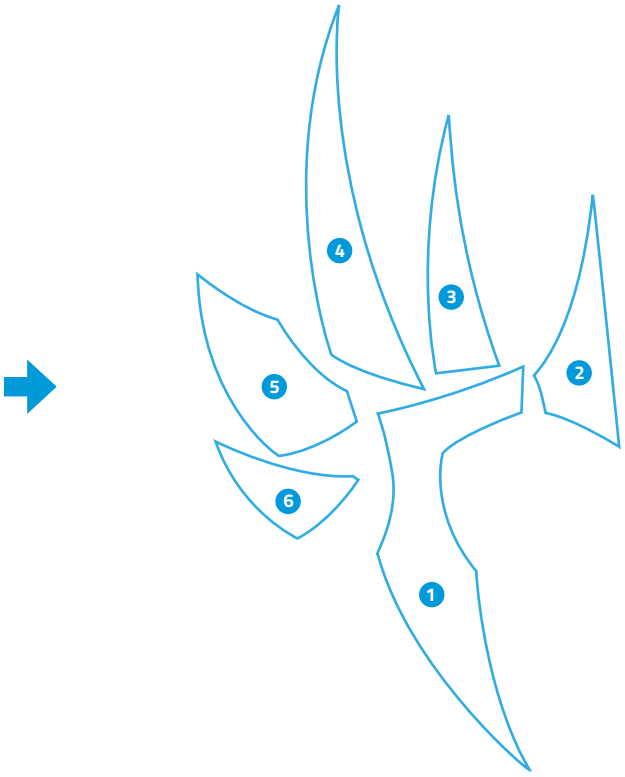
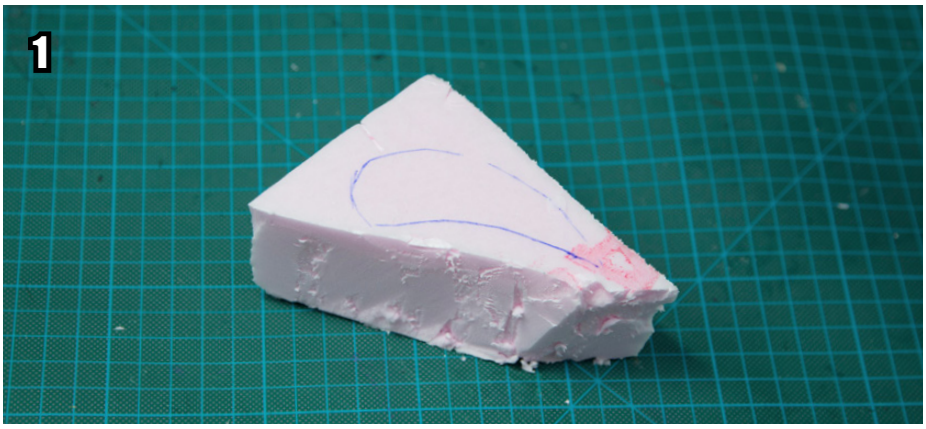


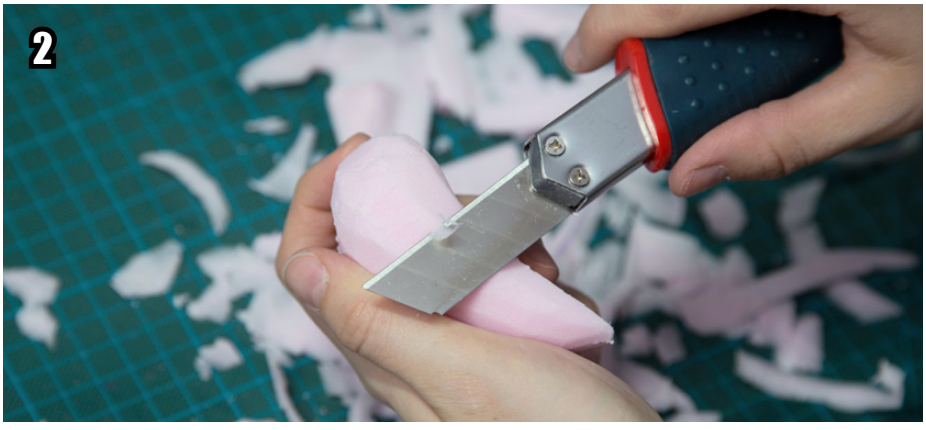
Photo by Benjamin Schwarz

Creating horns, antlers and other shapes

Pauldrons and helmets are often the most iconic pieces of an entire armor set – designed with very weird shapes, covered with eye catching sculpts or mystical light effects. Luckily there are as many ways to build something as there are interesting designs to discover.

Like always some materials are more pricey and some techniques are more advanced. I would like to show you a few tricks instead that everybody can follow and pick up very easily.





Carving insulation foam

Insulation foam is very lightweight and fun to carve. You should be able to find it for a low price in nearly every local hardware store or home depot. To get an interesting shape out of the 5cm (2inch) tick foam, first draw a silhouette on top **(1)**.

Now use a sharp hobby knife to cut and carve around the lines **(2)**. Sculpting with foam does need some practice, so don't be frustrated if you need a few tries. Remember to always cut *away* from your own body to avoid hurting yourself. Also note that cutting the material will make your knife dull super quick, so use a sharpener or have enough replacement knives in storage.

Smooth out the surface with sanding paper **(3)**. A medium grid between 80 and 120 is absolutely fine, since the foam is soft and easy to sand. Stroke carefully until all hard edges are gone. Also, don't forget to wear a dust mask and open a window since the particles are be toxic!

Note:

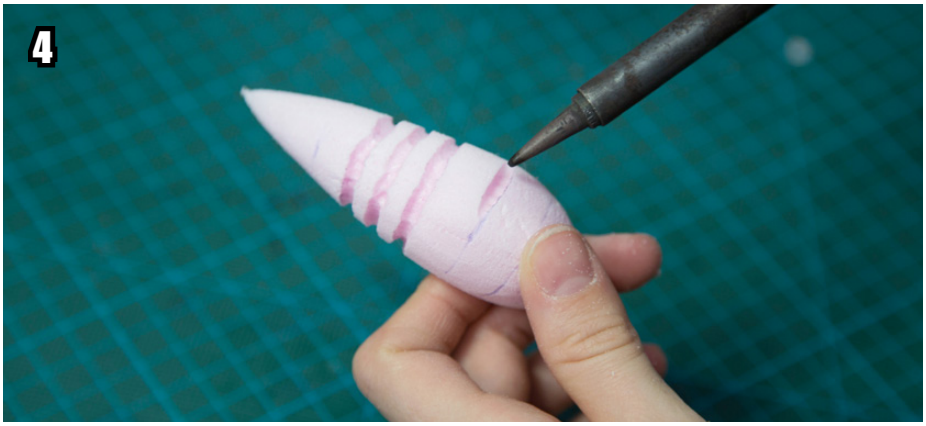
To carve insulation foam it's necessary to work with very sharp blades. You can either replace your dull blade with a shiny new one or slide the old one over sanding paper with a very fine grit to make them sharp again. I recommend changing the blade every once in a while just to see if you're working with a dull blade without noticing it. But still: recycling is better than buying new things! Save the planet!

You can achieve interesting textures by many ways. A dremel with different attachments works great, but so does your hobby knife. I even used my soldering iron for this job **(4)**. Working with this tool however requires good ventilation in your room as well as respiratory protection.

If you want to, you can now already seal and paint the material. To protect and prevent it from breaking apart however, it's a good idea to cover the foam with two pieces of Worbla **(5)**. Just press them around the edges and cut off leftovers. To clean your seams use a dremel as shown on page 12.

When you are happy with the surface, heat it up again and press the Worbla into the previously carved lines with any kind of tool you can find **(6)**.

Congratulations! You just made a pair of cool horns! Now just attach it with glue, magnets or directly onto the Worbla of your armor. You are now ready to roam the woods and use your shiny new horns to fight for territory!

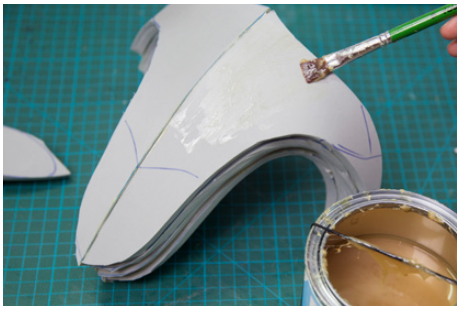


Note:

Insulation foam is extremely lightweight and with a thin layer of Worbla on top also super durable. If you need some cool sculpts, details or whole armor pieces, try out this method. Even if I've just shown you how to make some simple horns, you can create a huge variety of different shapes! Also a big plus point: the foam is super affordable!

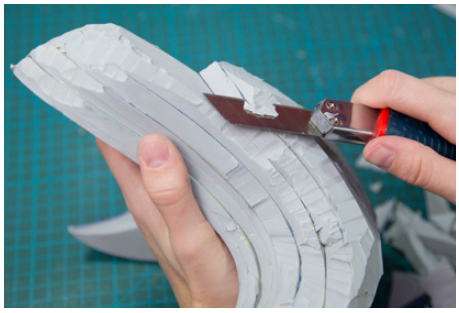
Layering and shaping EVA foam

Another cheap way to get cool three-dimensional shapes is by carving multiple layers of EVA foam.



Since EVA foam can be shaped with heat, it's easy to create a nice curve. Bend every layer separately, add glue to both sides and press the pieces together. It's easier to work with just one layer, than trying to bend a whole block of foam.

A good way to save material is to create as little scraps as possible. So start with the right silhouettes! My goal was to make a demon skull and I tried to come as close as possible to the final shape just by stacking several layers.

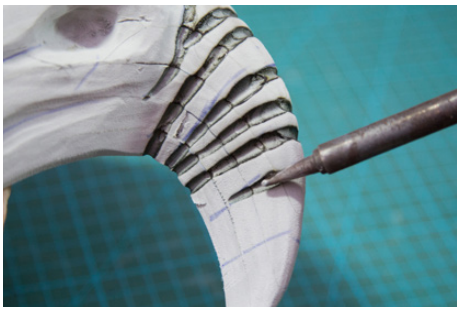


Next, grab a hobby knife and carefully start carving. Depending on the foam density, this may take a while. I prefer to use very sturdy foam as it feels better to carve and sand. Having a three-dimensional reference like a digital 3D model, an action figure or just pictures from different perspectives, helps a lot.

The most difficult part is actually to get the proportions identical on each side. You'll have to touch up, reshape or take away whole areas to make things look as symmetric as possible. With some practice however you'll be able to create something really cool for just a few bucks!

When you are done with carving, smooth your surface. A dremel is the perfect tool for that job! Use a fine grit and slow, controlled moves to get rid of deep cuts and left over foam. Just don't forget your respiratory protection! It will get really dusty here!

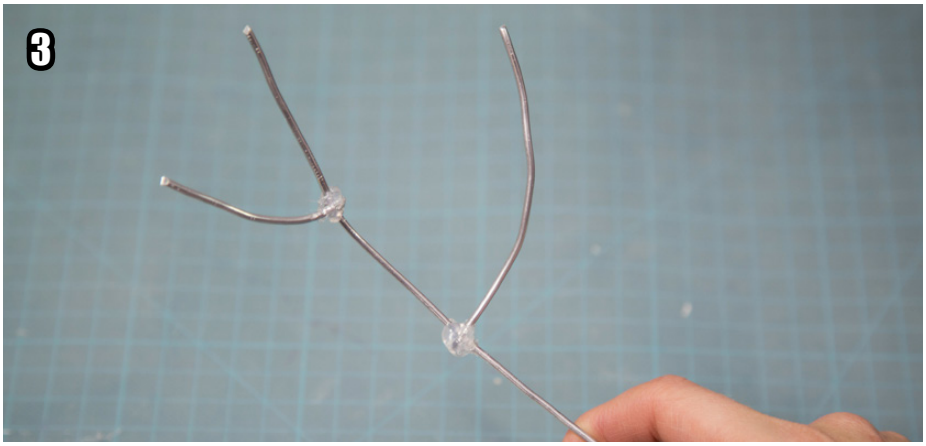
To get rid of any last bumps and dremel marks treat your EVA foam by hand with a fine grit sanding paper (100-120). You'll notice that if you carefully stroke, your carved piece will almost appear like it was sculpted out of clay. Super duper smooth!

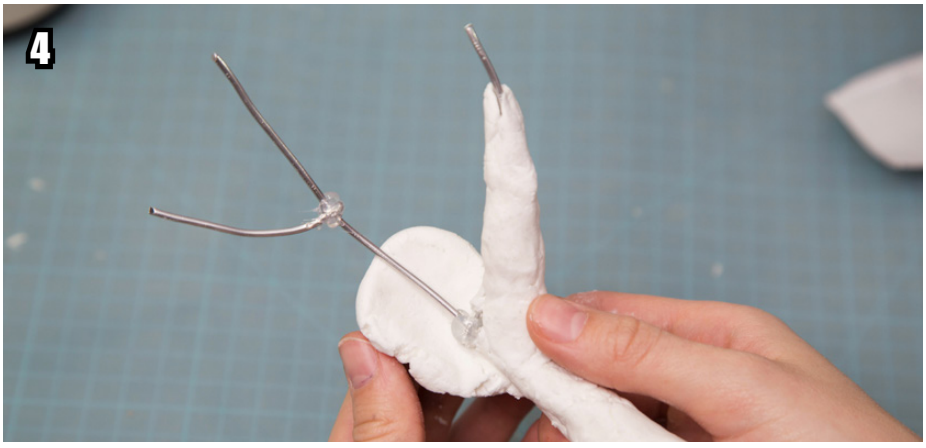


As a last step you can now add additional details. Since I really like to set things on fire, the idea of burning the foam with my soldering iron just came to me naturally. But beware that melting foam will produce toxic fumes, so use projection and work in a well ventilated room while you sit there laughing hysterically.

To finish up your piece either apply some layers of primer like glue or plasti-dip or use a coat of Worbla. Make your choice and let your finished piece shine!

Still need more horns? Grab some wire and clay!





Another technique, which I mainly use when I need to make cool antlers or other delicate structures, is to combine lightweight modeling clay with metal wire **(1)**. You don't need to search for a specific brand of clay, as long as your product gets solid enough to be sanded. Try to find a solution that is not too heavy as you still want to carry your costume for a long time.

At first cut the wire into smaller sections. Now bend them into the shape you want and glue the pieces together to create branches **(2)**. Little nooses at the end make this step easier.

Once your hot glue cools down, your build should be stiff and durable. Now is your last chance to bring the wires into the right shape and angle **(3)**.

The next step is to add some volume. Cover your wire completely with clay and try to get thinner when nearing the tips **(4)**. You don't need to sculpt everything super clean and smooth yet, but try to get a good thickness and avoid holes and big bumps. A little bit of water usually helps to smoothen your clay while working.

Note:

What looks really easy here, can be pretty difficult in reality. Just Google search for images of deers, rams, antelopes or any other animal you want to create some cool horns from. Photos are not only a great inspiration, but also help a lot during the actual crafting process!

Depending on the kind of clay it takes some time until it gets solid and durable. My product is air-drying, so I can stick it into the oven for 30 minutes to speed up the process. The final product should be ready for your sanding paper **(5+6)**.

It's really easy to get rid of bumps and edges when grinding by hand. Use a grit between 80 and 120 for the best results.

If you want to, you can now dremel or carve the clay to get a special texture. At this point you could theoretically already paint your horns as long as you keep in mind that they will still break under enough pressure.

Improve the durability by covering the clay with your new super favorite product. Heat up two big pieces and cover the horn from both sides. Press the borders together, cut away left over material and sand the cutting seams with a dremel **(7-8)**.

Maybe I should try to cover myself with Worbla to get immortal as well!

Note:

It can be quite tough to cover complicated shapes with Worbla. The material will probably tear apart at some spots. To fix that, fill the holes using tiny scraps! Once it cooled down, just smooth out the surface with a fitting tool, some additional heat or just by sanding paper or a dremel.

Note:

Nail scissors are a great tool for cutting small parts, curved edges or narrow gaps. Just try them out!

Done and ready!

The horns you have created this way can now be attached everywhere you want. This is your best chance to become a unicorn!

I mainly used this technique for the antler on my Norn Warrior helmet. It would have been easy to just heat them up and stick them directly on the helmet. Since I wanted to travel with this costume however I had to find a way to make them detachable. My solution was pretty simple: I added a wider piece to the end and pressed in some screws while the material was still hot and soft. After that I was able to screw them together using corresponding holes in the helmet shell.

Please note that there are tons of different ways to attach armor pieces. Experiment with velcro tape, magnets, buckles, strings and anything else that seems to be useful. I'm pretty sure you'll find countless great solutions!

Make sure to share them with everyone! ■

Note:

This helmet was created the same way I already explained on pages 8-13. Only the details and the shape are a bit different, but now you should know how to build your own super cool helmet, right?

Note:

The build had a great fit, but to keep it stable on my head I also added some padding inside. The final attachment worked with a rubber band in skin color that was strapped under my chin.

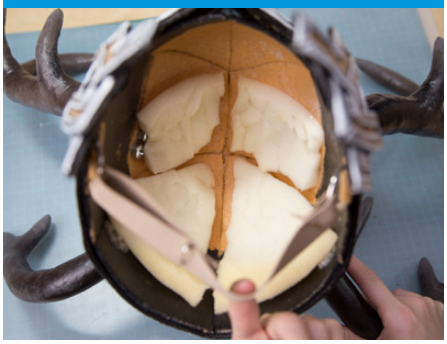
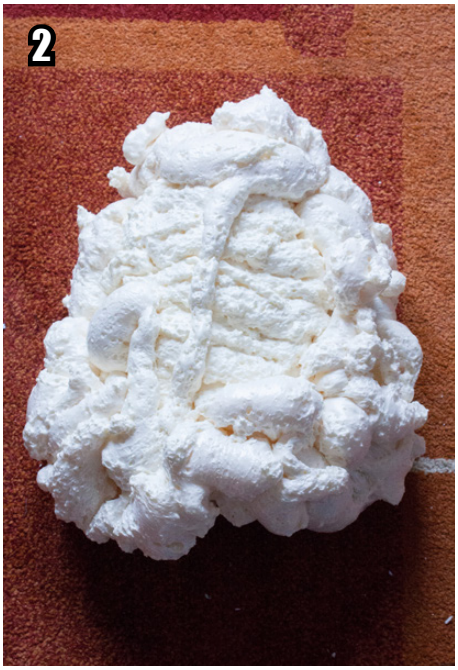


Photo by Benjamin Schwarz

Expand your horizons!

Expanding foam or „Great Stuff“ as it is called in the US, can be found in nearly every hardware store. As you can imagine it’s great fun to carve it and in the process fill your entire living space with scraps.

Some useful facts before we start: Expanding foam comes in spray cans and one can fills around a paint bucket full of material. It may remind you of whipped cream but I would strongly advise against eating it. After spraying it takes around a day to harden out completely. Unlike other foams I introduced before, this material is not flexible and creates big air holes. So before you can paint it, you will have to clean up the surface with other materials.



For my shoulder armor example I combined the Great Stuff with Styrofoam globes which I used as a base. The base I sprayed on was cardboard that I glued to my sphere and taped together with painters tape **(1)**.

The next step was actually to cover the entire armor piece with foam **(2)**. As the name implies the material expands when sprayed so keep that in mind. Make sure to create enough volume so that you can carve out your final form without missing anything. You can always add more foam but this will cost you more curing time.

Like before, you can carve with a regular hobby knife or box cutter. It may seem impossible to find any shape in this mess but there is a simple trick that will be able to guide you. Add cardboard silhouettes and try to search for them while cutting away the foam **(3)**. In my example I just stuck cardboard spikes into the base and added expanding foam around them. Once they became solid, I carved away the material until my knife touched the cardboard inside. This made it a lot easier to know when to stop carving.

Note:

Expanding foam is the stuff you use to insulate walls and windows with. If you are not able to find it in you local hardware store, just tell the staff you want to insulate a house. They will surely point you in the right direction now! Also add a respirator to your shopping cart since the fumes when spraying the foam are toxic.

You don't need to carve a perfect pauldron on your first try. It's enough to just get the base right at first, since you can then easily add to it by spraying on additional details. This takes more (curing) time, but it is also easier - especially for beginners! The huge amount of trash from carving as well as the allegedly toxic fumes are two reasons why I don't practice this technique a lot anymore. It's still great for beginners and also a lot of fun.

While other foams provide a surface ready for priming and painting, expanding foam needs additional work to close all of the air bubbles **(4)**. This works greatly with a combination of newspaper pieces to cover the big holes **(5)** and wallpaper paste and/or paper maché in powder form which you can sand to get a smooth surface **(6)**. The more newspaper layers you apply, the more durable is your result.

After you've completed those work steps you can finally paint your piece. A finished expanding foam armor can still break under pressure, so try to be extra careful. If you are still interested in learning more about this technique, please check out "**The Book of Prop Making**".

Note:

To see the process of making this shoulder piece, please check out the tutorial video on my Youtube-Channel:

youtu.be/MDDo83M68Kk

Work example: Crusader helmet

While having a helping hand during your project is awesome and fun, not all of us are lucky enough to have a friend who is okay with covering you in plastic wrap. To make the helmet pattern we will use a wig head this time. Let's call him Wilson for now.

You know the drill: Wrap Wilson in plastic wrap, painters tape, draw some lines and cut out your pattern. Don't forget to add enough sections!

Since wig heads are usually much smaller than a real head, make your patterns bigger when you transfer them onto Worbla. I definitely recommend making sure your paper dummy fits before you work on the real thing.

The pattern for the front piece was drawn freehand on some newspaper. I held it in front of the base to see whether I like the design and then altered it until I was happy. It is of course possible to keep on working with plastic wrap and tape. After a while however you'll get good enough to just use paper, a pen and guess the pattern totally freestyle.

Note:

Fictional characters often seem to have X-ray vision since they are able to see trough completely closed helmets. We are not born on Krypton though, so it's necessary to change the designs to make spy holes. Running into walls is not fun!

I deliberately did not close the helmet completely after applying the front part. There is a little gap between the layers at the top. You will definitely sweat a lot when wearing such a huge and heavy piece on your head for the whole day, so plan enough space for a good ventilation.

I recommend planning for a ventilation spot so all the hot air can escape. It's totally okay to make small adjustments to costumes if it helps making them more comfortable. Character designers don't need to think about how their creations breathe or sweat - but we do!

Note:

Working symmetrical is super important, especially when it comes to helmets. Mirror all your patterns exactly for a nice base and repeat work steps immediately for both sides to stay in your work flow. That way your helmet will look perfect from all sides!

Like I've shown on page 28, I used pink insulation foam to carve out two giant horns. To create a three-dimensional swirl I also cut the horns in half and glued them back together slightly twisted. Just carve and sand carefully to get rid of the visible glue seam.

Once you are done, cover the foam with Worbla, cut away overlapping material and clean the seams. Instead of burning or carving a texture into the foam, this time I decided to sculpt details with additional stripes of Worbla.

Since I never intended to travel with this costume anyway, I attached the horns directly without any way to remove them afterwards. You already know how to make detachable horns anyway!

Even though I worked a lot with lightweight foam, the helmet turned out to be quite heavy. This brings me to another important point: Add several layers of foam padding inside to make it as comfortable as possible to wear. Also keep in mind that huge helmets may limit your vision quite a lot. So besides now having the movement and flexibility of a rusty, squeaking tin man, you will also need the help of another person to guide you through all those overcrowded convention floors! At least you are now well protected!

After applying the paint job with regular acrylics the helmet was done. Despite it already took forever to sculpt all four horns - giving them a nice color was even worse. In total it took me around five full days of work to finish this baby. For more info about painting techniques, please check out "**The Book of Cosplay Painting**".

Work example: Barbarian pauldron

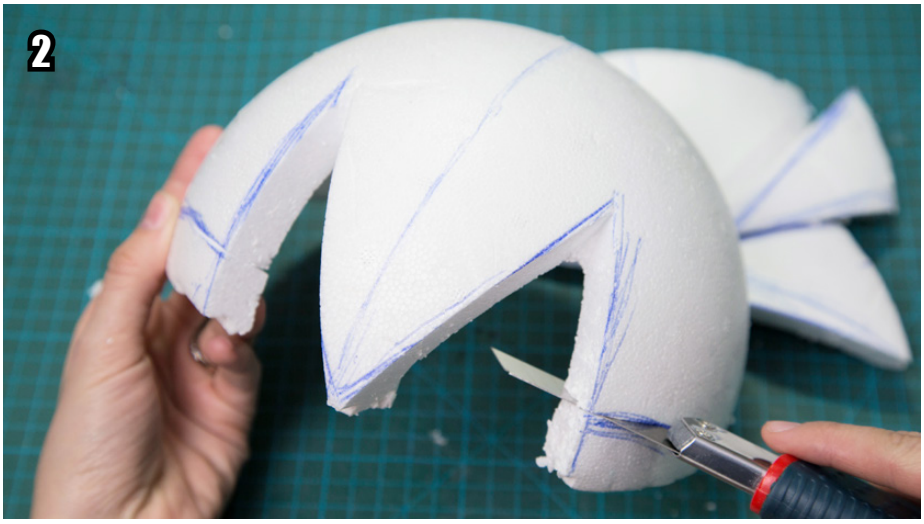
One of my favorite materials for pauldrons are Styrofoam spheres, which you can buy in lots of different sizes. They are super lightweight, cheap and really fun to work with.

Styrofoam globes usually come in half spheres. 20cm (8inch) diameter is a size that works well for comfortable armor pieces – if you'll keep them simple enough. To transform those white globes into a bad-ass Barbarian pauldron it's necessary to first mark the basic shape **(1)**.

It's sometimes a bit difficult to find clear lines, when you only have a blurry, low resolution reference artwork that you've found somewhere on the Internet. Just keep it simple: Nobody will blame you if your pauldron has only eight spikes instead of twelve!

Hobby knifes are perfect for carving. A sharp blade should be able to cut your Styrofoam like butter **(2)**. Be careful, you can always get rid of more material, while you will definitely have a hard time when you've cut too far. Also, the sound a hobby knife makes when it's cutting through squeaking Styrofoam is super awesome and will create goosebumps for everyone around.

If you want to, you can cut with a certain angle along the edges of your foam **(3)**. That way your pauldron won't look just like a plastic ball with holes in it, but will seem more forged and sculpted already. It's a question of personal preference of course, but it also makes it easer to cover the foam with Worbla – which, as you probably guessed already, is our next step.



Heat up a piece large enough to cover the complete half sphere. To heat up large pieces of Worbla it's a lot easier to use two hot air guns at the same time **(4)**.

Dragging a flat and sticky material over a sphere can be quite tricky. Keep in mind however that Worbla is stretchable. Also, don't worry about wrinkles too much. Just press the borders together and cut the material away once you are done. Seams can easily be smoothened by using a dremel **(5)**.

If you want to save a few bucks you can just fold the material over the edge of the foam. Attach additional costume pieces with enough hot glue and threat the very heat sensitive Styrofoam with sufficient care.

I still recommend covering both sides completely with Worbla to get the best results. Just heat up another piece and lay it carefully into the inner side of your shoulder armor **(6+7)**. Covering both sides with the thermoplastic will also make it easier to attach the pauldron later on.

Note:

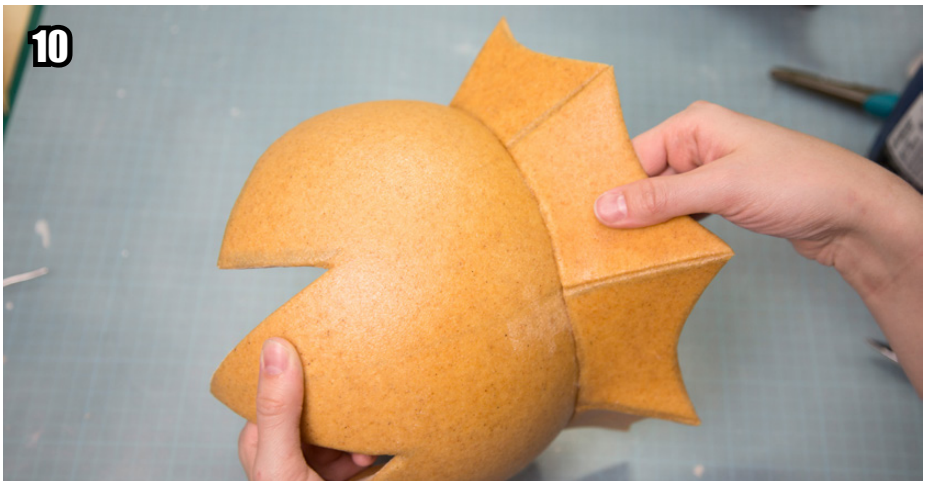
Styrofoam reacts very sensible to heat and will melt immediately once you swing your hot air gun. So heat up your Worbla well to have enough time to cover and stretch the material properly. After the foam is completely hidden under a sheet of Worbla, it's safe and you can keep on working without having to worry.

Press the layers together **(8)** and cut away overlapping material. If you have trouble getting into very narrow edges you can just use a wooden sculpting tool to help yourself.

Congratulations, your base pauldron is now solid, weatherproof and durable enough to survive the next few years **(9)**. Let's add details next!

Like I explained in my previous books, it's easy to apply additional elements out of Worbla-craft-foam-Worbla sandwiches. I used this technique to create the fin like design that surrounds the pauldron **(10)**.

The create fine details an alternative to modeling clay are material leftovers. Heat them up, roll them around and give them any shape you want as long as they are still hot **(11-13)**. Dip your hand and fingertips into cold water to avoid burns from the hot material and use your hot air gun to keep the material soft and shapeable.



By practicing this technique you can create entire sculptures, intricate ornaments and other nice details for your armor. I however was satisfied with a few simple spikes for the top of the pauldron **(14)**.

Usually I apply additional decorations in form of lines cut out of a double layer of Worbla. It's always a good idea to have a couple of stripes in different widths in storage **(15)**.

Since placing this perfectly round Styrofoam sphere on my bare shoulder would look really weird, it's now time to add the infamous „mini-pauldron" **(16)**. Create the shape using the basic pattern technique at the beginning of this book and just connect the two pieces. You can always adjust the angle later by heating it up again.

Note:

The final position of your armor piece depends on how you have placed your mini-pauldron. I always keep the pauldron on my shoulder while the material cools down. Adjust it and keep it in place until it stays in the right position. But don't worry - reheating is always an option!

Barbar-ready!

We are on a roll here! To finish your work apply primer (wood-glue or gesso), paint and varnish. I already explained a lot of different techniques in my "**Book of Cosplay Painting**", so please excuse me for skipping this work step here.

As you can see, building pauldrons looks a lot more difficult than it actually is. As long as you are thinking about how your patterns should look and start building in basic shapes, the whole process will become super easy and fun! ■

Belts, strings and buckles

Creating a cool piece of armor is one thing. Attaching it is something else entirely. Sorry, hot gluing the piece to your skin is not the best solution!

I often work with D-rings. Just cover them with Worbla or Wonderflex and stick them directly into your armor piece. They will become a part of your costume and therefore the attachment will be nearly indestructible!

The amount of those D-rings you would want to attach depends on the shape of your armor and on how much flexibility you want to have in your costume. Three rings are usually enough. One to the side, one to the front and one the back. Even if you end up not using them all, it's still a good idea to have options - and in case of an emergency it's always great to have a plan B!

The most important connection is between the middle line of the pauldron and your neck. If you are wearing a breastplate that is attached using straps over your shoulder, sew an additional D-ring to the top. Connect your pauldron using a string or velcro tape. I usually use a simple elastic string for that job. Try different positions of your D-rings to see the effect before you decide on the right one.

Note:

When working with Worbla, keep in mind to actually heat up both pieces to get a strong connection. If you want to experiment with your attachment, you can also just heat up one side, press it on and carefully pull it off again once it has cooled down.

Note:

If you are running out of time to finish your costume, it's still totally fine to bring some rings and a hot air gun to the hotel. Even if you attach them the morning before your convention, you are still able to wear your bad-ass armor as long as you have some strings with you!

Even though your pauldron is now attached, it will still fall forwards and backwards if you move your arm. By connecting a D-ring at the front of your piece to the attachment you are already using for the breastplate, you can avoid any movement to the back.

The same works also for the opposite side: Connect a third ring on the back to prevent it from falling to the front. There are a lot of different spots you can use and it also depends on the style of the breastplate you've built. Just make sure to use elastic strings, since otherwise it will be quite difficult to move your arm. Keep in mind: using the back and front rings is optional. With your first D-ring attached, jump and swing it around to see how it behaves. You can still add more strings if you notice that your armor piece is going crazy.

Also check out my attachment tutorial on Youtube!
(You can activate English subtitles in the Youtube player menu)

https://youtu.be/kujts-8rnPo

Note:

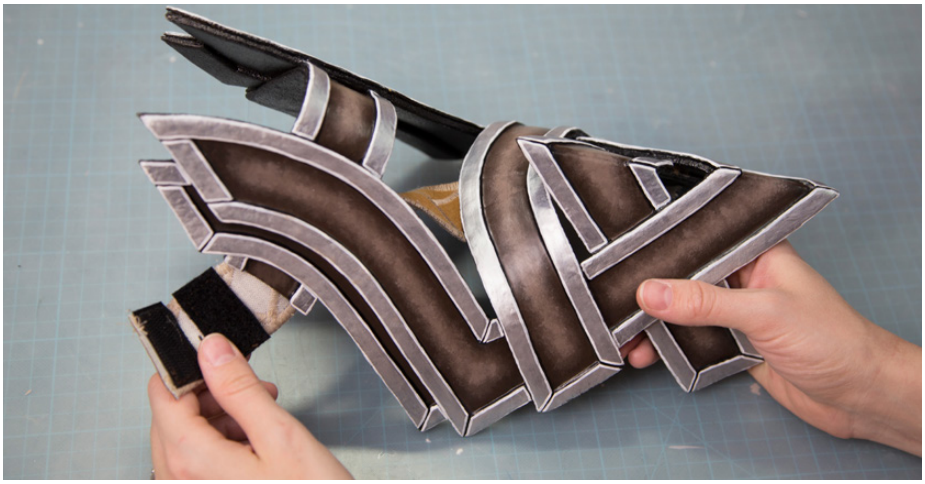
Using strings is a very quick and easy way to attach something. The downside is that you may need some help getting into and out of costume. After all it is nearly impossible to make a knot on your own back. You will need assistance! Muuuuuuuuum?

If you still have plenty of time left, it's worth to invest into a more durable solution!

Since belts fit to most of my costumes, it's my favorite type of attachment. Try to find the right length, cut them and seal them to get a clean shape. Now sew two pieces of velcro tape to the ends. Working with velcro makes it incredibly easy to get into and out of costumes. You can always loosen or tighten them if you feel uncomfortable and wardrobe malfunctions become really rare!

My Norn warrior pauldron is a good example for this kind of attachment. The belt I used was part of the original design – it took quite some time to apply the iconic ornaments to a piece of furniture leather. After I found the right length, I added the tape to one end and attached the other with a layer of worbla directly on the armor piece.

A breastplate with belts around the neck was already part of the original costume design. So it was super easy to sew on a D-ring that would hold my shoulder in place. I also used two additional rings on the bottom of my pauldron that I could drag a long rag of fabric through and around my arm. This way my shoulder and my arm supported the weight of the pauldron at the same time.

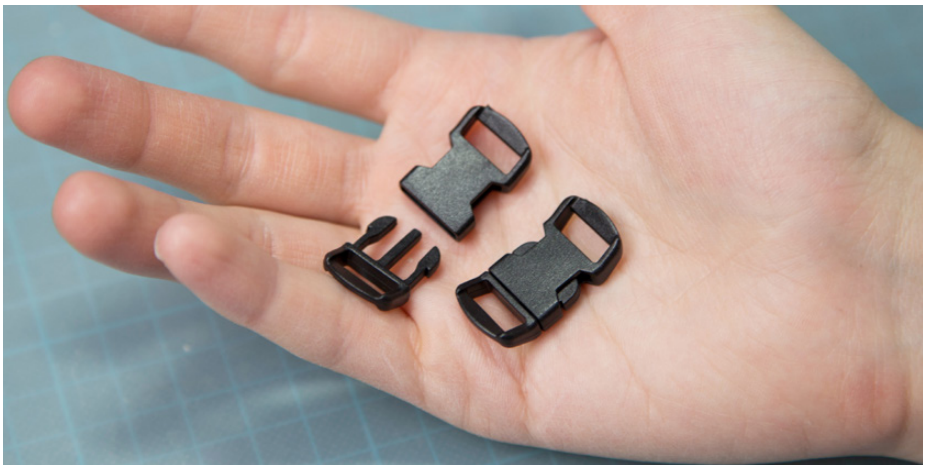


Note:

You'll notice that it's actually a lot easier to get in and out of a costume with belts and velcro instead of just using strings. You don't need to experiment every time before putting the costume on and will need less time to get it right. Also belts don't tear apart and it just feels much better to stay dressed for several hours.

Smart mask attachment

A frightening battle mask or a mighty helmet is often one of the most iconic pieces of your costume. However, a mighty warrior may not look all that mighty if he constantly has to readjust his mask that is slipping down his face.



As always there are many solutions. A nice technique I discovered, is to use small snap buckles that you can find in online stores and general crafting shops.

All you need to do is to attach a few of them to your wig and their counterparts to your armor piece. For a strong attachment four buckles are a good number. Sew them directly to your wig and add an elastic band if you like. It won't be super easy to find the right position at the first try so just grab a few pins and go nuts. The general idea is to fix your piece at enough spots so that it can neither slip up nor down or sideways.

My Diana mask worked by using two buckles attached on the top of the wig and two additional only a few inches lower. Since your mask or helmet will most likely hide the buckles once put on, you don't need to worry about hiding them at all. Lucky!

Attaching the corresponding buckle parts to your armor piece works the same way as with D-rings. Cover them with a bit with Worbla or Wonderflex, make a little cut into your armor and connect everything using heat.

The hard part is to find the right positions. The buckles on your armor piece need to line up perfectly with those on the wig when attached. Try to avoid scratching your face with a mask that is too loose and dangling around.

Now, snap both parts together and make adjustments until it fits properly. The advantage of this technique is that you are also able to wear really heavy and long wigs, since your armor piece will balance out the weight on the other side. The same also works for large armor pieces - just attach your wig with enough safety pins to hold it upright.

Note:

When it comes to attachments, it's important to be creative and to keep your mind open for new ideas. Besides buckles you can also try belts, velcro, hair bands, clips and of course magnets. Please understand that I cannot explain all of those options in detail. I tried to focus on those that work best for me. Experiment a lot and don't be scared to try out new things! It's worth the time and effort!

Photo by Benjamin Schwarz

Thank you! That's all for now! I hope helmets and pauldrons do not look so scary anymore and these new techniques will be useful for your future projects!

If you ever need more help come check out my website for more tutorials, write-ups and videos.

kamuicosplay.com

Also, if you already made a costume using my techniques, I would love to share your work in my gallery!

kamuicosplay.com/epiccosplay

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