Cosplay materials

- an introduction to materials and their properties

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Introduction

Cosplay opens the doors to a new and exciting world, where you can turn yourself into heroes, heroins, villains, princess and many other creatures. All this can be done pretty simply with some fabric and a sewing machine.
But if you - like I - have a tendency to fall in love with big weapons, glowing crowns and outfits that require you to be armed with more than just a sewing machine, then you need other materials than just fabric.
Finding the right materials can be like navigating a jungle! With this book, I will try to give you a “map” for this jungle - I will give descriptions of each material and their properties and show examples of what they can be used for.

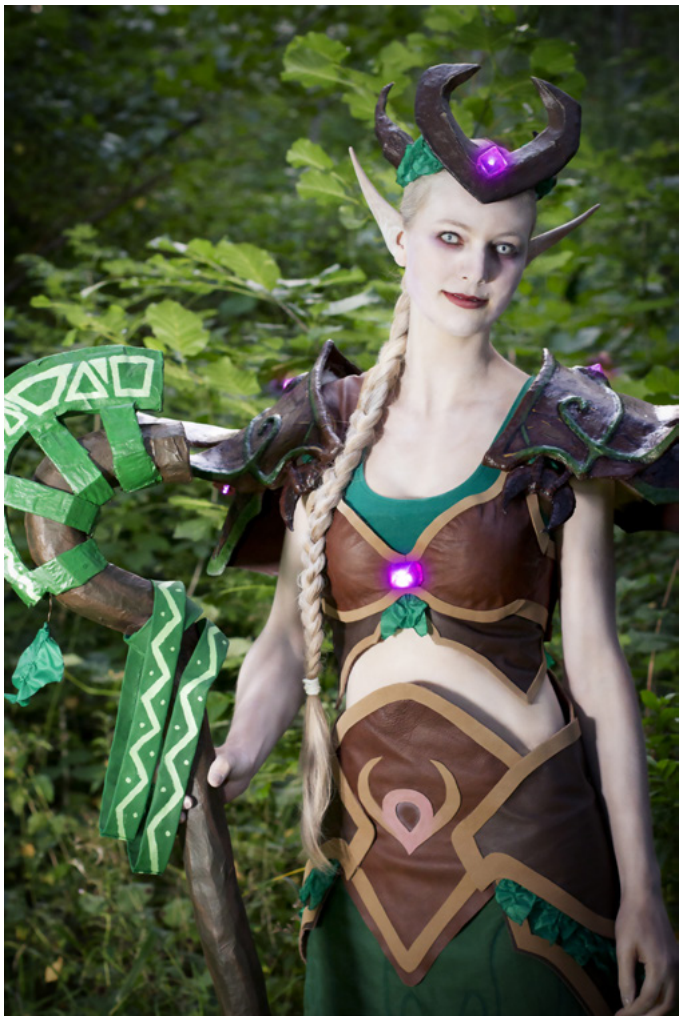
About the author

I call myself Skymone, but outside the cosplay jungle, I am known as Simone. I work as a web- and graphics designer for a living, but I spend my spare time on cosplays and other creative projects.

First time I “cosplayed” was during secondary school, with sewed costumes mostly made together with my mother.

It wasn’t until 2012 when I felt that I could actually call myself a “cosplayer”.

In 2012 I finished my studies, and while I was searching for a job, I needed something to occupy my time. I spent too much of it in front of my computer, and the creative part of my mind needed some diversion. At that time, the game “World of Warcraft” was a big part of my life, and I had seen others make impressive costumes from the game, so I decided to give it a try myself.



My first cosplay: Night elf Druid
Photographer: Sascha Nielsen, Zarsu.dk

It took me a lot of time, but I learnt a lot - and I did a lot of research. A few years and costumes later, I have saved all this information, and although I have written some of it before, I want to share as much of it as I can in a nice and clear document.

If you have any questions regarding the content of the upcoming pages - or other cosplay-related things for that matter - I would gladly try to help you out. You can contact me via the following pages:

www.skymone.dk
www.facebook.com/skymonecosplay

Before I get started, I would like to say thank you to all of my cosplay friends, who made me aware of existence of different materials; my boyfriend, who always supports me in my projects, my parents, who are both very creative and often come up with suggestions if I'm stuck with my costumes and my patient sister, who gladly acts as a photographer for me.

The materials

In the next pages, I will go through materials I know, and write a little about how they behave and what they can be used for. This is all based on my own experience, and there might be other ways to work with the materials than what I have described in this chapter.

PVC foamboard

The first in our journey is something that is officially called PVC foamboard, however, many associate it with a specific brand name. Therefore, you might hear or read the name “Sintra” in cosplay-related sources a lot, just know that the two mean the same thing. It has been used in cosplay for a while, but it is not the most popular, especially not in Europe. It is usually used within the advertisment sign business, since it is robust, but at the same time also light-weight.

Raw sintra comes in many colours

What makes PVC foamboard interesting for cosplayers is that it isn’t just light-weight and sturdy, but it can be shaped when heated up. It comes in different thicknesses, from 2 mm to 30 mm.
I have good experience using 3 mm thick PVC foamboard for armors and such. One should note, though, that it only bends in one direction, so it cannot be stretched around a ball, for example.

Example of Wonder Woman accessories made from Sintra

Cutting PVC foamboard can be done in a couple ways. The thinnest kinds can technically be cut with regular scissors, but a heated hobby knife on a flat surface is better in my experience. The material softens when heated and hardens again as it cools down. It has a bit of give, but it keeps its shape. A hot air gun can be used to heat it up - a regular hair dryer isn’t warm enough. When working with the material, be aware that it produces unhealthy fumes when heated up, so it is highly recommended to have proper ventilation and preferably employ additional safety measures.

When the prop has been shaped, you can paint it straight away with e.g. acrylic paints, since the surface is smooth and doesn’t require any priming or sanding.

Worbla's Finest Art

Worbla comes in sheets like this

Worbla has become incredibly popular in the cosplay world within the last few years, in part because many famous cosplayers use it. Worbla is a very versatile material, since it can be re-heated an almost infinite number of times. When it is hot, it can be shaped many ways and it keeps its shape when it cools down.

It is a thermoplastic material like PVC foamboard - that means that it is a plastic-based material that can be shaped when hot. Unlike Sintra and other thermoplastics, even the smallest left-overs of worbla can be reused. These left-overs can be heated up and then rolled out into a new sheet or it can be moulded like clay to form borders and bevels.

It can be hard to get a smooth surface since Worbla - when hot - crumbles easily. For this reason, it might be an advantage to combine it with other materials such as craft foam, EVA foam, expanding foam etc. Many cosplayers use the "Sandwich method" of using two layers of Worbla with craft foam inbetween. Personally, I think this uses up a bit too much Worbla, since the material is not cheap, and it also adds unnecessary weight to the costume. If I layer worbla, I use just one layer of Worbla and one layer of craft foam.

Another advantage of Worbla is that it sticks to itself and many other surfaces when it is hot. That makes it easy to e.g. put borders on a pauldron or use Worbla to make details on a prop from other materials.

A drawback of Worbla is the slightly rough surface, which has to be treated with a lot of primer to become properly smooth.

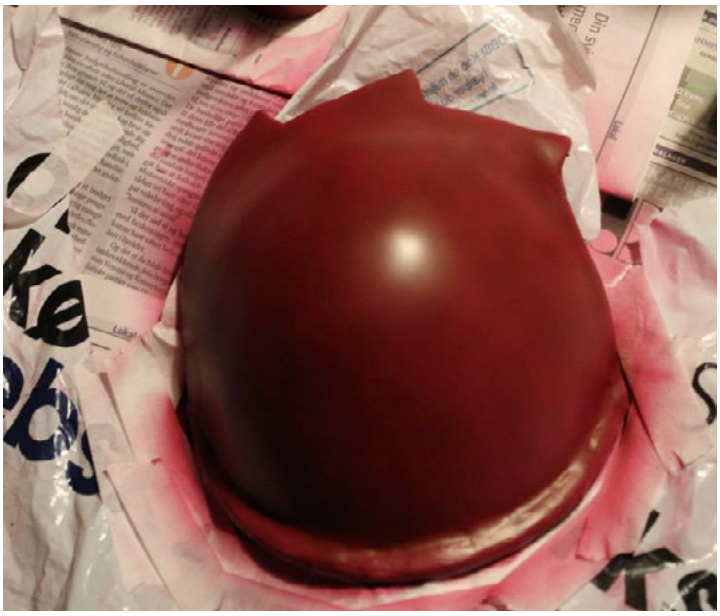
There are many ways to achieve a smooth surface. Some people use wood clue, because it is cheap and doesn't take long to add - 4-5 layers is enough, and afterwards there is no need to sand it.

Worbla can be heated up and used almost like clay to shape a variety of things.

Gesso is another possible primer. It is similar to thick acrylic paint, and requires many layers - often 10 or more. Once the gesso has been added, the surface has to be sanded to reach a really smooth end result - but the work is worth it, and the surface

will be very smooth. There are thousands of tutorials out there on how to get a smooth Worbla surface, and it is worth looking into to see which option suits you the best.

There are no toxic fumes when working with Worbla, so there is no need for extra ventilation.



Gesso and lots of sanding gives a very smooth surface - but it requires a lot of time and patience.

Worbla, though, isn't entirely harmless: it's easy to burn yourself, since it is heated with hot air gun (which is many times hotter than hairdryer) and the material itself can get extremely hot to the touch. When working with the hot Worbla, it can be a good idea to cover the work surface with baking paper, since Worbla doesn't stick very well to it, unlike other surfaces, such as your table.

If you are shaping the worbla on top of something (e.g. to get a round shape), vaseline can be used on the shape to avoid having to Worbla stick to it.

Left-over Worbla can also be heated in a microwave at maximum strength for around 4 minutes, after which it can be rolled into a new sheet with a cake roll.

Kobracast

Kobracast is another thermoplastic material. It differs from the others by being fabric-based - the base of the material is something like gauze tape with a layer of thermoplastic on top, which gives a very light-weight material that can be bent and shaped easily. Kobracast can also be sewn in, making it a possible base for a corset or something similar.

It can be shaped around other things, and its light-weight properties make it an excellent choice for horns and other details that would be mounted on wigs or your own head.

Kobracast sticks to itself and other things when hot, just like Worbla.

Kobracast in its raw shape - it comes in rolls like these and is available in different lengths and widths.

The downside of Kobracast is that it has a very uneven surface, which has to be treated before it can be painted. Using gesso is an option, like with Worbla, but it requires a lot of layers and a lot of sanding. The result is worth the work, though!

Left: Horn made from Kobracast. It hasn't been treated yet, and you can see the structure of the material. Right: A finished horn made from Kobracast. A tutorial on how these horns were mounted on the head can be found on my Facebook page "Skymone Cosplay"

Kobracast can be cut with scissors and heated up with a hot air gun. It can also be heated in boiling water, but remember to use gloves! It can be an advantage to wet your hands with water when working with the material to prevent it from sticking to the skin.

The material does not produce any toxic fumes and therefore has no special requirements for ventilation.

Craft/thin EVA foam

Craft foam usually comes in sheets of A4 or A3 size and is available in many different colours.

Craft foam and EVA foam are more or less the same material - as I understand, it is the ratio of the ingredients that has influence of whether it is called one or the other, but the shops usually know as little about it as the rest of us, and often use the terms interchangeably.

Both come in sheets of 2-3 mm thickness, and they act more or less the same. They can be heated and shaped like Sintra, but they don't get as stiff once cooled down - at least not at this thickness. It can be used together with Worbla to get good stability and stiffness.

Another advantage with this kind of foam is that you can sew in it with a sewing machine (the stronger the sewing machine motor, the easier it gets), so e.g. making a leather armor can be done by sewing pleather onto the foam, and then you get both the nice surface and texture of the leather and the shapeability and firmness of the foam.

EVA foam makes a nice base for a leather armor

If you don't want to cover the foam with fabric or Worbla, it is also an option to just paint the foam. When painting it, it is advised to use a primer first, such as gesso. I would not advise on using wood glue as a primer, unless the foam is placed somewhere where the foam will not be bent (i.e. on/around joins), since the wood glue becomes too hard when dry and cracks if the foam is flexed.

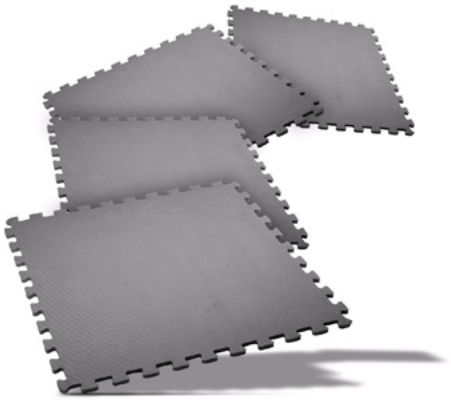
Belt made from a yoga mat found at the trash, fabric glued on top with contact glue.

The foam can be cut with scissors or with a hobby knife, and it can be heated with a hot air gun. Some people also use their stove to heat up the material (without letting it touch directly onto the hot surface!), but personally, I find it a bit too risky.

A budget tip - most cheap foam yoga mats are made from EVA foam and can be used to make cosplays from. These mats can often be found at flea markets, second hand shops or even in the trash, and are perfect for making super cheap armors.

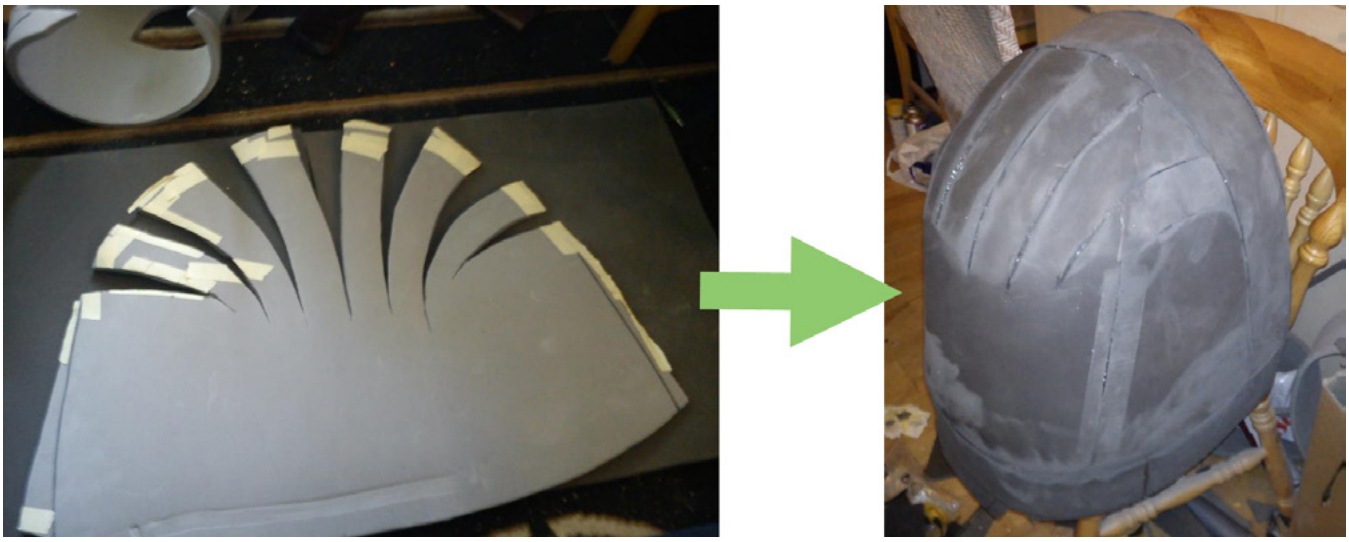
Thick EVA foam

Thick EVA foam is a really good material for larger armors and weapons. It is especially well-liked among those cosplayers who make large, full-body armors like e.g. Iron Man.



EVA foam has many aliases - it is often known as camping mats, work mats, sport mats, floor mats etc.

It can, like it's thinner version, be shaped by heating it with a hot air gun, but as opposed to the thinner EVA foam, thick EVA foam is more rigid and more or less stay in its shape once cooled down. It's very stable and durable.
It is hard to bend it in more than one direction, and round shapes can only be made to an extent, but if very round shapes are needed, a way to do it is cutting slits in the foam and glue them together. A way to do this is to use Pepakura patterns, which are patterns used for paperfolding. These can be printed and transferred to the foam.



Round shapes can be made by cutting slits into the foam and gluing them together. Photo: Roses and Boltshells

I have only used this material for borders myself, so most of this section is based on things I have seen friends do, mainly Roses and Boltshells. I treated my own EVA foam borders with gesso and then acrylic paint, since they were in a place where there was a lot of flexing going on.

For larger and more advanced things, such as large armor, other methods might be preferable. When the base shape is done, it will most likely have visible glue traces and unevenness, so those should be sanded before doing anything else. They won't be completely invisible after sanding, so to cover them better, acrylic sealant can be applied with a moist sponge. Once that is dry, some more sanding should help make the surface smooth. After this, adding wood glue to the surface will help make it hard

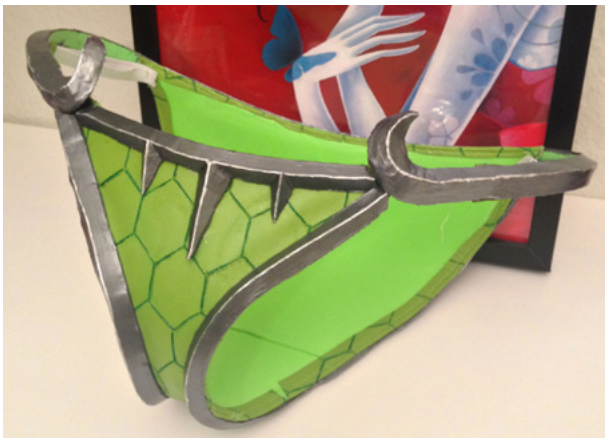
and smooth. It can be left like that, or some resin (a special kind meant for foam) can be used for even better surface, although this is expensive. Plastidip is also an option for getting that really hard, smooth and solid surface.

There are countless ways to treat the surface, and this was just my own and Roses and Boltshells methods, and I can recommend doing some more research before getting started with this.

Thick EVA foam can be cut with a hobby knife, but it is too thick to be cut with scissors. Heating up the foam before cutting helps. Having a lot of spare blades for the knife is important, as they get dull very quickly when working with EVA foam.

EVA foam can be bought in many places and is often known as floor protectors, camping mats, sports floor etc. Usually, they can be bought in sporting good stores and building supply shops.

This is how EVA foam looks when it has been treated with acrylic sealant, sanding, wood glue and plastidip.
Photo: Roses and Boltshells



Colourful children's play mats can be turned into pretty borders.

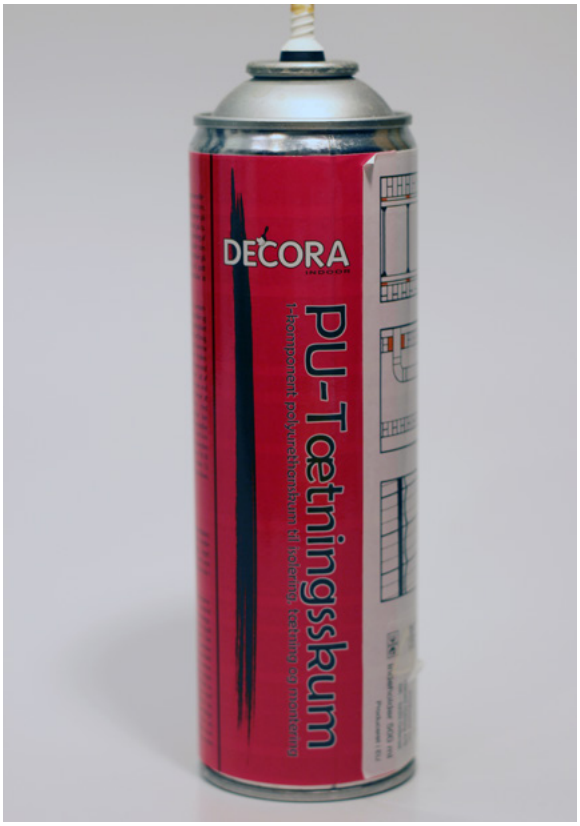
If you only need small pieces, another option is to get those foamy puzzle pieces for children to play with on the floor. Despite their colourful look, they are made of the exact same material and can be used for cosplay - and they can often be found second hand.

Expanding foam

Expanding foam is usually used in the building industry. It is a funny material, which comes in a can and expands to many times its size when it dries.

The advantage of the material is that it is super cheap, and it makes a good base for large, complicated shapes, as it can be sprayed out and cut into the shape needed.

On its own, the foam is not exceptionally sturdy in regards to transportation etc, but with e.g. a wooden stick as a base, a prop made of expanding foam will be pretty sturdy.
Alternatively, the item can be shaped and cut from expanding foam first and afterwards the whole thing can be covered in Worbla, which makes it a VERY sturdy prop.



Expanding foam usually comes in cans of 500 ml., which yields around 10-30L of finished hard foam.

If you choose not to use Worbla, the foam has to be covered with something before you can paint it. An option here is to use papermache to cover uneveness, which is also really cheap, almost free. Afterwards, it can be covered by paper clay or perhaps gesso. Both can be sanded to a smooth, even surface.

Expanding foam grows to about 20 times the size after it has been sprayed.

The expanding foam should be sprayed out in a room with good ventilation - though, not too much draft directly onto the foam. It also has to be in a dry place as too high humidity can cause the foam to not expand properly. A basement or a garage is a good place to work with the foam, but it can be done inside as well, if necessary, but perhaps in a room that is not occupied for an hour or two after the foam has been sprayed.

After the foam is dry, it can be cut with e.g. a hobby knife. It makes a lot of dust and it may be a good idea to use a mask or tie a scarf over mouth and nose to avoid inhaling the dust. If you want an even smoother surface, the expanding foam can be sanded before covering it with papermache or other material of your choice.

Expanding foam can be covered with both papermache (above) or worbla (below).

Cast resin

Cast resin is an interesting material - as the name might indicate, it is similar to the resin found in nature, since it is transparent and things can be cast inside it (much like how insects are sometimes found inside transparent natural resin).

Cast resin comes in many shapes and colours. Often, it is bought in cans like this with a tiny bottle of hardener.

The material comes in bottles or cans and consists of two components: the resin itself and a hardener. The amount of resin needed is measured in a measuring cup, and the hardener is added after. When mixed, the two liquids react with each other, and there is a short pot life during which the resin can be poured into a mould. After a few hours (depending on the brand), a clear, hard plastic cast of the mould will be complete. Resin is somewhat expensive and pretty heavy, and therefore is best for smaller things, such as glowing gems in a costume, jewellery or perhaps a small weapon.


Resin gems cast in an ice cube tray with LEDs inside. Not yet sanded or lacquored.

Many make use of the fact that things can be cast into the resin to add LEDs to the casts to make them glow. It can be hard to find the right time to add the gems, as one has to wait until the resin is almost stiff, but not quite. Alternatively, I have found it to be easier to use a 5mm drill and just drill a hole for the LEDs after the cast is complete.

If colour is needed, the resin can be dyed with resin dye, which is added together with the hardener. The dye can be pretty pricey, though. Resin is also available in non-transparent version and in pre-coloured variations. Another option is to lacquor them with nail polish on the outside, after they have been cast. The underside of gems can be covered with silver foil, since it will reflect the light from the surroundings and the LEDs and give the gem a more solid look.

Resin can be cast in silicone, latex and plastic moulds. Places like eBay and Etsy sell shapes made for resin, and otherwise ice cube trays and chocolate/candy moulds can be used for resin. It is also possible to make your own moulds. For this purpose, 2-component liquid silicone and latex works well. It is also possible to make silicone moulds from regular silicone from building supply shops, which is first added to water with dish washer soap and kneaded, then the item, you want to make a cast of, is squeezed into the silicone, which will cure overnight, after which the item can be taken out.

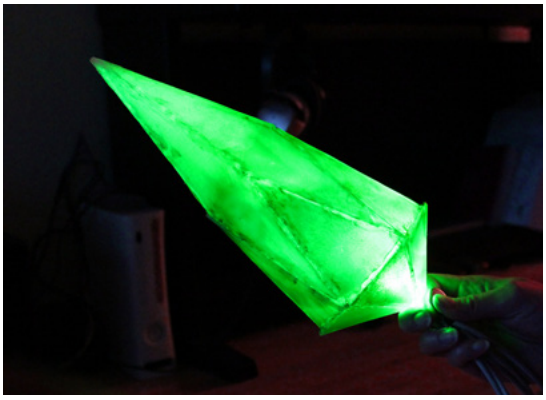
It’s a good idea to add a mould release agent to the mould to avoid ruining the mould. Vaseline can also be used, but it’s harder to apply in an even layer.
If the mould is not smooth enough, the resin can be sanded after hardening to get a smoother surface - to get a transparent surface again after sanding, transparent nail polish can be added.

There are many different types of moulds. At the top, an ice cube tray, bottom left a mould made for resin and bottom right a home made mold from silicone.

Resin has poisonous fumes, so it is best to make sure there is good ventilation when working with it, and preferably, it should be done in an empty room, so no one would breathe in the fumes while it cures.

It is possible to drill a hole and add the LED after the resin has cured.

LED's and other components



A couple of LEDs make a nice impression and are easier to use than one might think.

Adding light to a cosplay gives a unique and exciting effect - and it is a lot more simple than one might think!

The only things needed are 1 LED (light-emitting diode), some wire, a switch and a battery holder. The last two can even be bought in a combined, single unit, so you only have to add the LED to it.

There are many different types of LEDs - different colours, sizes, light angles and even versions that blink. I usually use 5mm standard LEDs, which can be bought for pennies on eBay from China.

5 mm white LED

Slide switch

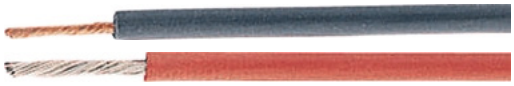
Switches are also available in a countless number of variations, and which one is best depends entirely on personal preference and how, you plan on mounting it on the costume. Personally, I prefer slide switches, because I think they are the easiest to operate while placed in a weird place such as the armpit or behind shoulders.

Which type of battery holder should be used of course depends on what kind of project is is. For my regular few-LED projects, I have used button cell batteries of the type CR2032, and so far, I am sticking with these for a number of reasons. They can power my costumes for a while, they take up very little space and they usually are enough to run the amount of LEDs I use - so far I have had 5 connected to the same circuit with no problems. Another advantage of button cell batteries like these is that they're only 3 volt, which means the voltage fits with the LEDs, so there is no need for adding resistance to the circuit.

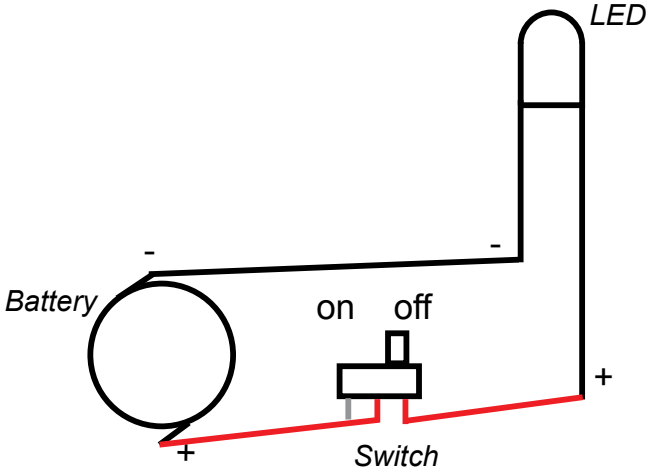
Button cell battery holder for CR2032 batteries

Wire is, again, all about preference. I have used copper wire before, but it all depends on what is available to me - sometimes I am lucky to find electronics in the trash from which I can salvage wire. Of course it has to be something that isn't too fragile,

but apart from that, most regular wire works for this type of projects. It can be a good idea to use colour-coded wire to make it easier to tell positive pole from the negative pole, but the colours have no influence on the functionality.



There are many different types of wire. An option is to use red and black copper wire.



The components are put together as shown in this diagram. From the battery holder's positive contact, a wire is soldered on and run to the middle leg of the switch (or left, if it only has two). From the right leg, another wire is run to the long leg of the LED (which is the positive). Last, a wire is soldered on between the short LED leg and onto the battery holder's negative contact. A battery is then added, and the LED can be turned on and off.

If a longer row of light is needed, LED strips are an option - it is a row of LEDs set in one long strip. These are also easy to use, although they require a different kind battery. Typical 9V, but it can differ, and usually, the packaging will say what is necessary to power the strip.
The light of an LED strip can be a bit uneven, as it is light-spots and not a continuous light source, but none the less, the strips have many uses.

LED strip. The light is uneven in spots, but depending on where in the project the light is placed, it can give a nice result anyways.

There is no health risk in working with the LEDs, but of course there is the danger of getting burnt, as a soldering iron, which is required to solder the components together, is very hot.

The nude, soldered contacts can be protected with isolation tape or with glue from a glue gun.

EL wire and EL tape

EL (Electroluminescent) wire and EL tape are two other materials that can be used to add light to a cosplay. They are great, because they give a completely uniform and continuous light as opposed to the spotty light of LED strips.

EL tape glows continuously on one side.

Usually, both EL tape and EL wire come in a bundle with a combined battery holder, inverter and switch included - that means the only thing you need to do to make it light up, is add batteries. No knowledge of electronics needed and no need for soldering irons if you want to use EL wire/tape.

EL Wire also glows continuously, but is more like a wire and lights up from all sides, and not just on one surface, like the wider EL tape.

However, if you wish to shorten the tape/wire, it is VERY difficult to solder on to the wires again afterwards, so if possible, always get the right length from the start.

The negative thing about EL tape is that it is highly sensitive, and because of the way it is made, it breaks easily if it is flexed a lot. That means that placement of the tape/wire near joints that bend a lot - such as elbow or knee - is a bad idea. I would also not recommend using the wire for a whip that will be swung a lot, as it will wear on the inside components of the wire and cause it to short circuit and cease to work (although, whips from EL wire DO look pretty awesome).

If you avoid flexing the wire/tape a lot, then it is a pretty great material, especially because it comes all ready for use.

PVC pipe

PVC pipe is good, if you are planning to make a long, collapsible staff. It can be bought in many different lengths for little money, and since it is made for being put together, it is easy to just stick the pipes into each other. The connection will be visible, as the pipe is a bit wider at the connection point, but the connection can be hidden with e.g. Worbla, EVA foam or similar.

PVC pipes are available in many lengths and diameters. One end is a bit wider than the other, so the pipes can be connected, making it a good option for collapsible staves.

Another advantage of PVC pipe is that it is hollow and doesn't weigh much. The hollowness also makes it ideal for hidding wires and switches if the staff needs to light up.

If you want to paint the PVC, it should be primed first with a universal primer or any other primer meant for PVC before it is painted with acrylics. Alternatively, spray paint made specifically for PVC is available in some building supply shops, although primer and acrylics work just fine.

PVC can be sawed with a regular hand saw or with an electric saw, but it can be hard to keep it in place while sawing, since it's round, so if possible, clamp it down while sawing. After it has been sawed, the end can be sanded to make it less uneven.

The connection can be hidden with Worbla or EVA foam and the pipe can be painted with acrylics, once it has been covered with PVC primer.

Pröjs

Pröjs is a funny mat - but surprisingly usable. I accidentally found it in Ikea and was positively surprised how useable this material is for cosplay. I have used it to make transparent, large gems that I found too large to cast from resin.

Pröjs from Ikea is surprisingly good for large, glowing gems.

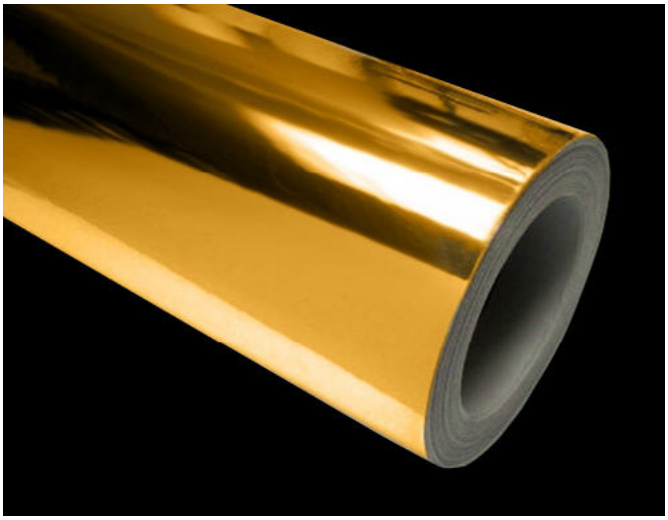
A glowing gem made from Pröjs. It has been cut out using a pepakura pattern, painted on the inside with acrylic paints and glued together with a hot glue gun.

This desk protection mat is pretty bendable and can be cut easily with scissors. It doesn't keep its shape that easily on its own, but if glued together (hot glue) with more pieces in e.g. a triangular shape, it becomes pretty stiff. It isn't durable enough that you can throw it around, but it is durable enough to bring to a con. To make things from the material more sturdy, it is possible to add a metal frame, which makes for a pretty durable prop.

To get the shape of the prop right, Pepakura (paper folding) patterns can be used - these are often found for free online.

Acrylic paint doesn't stick very well on Pröjs, but if you paint the inside of your project, which doesn't come in touch with other things, it works fine.

Car vinyl wrap



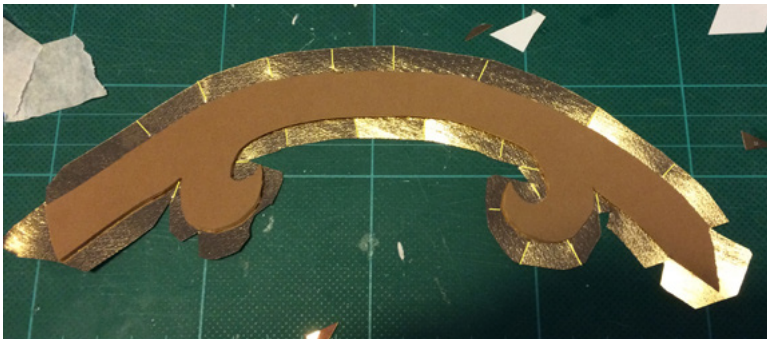
Car vinyl wrap is a thin layer of foil, which is sticky on one side and is similar to the transparent foil that can be used for wrapping books. Vinyl wrap can be heated up, which will make it shrink tightly around the object underneath it.

After having made several costumes that featured metallic borders, I was looking for a material that actually looked like metal without being metal. I came across some cosplayers who had used car vinyl for their costumes, which turned out to be exactly what I needed. Car vinyl wrap comes in many colours, patterns and finishes, and it can be stretched over complicated shapes, it's bendable and it looks like metal.

The vinyl adapts to whatever it is added to. If added to fabric, it will be bendable and can be sewn on. If added to foam, it becomes more stiff, like the foam - however, if the foam is bent too much, it will leave a mark in the wrap, so some caution is needed.

It can also be wrapped around Worbla, Sintra and whatever else materials one might use, and I can imagine it would make a really awesome armor that would look like real metal, if one would wrap the vinyl around a large, full-body armor. Since the wrap takes on the shape of the thing it is added to, it is necessary to treat the surface first, otherwise the wrap would look as uneven as e.g. the surface of untreated Worbla. Of course, the fact that it does take on the surface can be used to an advantage when working with embossed patterns or similar.

Vinyl wrap can be used on many things - here it has been wrapped around craft foam. To get the round shapes, it is necessary to cut slids and triangles in the vinyl to avoid wrinkles



It can be necessary to cut little slits and triangles in the vinyl before folding it on to the back.

Vinyl wrap is pretty straightforward to use. Once the thing you want to add it to is shaped and ready, a piece of foam in the same shape + a bit of "seam allowance" is cut. Then the foil is put on the outside of the item, and heated up shortly with a hot air gun - just enough for the vinyl to start shrinking and fitting to the shape underneath. It is then smoothed into place. Lastly, the borders are heated and folded to the back side. It can be necessary

to cut little slits in the border, so the foil doesn’t wrinkle on the back.

Caution is needed to avoid melting the foil, which happens if too much heat is used. I used my air gun at middle temperature.
The foil has no toxic fumes, so it can be used inside without any special ventilation.

The gold borders in this photo are made from vinyl wrap on craft foam, which has been glued onto pleather and Worbla with contact glue.

Tools

You cannot do much without the proper weapon! Some of the materials I have mentioned previously require special tools to work with, so I want to introduce some of my most used gadgets from my toolbox. I have started out with the cheapest tools possible, and now I am upgrading as I go along. It is okat to start small and build up.

Hot air gun

This is a must-have tool if you want to work with any kind of foam or thermoplastic. They come in prices from pocket change to fortunes. I started out with the cheapest one, and it still works now, almost 3 years later. I never had any problems with it. More expensive hot air guns have some nice features though - they let you set the temperature and they also make less noise.

Glue gun

Sticking with the weapons, the next one is a glue gun. This one is also useful for all sorts of things, and not just gluing things together - it's also great if you need to make details that are sticking out from the surface and for isolation in circuits. Som even use glue guns to make gems, similar to resin gems. To me, this is a tool I wouldn't go without!

Soldering iron

A soldering iron is a must if you want to make a costume with lights. They can - like any other tool - be bought in a cheap or pricy version. I have had a few of the cheap ones, and I do understand why the more expensive ones are better, since they have temperature control, are build better etc. - but you can get far with the cheap ones, so for a beginner, they are fine. Don't forget to get some tin solder as well.

Hobby knife

With a hobby knife and a stack of extra blades, you will do a lot, especially when working with any kind of foam. The small hobby knives are also useful for detail work.

Small pliers

Not exactly something you cannot live without, but I use these pliers for many things, and I would not like to not have my set. They are good if you need to shape some metal (like for a base for expanding foam) or to hold things while soldering, so you don't burn yourself.

Sanding machine

There are many different types of sanders, and the common thing about them is that they can be used to sand large surfaces on armors and props. You will not be able to completely avoid sanding some by hand, but a machine like this will save you some hours of tedious hand-sanding!

Rotary tools

Rotary tools usually known by the brand "Dremel" are useful tools that can be used for such things as sanding EVA foam edges. It also cuts many materials and it comes with tiny drills, making it a good all-round tool.

Closing comments

Making cosplays from other things than just fabric is not only all about technique. Actually, in my opinion that is the least of it. Of course you can be really great at working with e.g. Worbla and make the most impressive armors from it. But to me, the exciting thing about making these kinds of cosplays is not being the best at one thing - it is mastering a lot of different things, even if not perfectly.

Improvisation, creativity and thinking out of the box

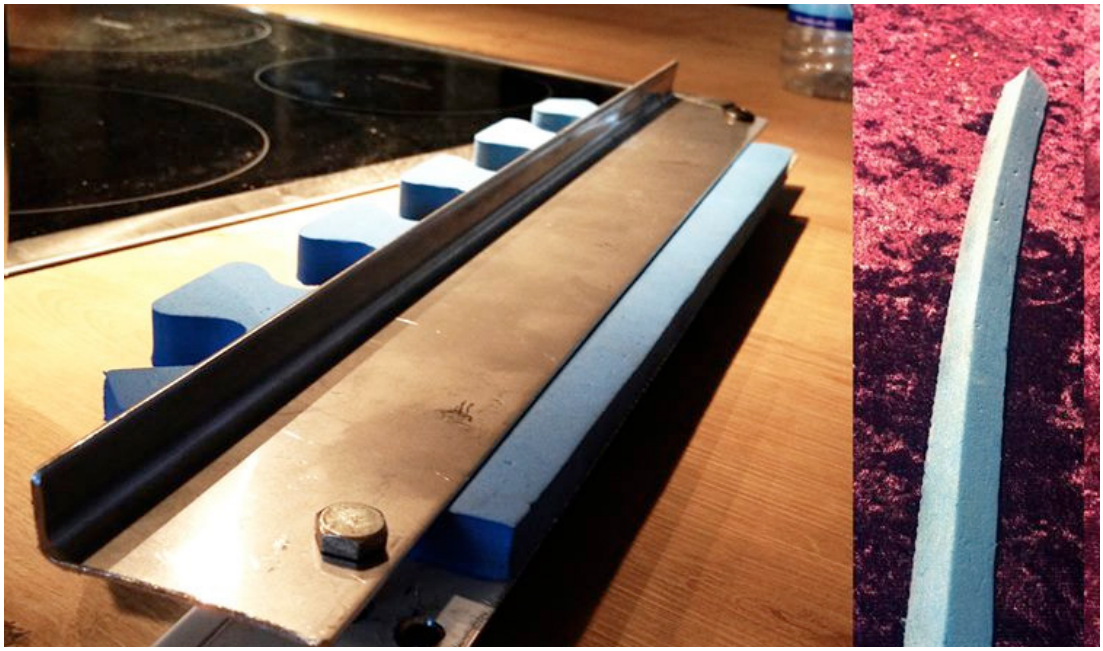
Sometimes finding the right materials can be a challenge. The answer is not always to be found in the materials available in craft shops. I have often by coincidence found things in building supply shops that turned out to be just perfect for what I needed.

I have also spent hours and even days working with something that turned out not to work. That is something you have to be prepared for - if you make something new and never seen before, then there will not always be tutorials online, and so you just have to try until it works. The most important thing is to not give up!

After having made all the silver borders of the costume pictured on the front cover of this book from acrylic sealant, I discovered that that material was NOT good for the purpose. Instead, I found my solution in puzzle pieces like the ones above, that turned out to be perfect for the purpose.

Use your social circle

Another thing that I find good about the cosplay environment is that we are there for each other - I was only part of this environment for a couple of years, but I am overwhelmed by how many cosplayers share their knowledge and experience, and there are many groups on e.g. Facebook and cosplay forums where people can ask each other for help.



Even people, who do not know anything about cosplay might be able to help - here is a border cutting template made by my father.

But not only cosplayers can help. Maybe you have a parent, an uncle, an acquaintance who knows something about building materials, about electronics - they might not know anything about cosplay, but they might still be able to help you out. I myself am lucky to have an engineer for a dad. When I was pulling out hairs trying to figure out how to get all my triangular foam borders equally sized, he made a simple template for me. When I was cursing how hard it was to remove the isolation from a very, very thin copper wire, my boyfriend - who is good with electronics - fixed me a de-isolator from an old flash light.

But the very most important advice I can give is:

Never give up on your dream cosplay!

Photographer front cover: Stefani Schubert

Photographer back cover: Sascha Nielsen, zarsu.dk