

**KOZAKOWY'S OUTFIT CREATION GUIDE**  
**6. SUBSTANCE PAINTER 2**  
**MY WORKFLOW**



**Introduction**

Last time we've discussed some basic stuff regarding setting up our SP project, **creating folders** and **masks** based on geometry selection. (fig.1) We've also talked somewhat about **texture sets** and creating a working Skyrim texture **export preset**.

If you're totally new to SP topics please refer to the previous **5th** chapter of our **Outfit Creation Guide**.

This time I will try to get more in depth into my own material painting workflow in SP.

**IMPORTANT NOTE!!!**

I'm using **Substance Painter 2.0** by Allegorhythmic, which is no longer available so I can't guarantee that my workflow will work in newer versions of SP by **Adobe**. The newer versions have definitely more functions.

**From the base upwards**

As I mentioned in the previous part - after I start a new SP project I delete everything from the Layers list and create a **material base**, (fig.2) which is black on the **Diffuse** and **Specular** channel and has a constant value set on the **Glossiness** slider. (fig.3)

We need the **glossiness value** set in our SP project for the preview purposes only, the real glossiness value will be set in **NifSkope** during our nif file finalization process. For Skyrim glossiness is a number between 0 and 100 and is constant for a certain model part. You can have many model parts in a single nif with **different glossiness values**. This way you can have for example a mat fabric with jewels.

This time I'll be working with pretty **non glossy** materials like cotton/linnen fabrics so I set the Glossiness slider pretty low - let's say around **0.4**

I can also leave my **Height** channel off here or on with 0 value on the slider. It doesn't matter at this point.

I also like to divide my layer list into **folders** and assign **masks** to these folders. (check the previous chapter of the tutorial) Usually the folder contains a certain material type or a certain part within a geometry piece. Here I will go with parts like **Bodice**, **Pants**, **Sleeves** and **Lacing**. (fig.2)

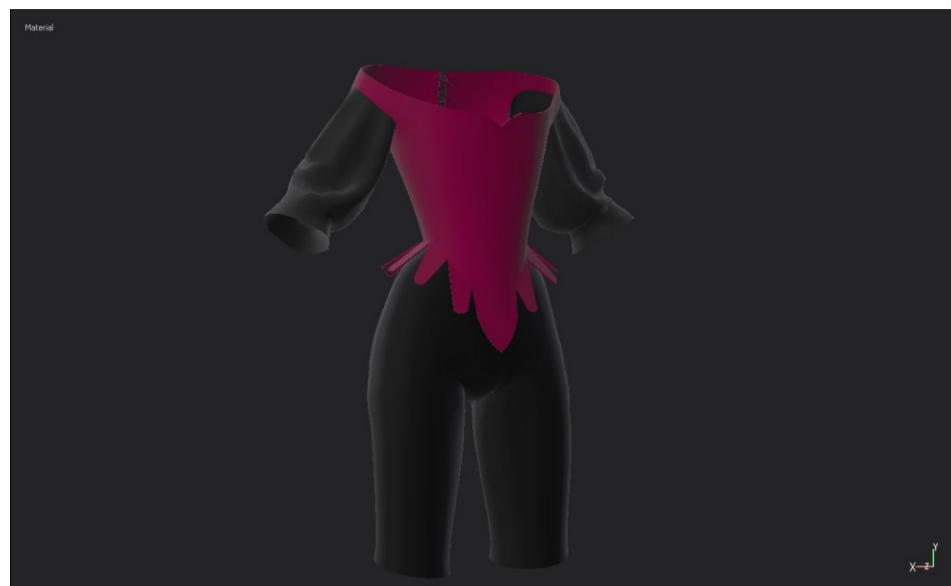
Let's focus on the **bodice** folder. At first I've put only a **dummy color** there, now let's create the fabric texture. Click „**Add a fill layer**” and name it. (fig.4) I also defined the **Diffuse** color to dark violet (fig.5), the **Specular** color to dark grey and the **Height** slider to something around 0,1. Then right-click the Fabric layer and select „**Add bitmap mask**””. (fig.6) You will get a **pop-up window** for texture selection. (fig.7)

Here you will need a **decent quality seamless fabric texture**. There are tons of them online - just choose the one you fancy. I like to use **2k** or **4k** fabric textures here. After you find one, put it into the **SP textures folder** in your Windows „Documents” folder. For me it's like:

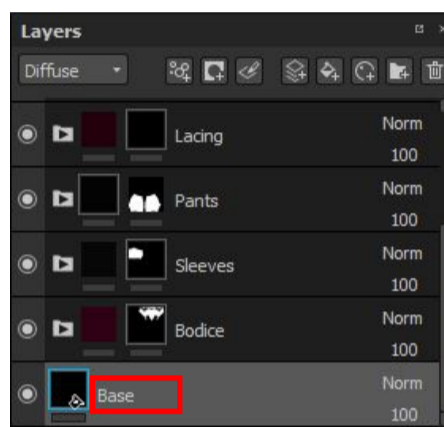
„C:\Users\kozakowy\Documents\Substance Painter 2\shelf\textures”

This way the texture will appear right away in your project shelf. You can **search for it** in the texture pop-up window and select it.

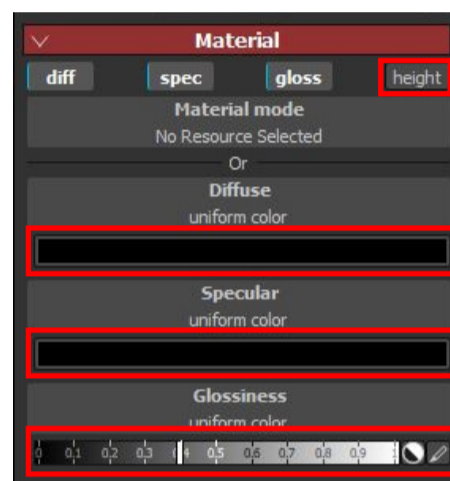
This way the material properties we set up at first are applied to the model through the **Bitmap mask**. (fig.8)



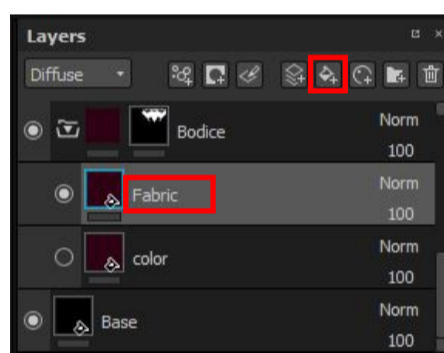
**fig. 1** The starting point



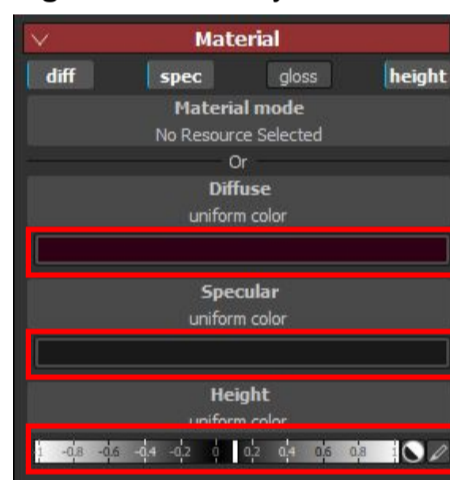
**fig. 2** The base layer



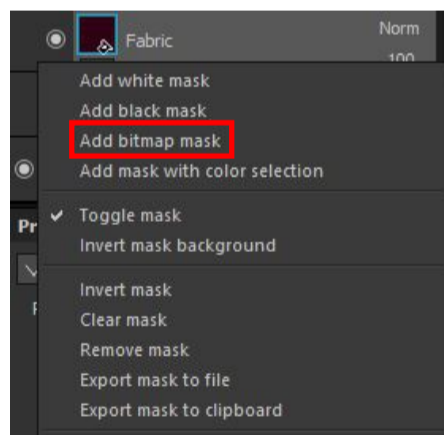
**fig. 3** The base layer channels



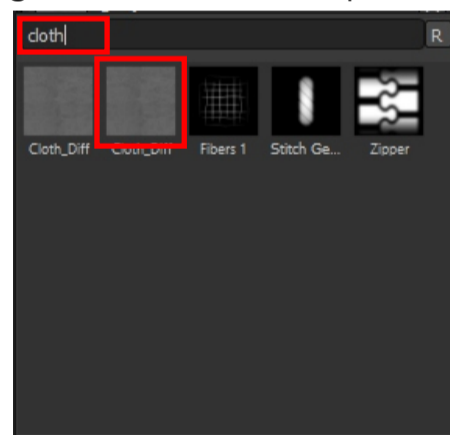
**fig. 4** Creating the fill layer



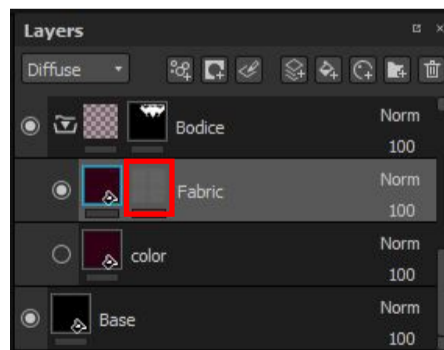
**fig. 5** The fabric material params



**fig. 6** Adding a bitmap mask



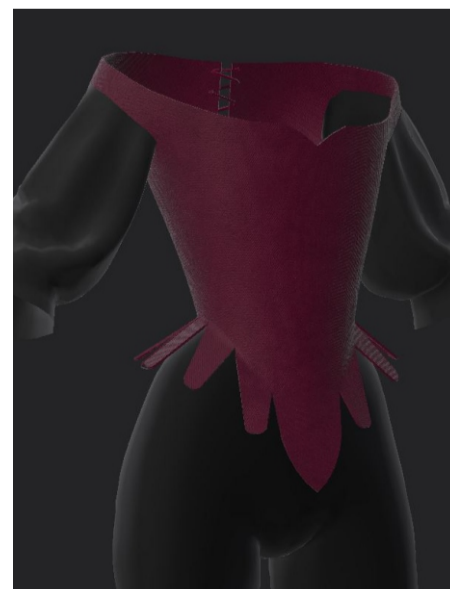
**fig. 7** Bitmap selection pop-up



**fig. 8** A bitmap mask added



**fig. 9** Click this to access more



**fig. 10** How it looks on model

You can control the **transforms** of the Bitmap by clicking the **Fill** bar under the Layer label. (fig.9) Apart from some other useful parameters like texture **projection**, **filtering** and **tiling**, you can find there the **UV Scale**, **UV Offset** and **UV Rotation** parameters. (fig.11) In our case we need to adjust the fabric **grain** size to suit our needs. You have to experiment with the **scale** parameter yourself to get the desired result. (fig.10)

Another useful thing that I often add to the bitmap mask stack is the **levels effect**. It allows you to selectively adjust the contrast of your mask and might help if you want some textures to appear sharper or bumps be more rough. This effect is also very useful if you work with opacity - to fine tune the opacity gradient.

To put this effect in your mask stack just right-click your mask and select **Add Levels**. (fig.12) When you select **Levels** in your stack, an adjustment panel will appear in the properties panel. By moving the markers above the **spectrum graph** (fig.13) you adjust the input levels and the lower ones are for output. I most often use the upper ones and it's usually more than enough.

Under the graph you have some pretty self-explanatory buttons. The **Invert** option is the most useful since it lets you invert the texture you're using.

Ok., after setting this up the fabric looks somewhat more rough than originally - that's nice :) (fig.14)

**Adding basic wrinkles**

Now let's add something that instantly makes our material look a lot better - some generic **wrinkles**.

To do this let's again add a new **Fill Layer** (fig.15) and the same way we did it previously and get rid of all channels in the Material properties section except **Height channel**. (fig.16) I often keep wrinkles affect only the height channel, but you also might want it to affect the diffuse and/or specular. You have to remember though, that the diffuse channels for this layer has to be **hardly opaque**. Other way it will be too strongly visible in the diffuse channel and the whole thing will look unnatural.

Let's add a **bitmap mask** to it, but this time look for the parametric texture called **Crystal 2** (you might also try others factory textures that you like Anisotropic Noise or Creased). (fig.17)

Again, adjust the **scale** and **rotation** of the texture same way as before. (fig.18) You will see the result quickly in the viewport. (fig.19) Here also you have to pick a desired **rotation** of the wrinkles. For these basic ones I usually choose **horizontal for bodices** (since they're tightly fitted and the tension in the fabric is distributed horizontally) and I use **vertical for skirts** since the gravity makes the wrinkles that way.

I often do circle skirts and therefore I paint some **custom wrinkles** for them, but I still add a layer of small default ones, because a fabric can also be **pre-wrinkled** in the storage or so on.

You have to **observe the fabrics** that you want to recreate. Some fabrics are more **stiff** and there are lots of wrinkles visible and sometimes they are **stretchy** and wrinkle only in a certain direction without many extra wrinkles visible. I usually make **2-3 wrinkles layers** in my projects, but for this bodice only one is more than enough.

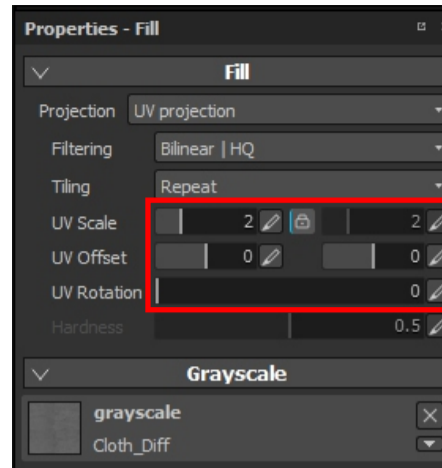


fig. 11 Tex transform params

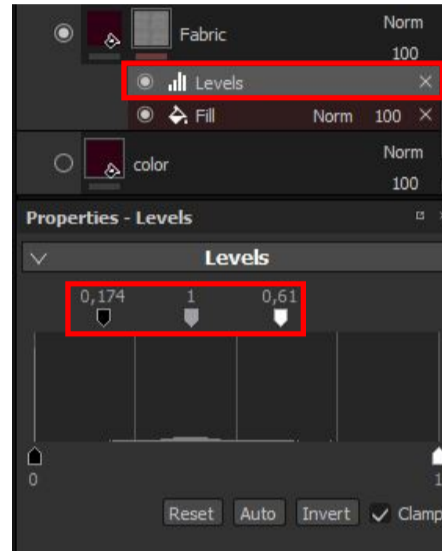


fig. 13 Adjusting Levels

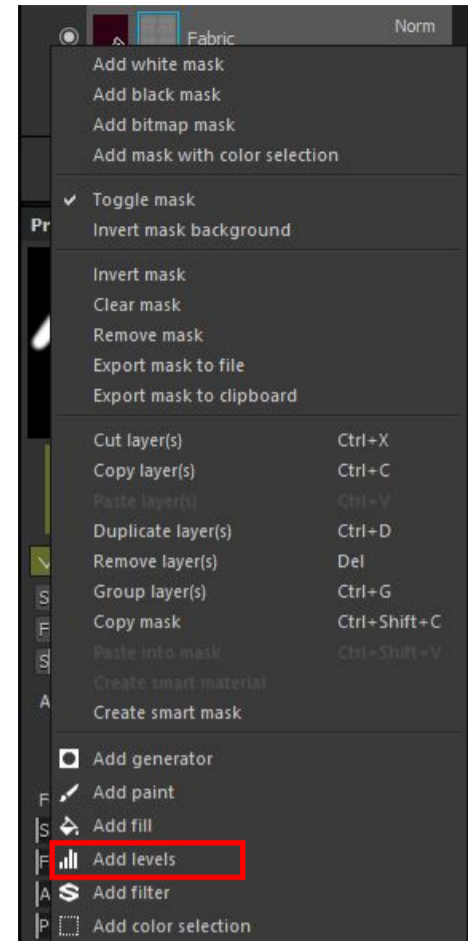


fig. 12 Adding levels effect



fig. 14 A more rough fabric look

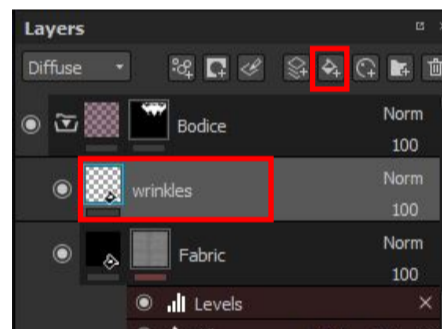


fig. 15 Adding wrinkles layer



fig. 16 Wrinkles layer channels

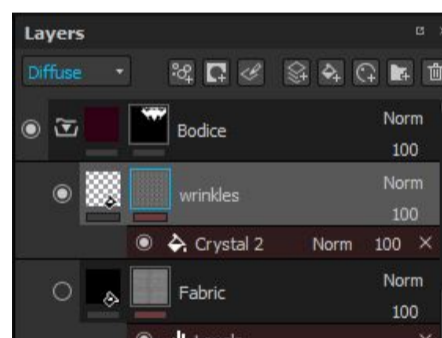


fig. 17 Crystal 2 bitmap mask

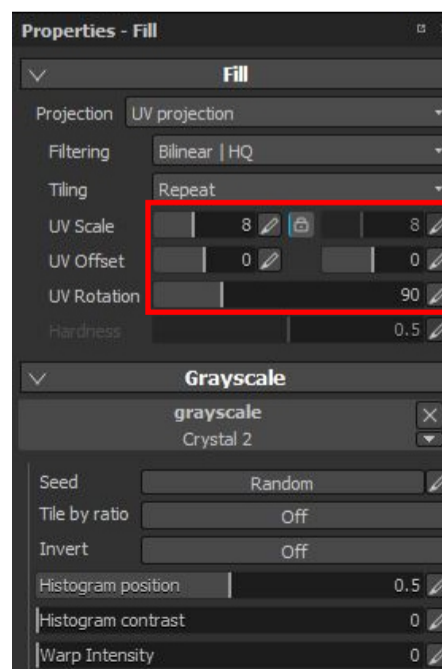


fig. 18 Wrinkles transform params



fig. 19 How it looks on the model

Finally we have to **blur** the texture to make it look like real wrinkles. The amount of this blur also depends on the type of fabric. Some fabrics tend to get some very sharp wrinkies.

To add blur to the mask stack right-click your wrinkles mask and select **Add filter**. (fig.20) Next, pick a filter you want here from the list. We'll be using just Blur. (fig.21) In some cases you might use also Blur Directional.

Now play with the **Blur Intensity** parameter to get the desired wrinkles look. (fig.22) You may also want to play with the **Height** parameter strength for the whole wrinkles layer, to adjust the blurred wrinkles depth. (fig.23)

**Tip:** The **Blur** effect is very useful for making the Height bumps more visible. Sometimes adding a bit of blur to a sharp Height line can make it feel stronger because the **slope** will be wider, thus more visible.

### Painting the boning

Ok, now we're going to actually paint something. Let's start with the **boning**, which will be rather a simple set of lines, a little bit blurred affecting mainly the **Height** channel and maybe just a bit the **Diffuse** channel.


Let's create a **new fill layer** just like before, but instead of adding a bitmap mask, let's add a **black mask** - this way we'll get a **blank canvas** to work on. (fig.24) Now make sure to enable the paint mode.



Secondly, let's choose the **brush alpha** we'll use for painting the boning. I like to use the simple round **Shape** for this purpose, (fig.25) but I also maximize the **hardness** value in the **Brush settings** tab in the Properties panel. You might want to use less hard brushes to paint such bumps, but I like to keep this parametric and add the **blur** to these strokes after they are painted.

For painting boning I'd also like the **spacing** of the brush to be minimal, since I'd like to have a **continuous line** and not a dotted one. (fig.27)

A thing that might come in handy to you while painting on the model, is also **turning on the wireframe** in the Viewer Setting panel. (fig.26) I like to use the wireframe as guides. Looking at the grid helps you to know better which lines to stick to or follow when painting. (fig.28)

Another very useful thing is to turn on the **Symmetry** mode 

In our case the bodice is symmetrical so we want Substance Painter to mirror our brush strokes also on the other half of the shape.

I don't know why, but not all FBX exports (even if they are symmetrical and have the axis in their middle during exporting from 3ds max) have their symmetry mirror centered. In these cases we cannot use the symmetry mode for painting and have to paint the left side and the right side by hand. It can be pretty annoying. I will write some more infos about it if I manage to figure out what causes this problem. A solution to this might be both doublechecking the **pivot point** in 3dsmax and/or the **volume** of our objects - if this is also symmetrical.

Ok., everything is set, **time to paint**.

**Tip:** If you want to paint a straight segment just hold the SHIFT button between the clicks and the straight brush stroke will appear between the clicks. (fig.29) By holding SHIFT constantly you'll be able to paint a polyline made out of straight segments. I actually use this mode all the time.

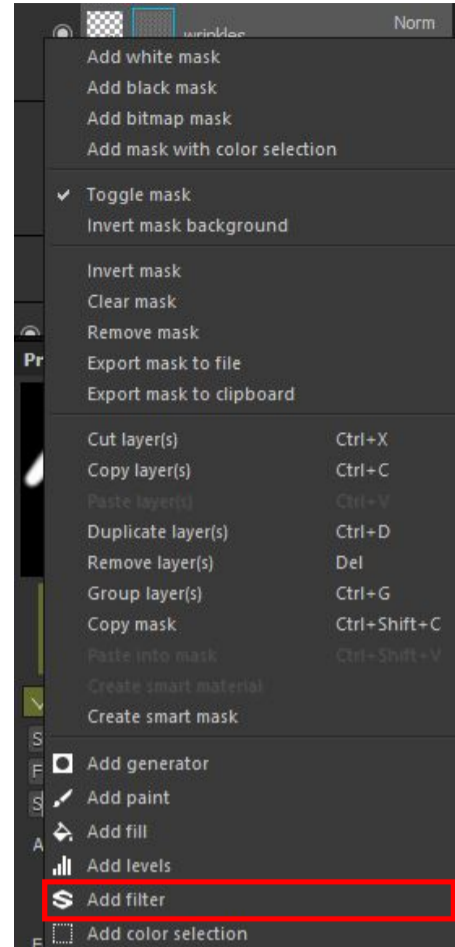


fig. 20 Adding filter to the stack

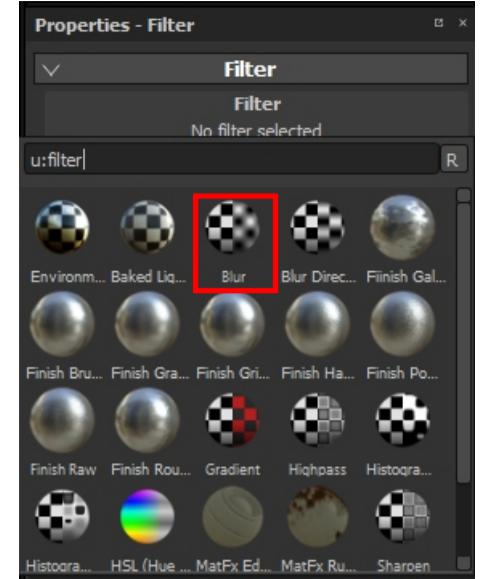


fig. 21 Selecting blur filter



fig. 22 Setting up the blur filter

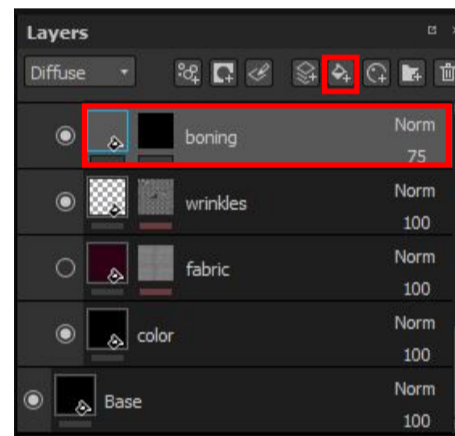


fig. 24 Adding the boning layer



fig. 23 Blur result

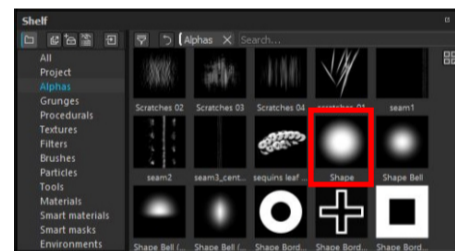


fig. 25 Picking the brush alpha

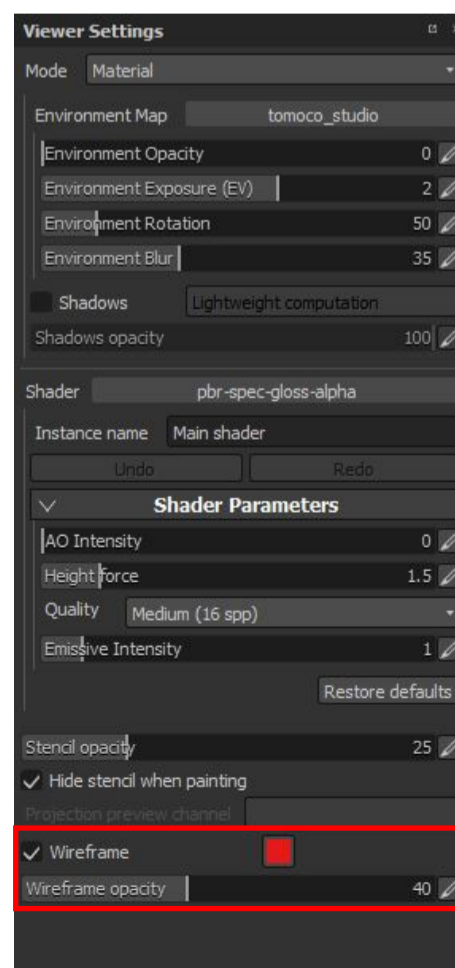


fig. 26 Enabling the wireframe

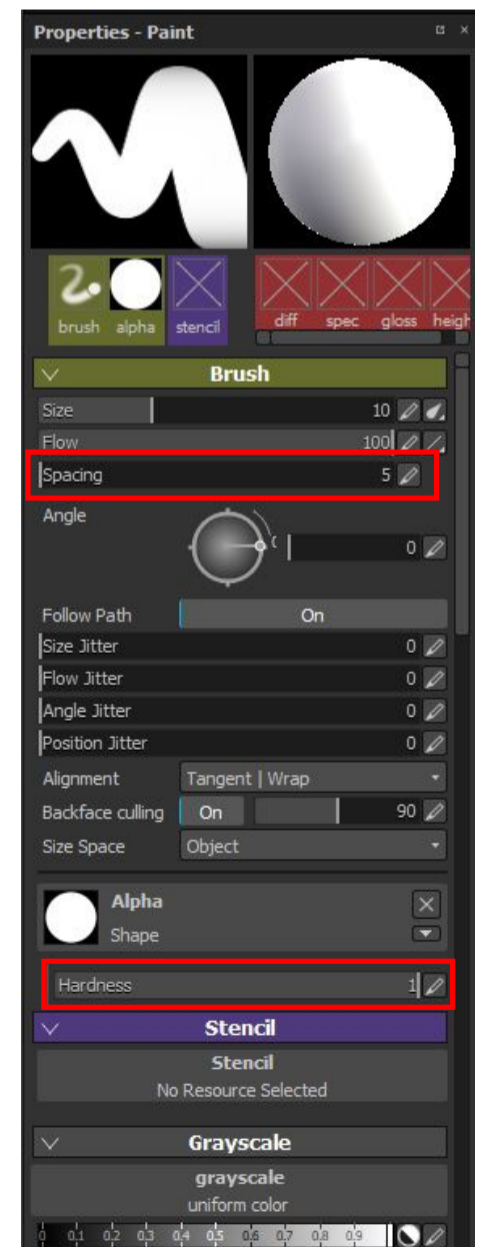


fig. 27 Brush setup

This way we'll paint all the boning shapes on our bodice model. (fig.30, fig.31)

After it's done let's play with the parameters in the **Material** section for the **boning layer**. The **Diffuse** color remains default, but we'll lower the layer opacity level to something really low like let's say **2** to make it really **softly brighten up** the base fabric color. Next, we can set the **Specular** color just a small bit above the base color (the bumps are usually more shiny on a surface and the space between them more dirty if the material is worn). Let's adjust the **Height** value to let's say **0,2**. I don't really want this bodice to look like a bamboo armor but rather a flat surface with a just a bit of boning texture visible.

Last but not least, let's add some **blur** to the boning lines. For this, as you remember from the wrinkles part, right click on the layer's mask and select **Add Filter** and pick **Blur**. (fig.32)

Experiment with **blur amounts** here. I really liked the outcome with a value around **0.4**. (fig.33)

Now with this set, the bodice will start to look more like a real thing.

**Tip:** While painting materials for corsets I usually make some stitchings to mark not only the boning but also the channels. It adds some extra detail to the garment and makes it look really cool. But here it's not the case. In reality the boning chanel are made in the structure layer of the bodice which is not visible. What we see here is only the outer fashion fabric layer that covers all the structural layers. You can study some historical stays if you're interested in fashion engineering. ;)

Ok, next up, let's move on to the **edge piping or trimming** if you like.

We're going to paint it using the exact same tools as for the boning. So, let's create a **new fill layer**, name it and set up some basic parameters for the piping material. (fig.34)

I'd like to have a **Diffuse** color that is slightly more saturated and brighter than the bodice fabric. I'd also like to have the **Specular** value a fair bit higher, to make the piping stand out more in terms of its sheen. We'll also start with **0,2 Height** value - similar to the boning.

Let's add the **black mask** to the fill layer and start painting with the same brush alpha as we had for the boning, but let's make it smaller.

**Tip:** You can use the bracket keys „[” „]” to resize the brush. If you want more precise scaling you have to use the Properties panel and the size slider in the Brush settings tab.

**Tip:** You can use different „painting spaces” in Substance Painter. For example you can paint on the model as it is displayed in the 3d viewport (seen as you press the **F2** button). You achieve it by selecting Alignment „**Tangent | Wrap**” and Size Space „**Object**”. The second useful mode is painting on the Texture (seen as you press the **F3** button). You can turn this on by selecting „**UV**” Alignment mode and „**Texture**” for Size Space. This mode is very useful if you have some overlapping objects in your model. If you're painting the overlapping parts using the „**Tangent | Wrap / Object**” mode, you'll most probably paint both parts at the same time and with some errors. The „**UV / Texture**” mode solves this.

I like to turn on the „**UV / Texture**” mode for the piping/binding but if my UVW pattern is really complex I try to paint it in the „**Tangent | Wrap / Object**” mode and only switch to the second mode if I encounter some problems.

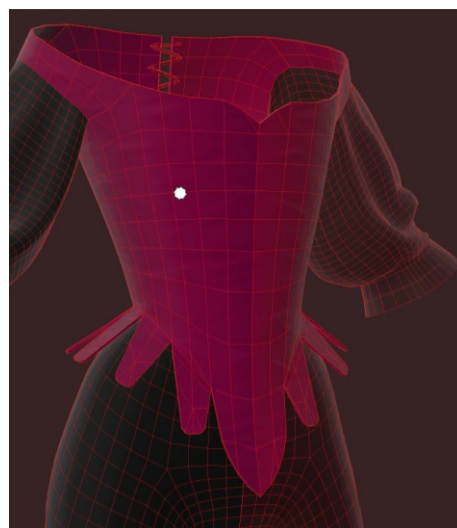


fig. 28 Wireframe and Symmetry

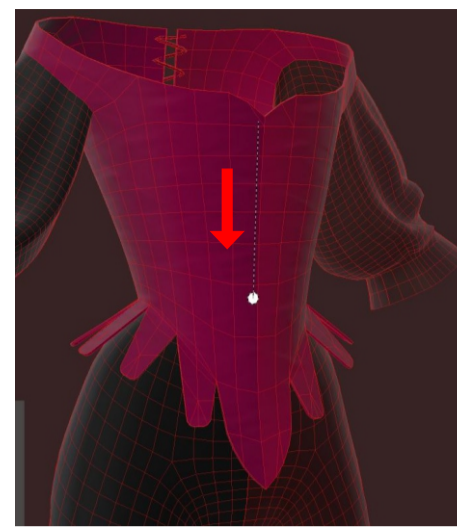


fig. 29 Drawing the straight line

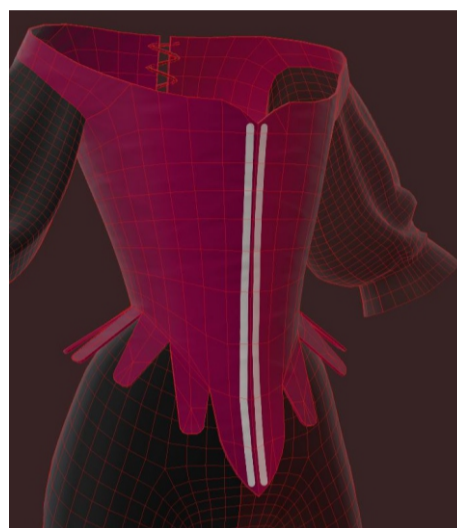


fig. 30 First bones ready



fig. 31 Filling the rest with bones

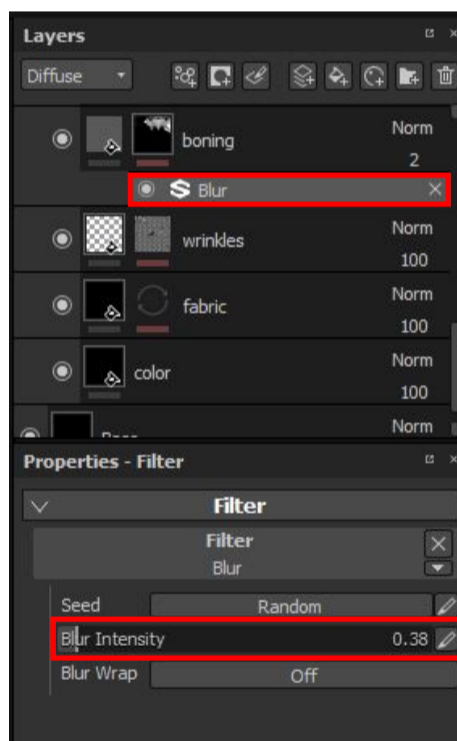


fig. 32 Applying blur to the bones



fig. 33 The blur effect visible

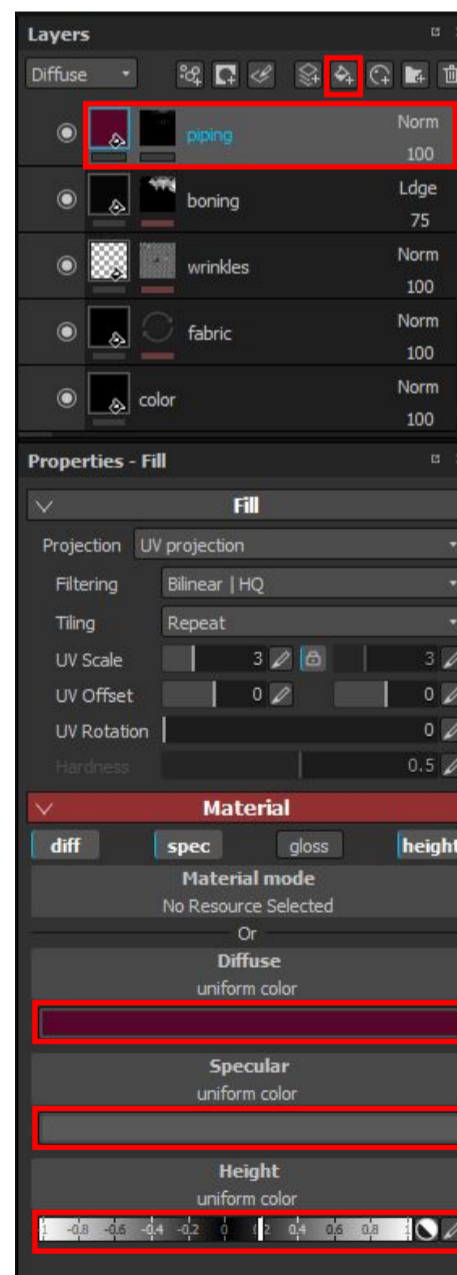


fig. 34 Creating the piping layer

Ok, let's go and paint the binding. Again, the **Symmetry mode** on and shift-clicking near the edge of the model all around. (fig.35)

The **width** of the binding on different garments can vary, also the techniques for attaching the binding to the edge can be different. The binding stitch can be hidden, can be visible, can be decorative and so on. Here I chose a **narrow binding** and the stitch is hidden. This makes the whole thing easy, since painting **one line** around the edge of the bodice will do the trick.

Next up, let's add some **stitches** on the surface of the bodice to accentuate the seams between the panels.

Again, let's create a **Fill layer** and add a black mask to it. I want the stitches to be also Violet on the **Diffuse** channel but no **Specular** and like pushed tightly into the fabric, so I'll go with **Height -0.4** value. (fig.38)

Next, let's pick the **Stitch Generator** alpha from the Shelf panel. (fig.39) What is important in the **Brush setup** tab, let's zero the **Rotation**, set the **Spacing** to something around a 100 and turn on the **Follow Path** option. (fig.37)

Ok. this way we're ready to paint some stitches. Again like before - **click on the model** and **shift-click** to create a straight line. Then still holding shift continue with the stitching line.

In case of this bodice I will mark the stitches only on the border of the stays panels so there will be very few of them and pretty straight. There will be a **center-front** seam stitched, the **side seams** (we can use the symmetry option to draw both sides at once) and also there will be some additional stitches here and there.

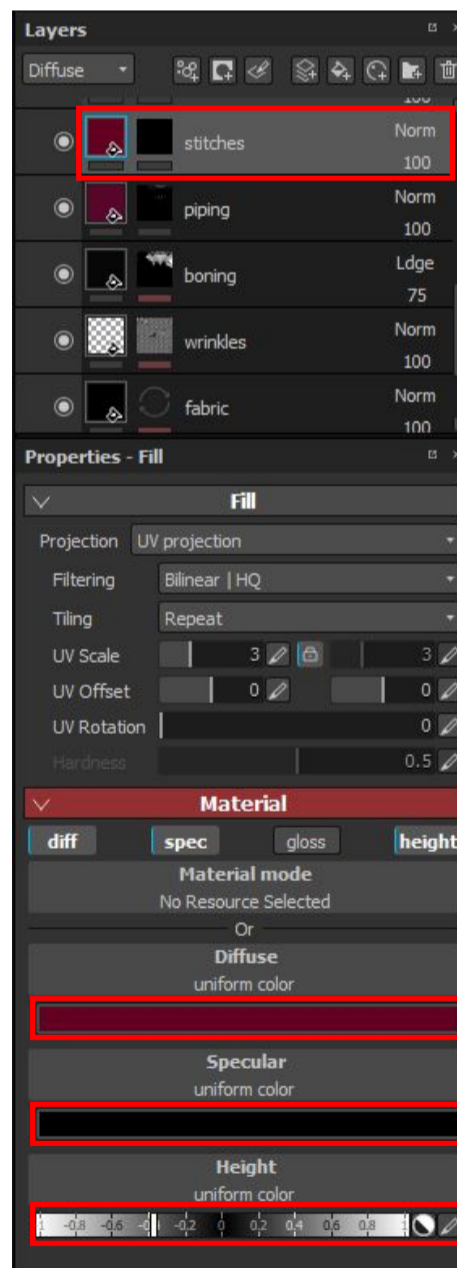
Drawing the stitches may seem to much detail for some, but if you want to produce a quality garment model that looks great both from a distance and in a **closeup scene** - it's a way to go. It just makes the garment feel much more real. (fig.40, fig.41)



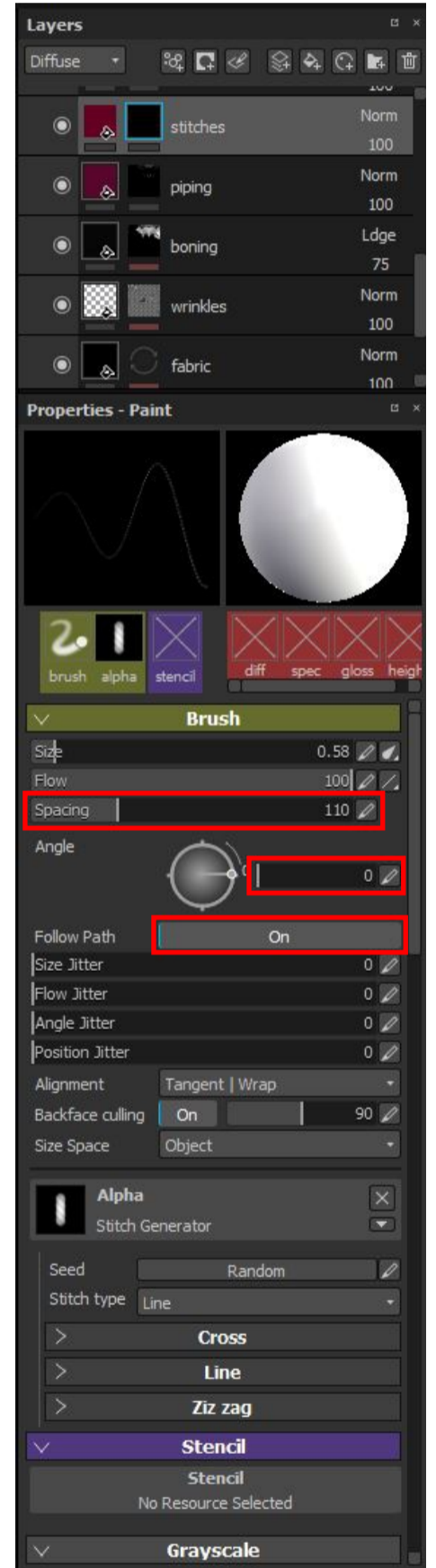
**fig. 35** Painting the binding with Symmetry on



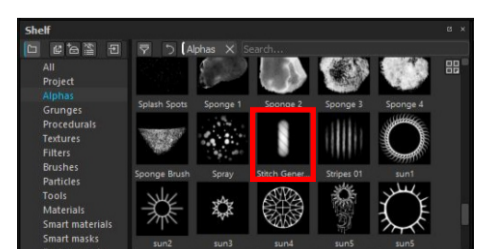
**fig. 36** Stiches on panel seams



**fig. 38** Stitches Layer parameters



**fig. 37** Brush setup for stitches



**fig. 39** Selecting Stitch Generator alpha

To make this simple bodice complete I'd like to add the **grommets** to the texture.

Sometimes I model the grommets, especially when they're **big or decorative**. But most of the cases I paint them, since I don't really like modelling them and aligning with the **bodice and lacing**.

Painting the grommets is pretty simple. Again, let's create a fresh **Fill Layer** with a black mask added. (fig.42) Let's set up the Grommets layer channels to: **Diffuse** - violet, **Specular** - light grey and **Height** - somewhat high like 0,5 I'd say.

Next, let's pick the **Ring brush alpha** (fig.43) from the **Shelf panel**. If you have the **Follow Path** button on, turn it **off**, adjust the size by pressing „[” or „]” and you're ready to paint the grommets. The brush will work like a stamp now so one click equals one grommet.

After this is done, we've got all the basic bodice elements ready. We can fiddle a bit with the **Channel parameters**. This way you can change colors, specular and heights of all the things you've painted on your model.

At this point it's nice to cycle through the texture set **Channels** by pressing the „c” button and see how all the different elements look on different texture channels. We get back to the material display by pressing „m” key.



fig. 40 The center front stitch closeup

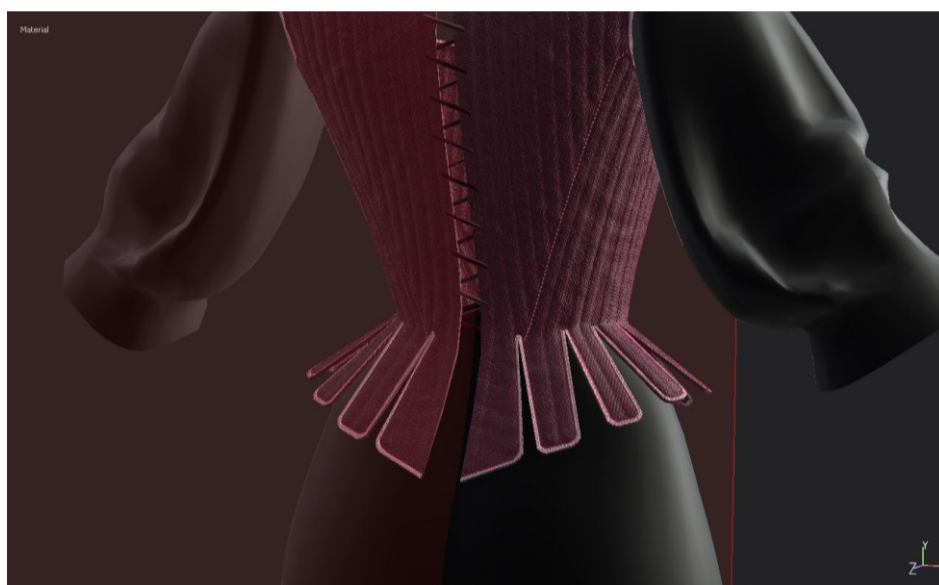


fig. 41 The stitches in the back

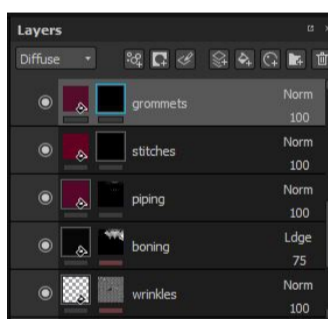


fig. 42 Creating the layer

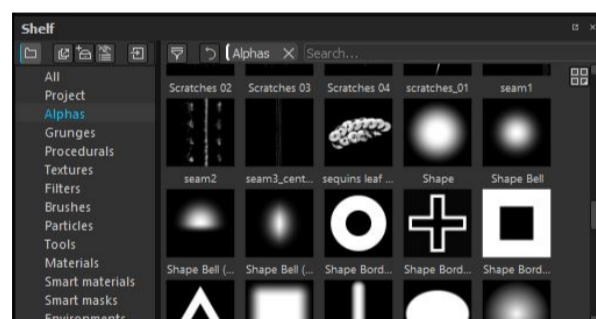


fig. 43 Selecting the ring alpha

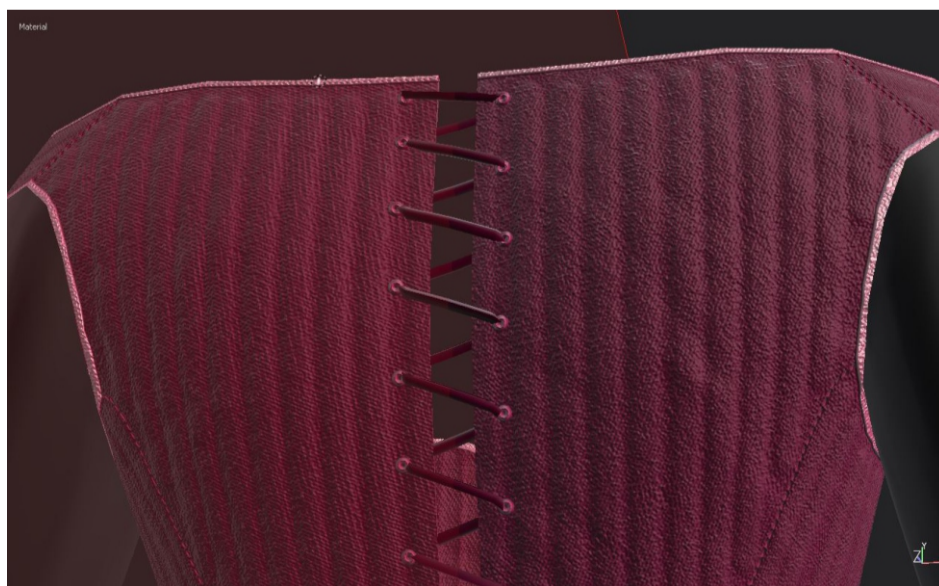


fig. 23 Export settings - Creating your own preset

### To sum up

Of course there is a lot more to talk about if we wanted to go deeper into details of the certain elements, but let's leave it like this for now. Hope all this makes sense.

**Do not hesitate to ask me anything via the Patreon messages section if you have any questions. :)**

**Thank you kindly** for supporting my projects so wonderfully. Well, wish you **good luck with your projects**.

Yours,  
K.

