

Getting Comfortable with Hard Surface Unwrapping

By Blender Bros



Introduction

Hey there! Josh here from Blender Bros. Thanks for downloading this UV Unwrapping Guide.

So, there is always a ton of confusion when it comes to hard surface UV unwrapping in Blender (or any software, for that matter).

I tend to see too many content creators focusing on the manual strategy behind this process, but in reality, you should be *automating* it.

Blender has all the tools you need to make UV Unwrapping as simple as possible.

It isn't that complicated.

This short guide will teach you exactly what you need to know to get started.

Feel free to print out this document or drop it on another monitor. It's a great reference if you ever get stuck while unwrapping.

Let's get started.

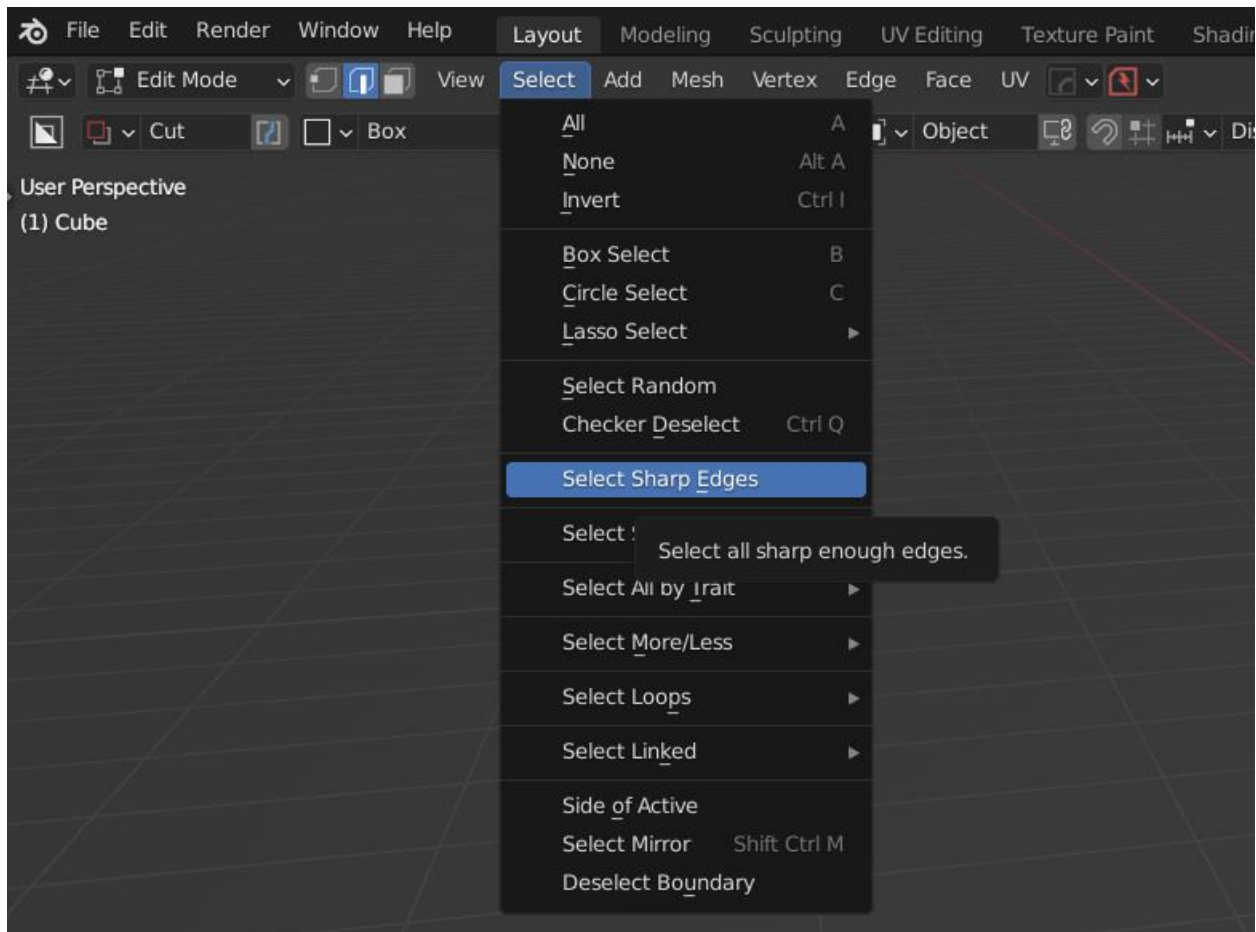


Step 1: Automate Your Seams

Most tutorials show you how to mark seams on your models; I disagree with this approach (unless it's for organic models).

You should be letting Blender do the heavy work for you, then afterwards you can pick up the scraps.

To automate your seams, go into edge mode for your model, make sure everything is deselected, and then go to **Select -> Select Sharp Edges**. Once the edges are selected, press CTRL E -> Mark Seam.



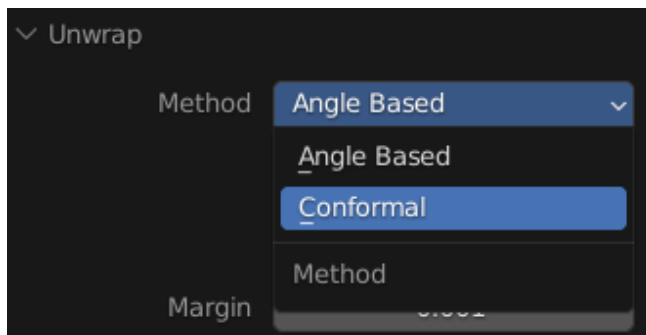
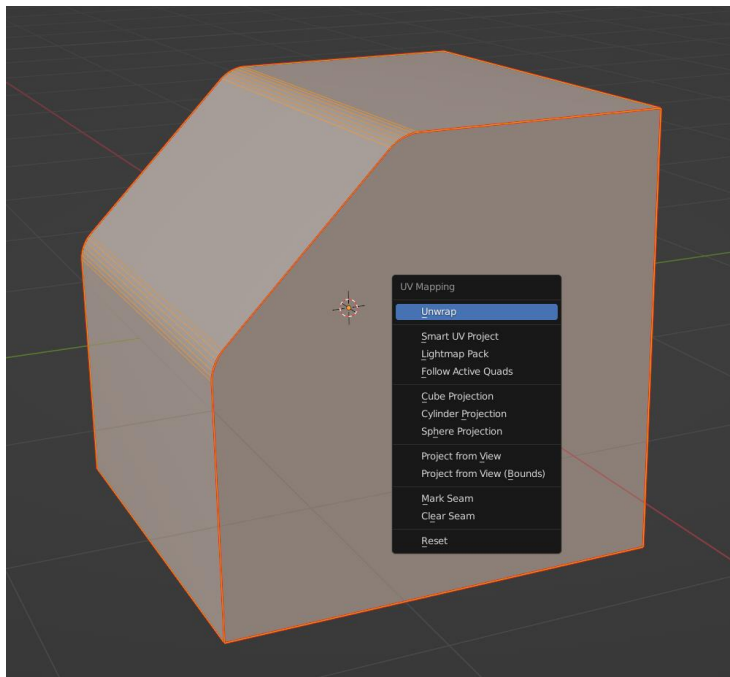
Step 2: Unwrap the Model

Now your seams should be marked (in red) on the sharp edges of your model.

But now we need to unwrap it. This part is easy.

Press 'A' to select all (in edit mode), press 'U', and then choose 'Unwrap'.

After that, you should see a dropdown menu in the bottom left. Choose 'Conformal' (Conformal is best suited for hard surface models. Angled Based is best suited for organic models).



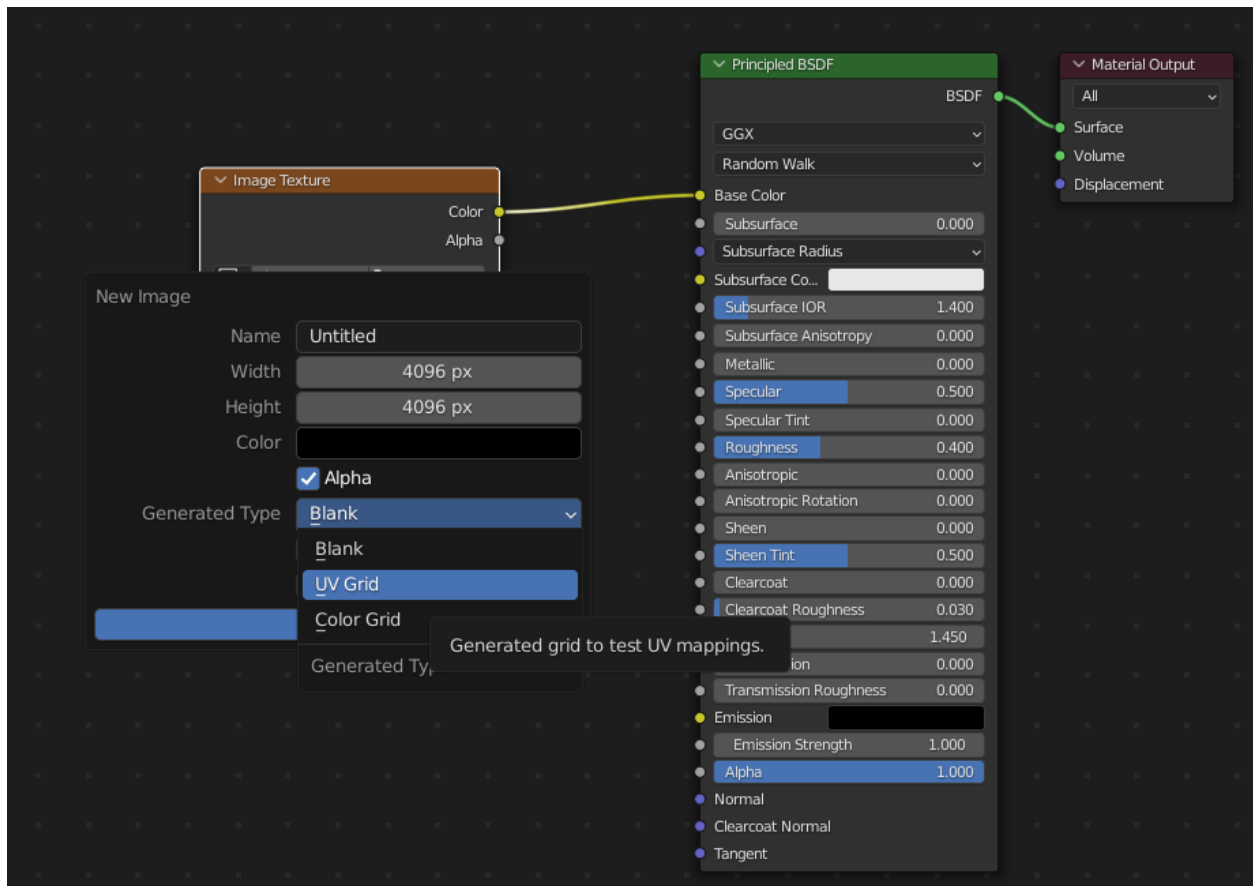
Step 3: Add a Checker Texture

Now your model should be unwrapped.

But we can't actually see how the unwrap looks.

So, let's add a Checker Texture. It's easy.

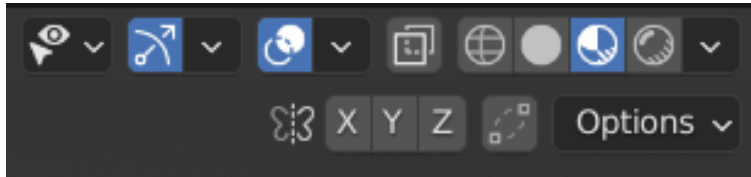
- 1) Drag out a new panel
- 2) Go to the Shader Editor
- 3) Add an Image Texture
- 4) Click 'New'
- 5) Choose your resolution (I tend to use 4096x4096)
- 6) Change the Generated Type to 'UV Grid'
- 7) Connect the Image Texture to the Base Color in the Principled Shader node



Step 4: Pick Up the Scraps

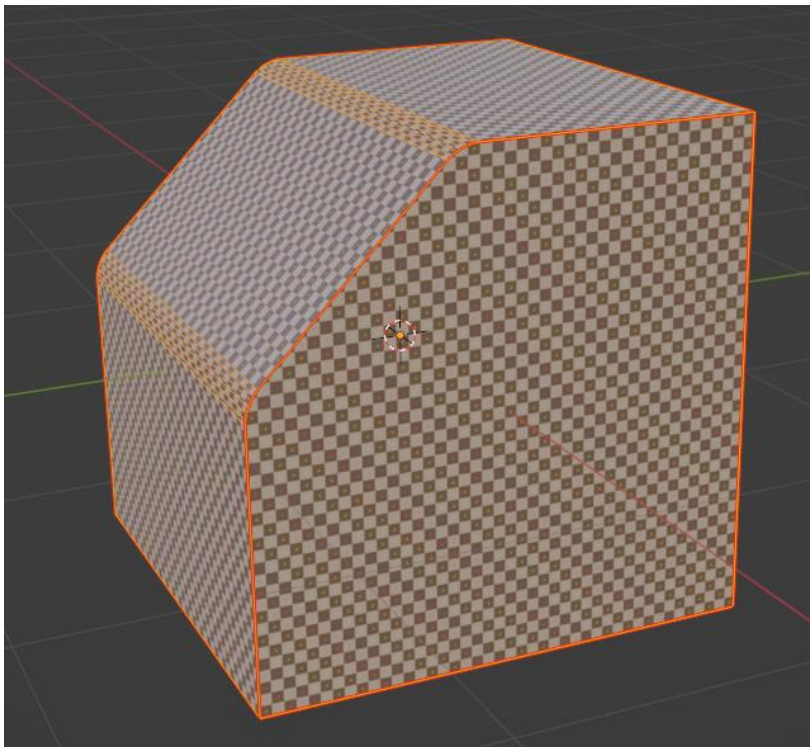
Now that the checker texture is connected, we can head into material (LookDev) mode.

Just click the third little orb on the top of the viewport:



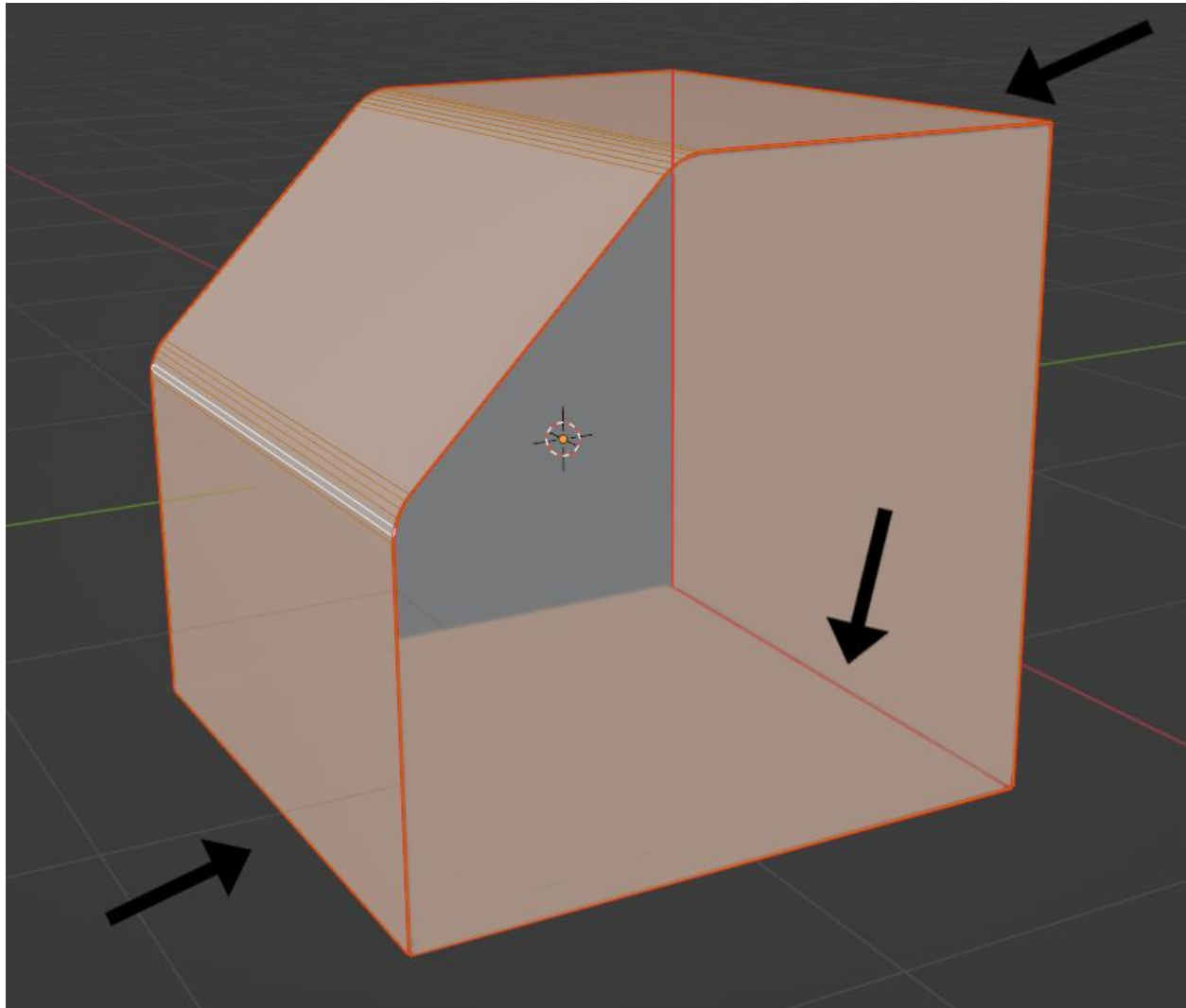
We should now be able to see the checker texture applied to our model.

Although we could technically stop here, there are most likely a few seams we can remove to make it a bit better.



This can get pretty complicated, so I'm only going to show you what you need most of the time. Your unwrapping skills will develop through intuition, so more complex methods are best learned through practice.

If you have any *loops* of faces going around the model (a cyclic set of faces), like this,



take note of all the marked seams this selection passes through. We have two in the back and one in the front (as indicated by the arrows).

However, you only need *one* seam marked through a loop of faces.

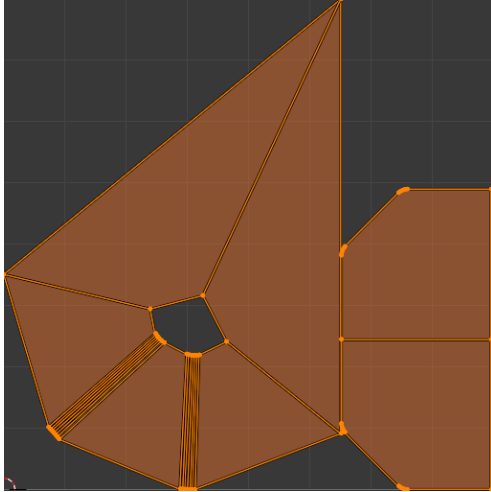


Imagine you have a paper ring. Would you cut it three times to flatten it, or just once?

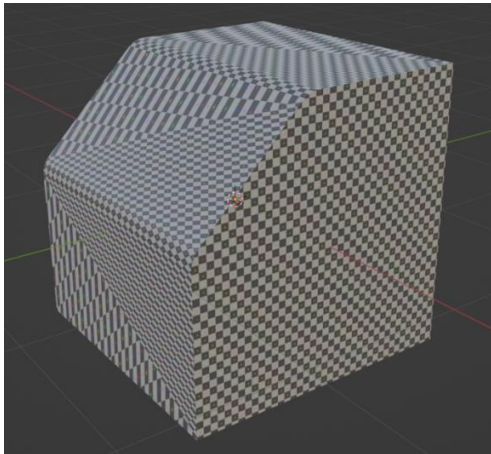
Obviously, there's no need to cut it three times. Just cut it once somewhere and it'll flatten out just fine.

This is the same idea with loops of faces.

If there are no seams going through a loop of faces, you'll get a *UV ring*, like this:



And it will cause distortions on your mesh, like this:



Ouch!

But if you have *one* seam somewhere, it'll be nice and straight:



So, in the picture above with the arrows, you can remove any two seams you want. You only need one to keep the UVs straight.

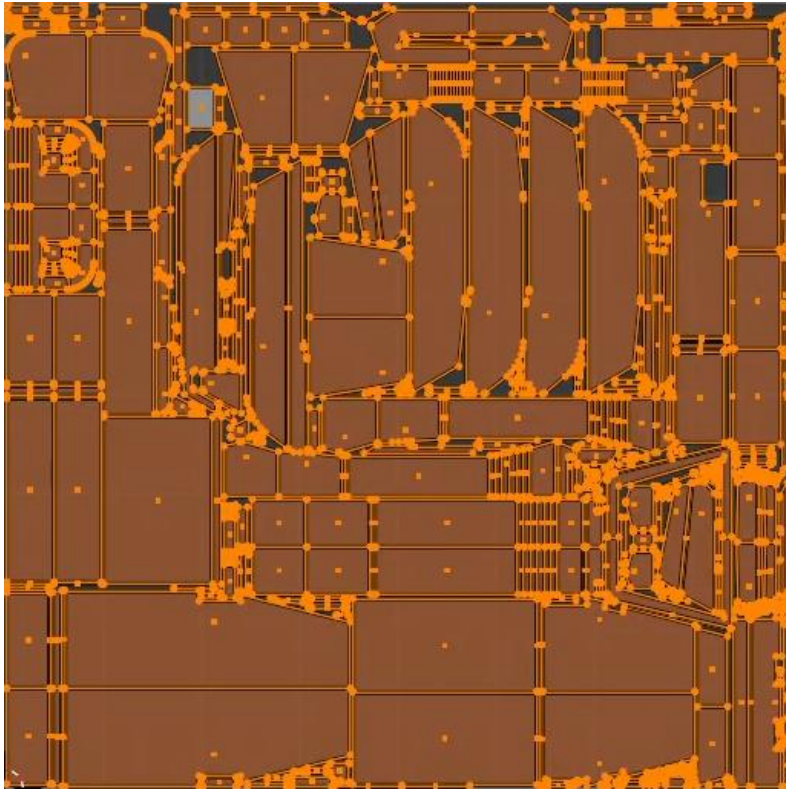
I'd suggest removing seams that are the most noticeable, so it isn't visible during texturing.



Step 5: Pack Them Islands!

Depending on the complexity of your model, once you've finished unwrapping and cleaning up your seams, you're going to want to make sure you use up as much UV space as possible.

Something like this would be an ideal (and realistic) result:



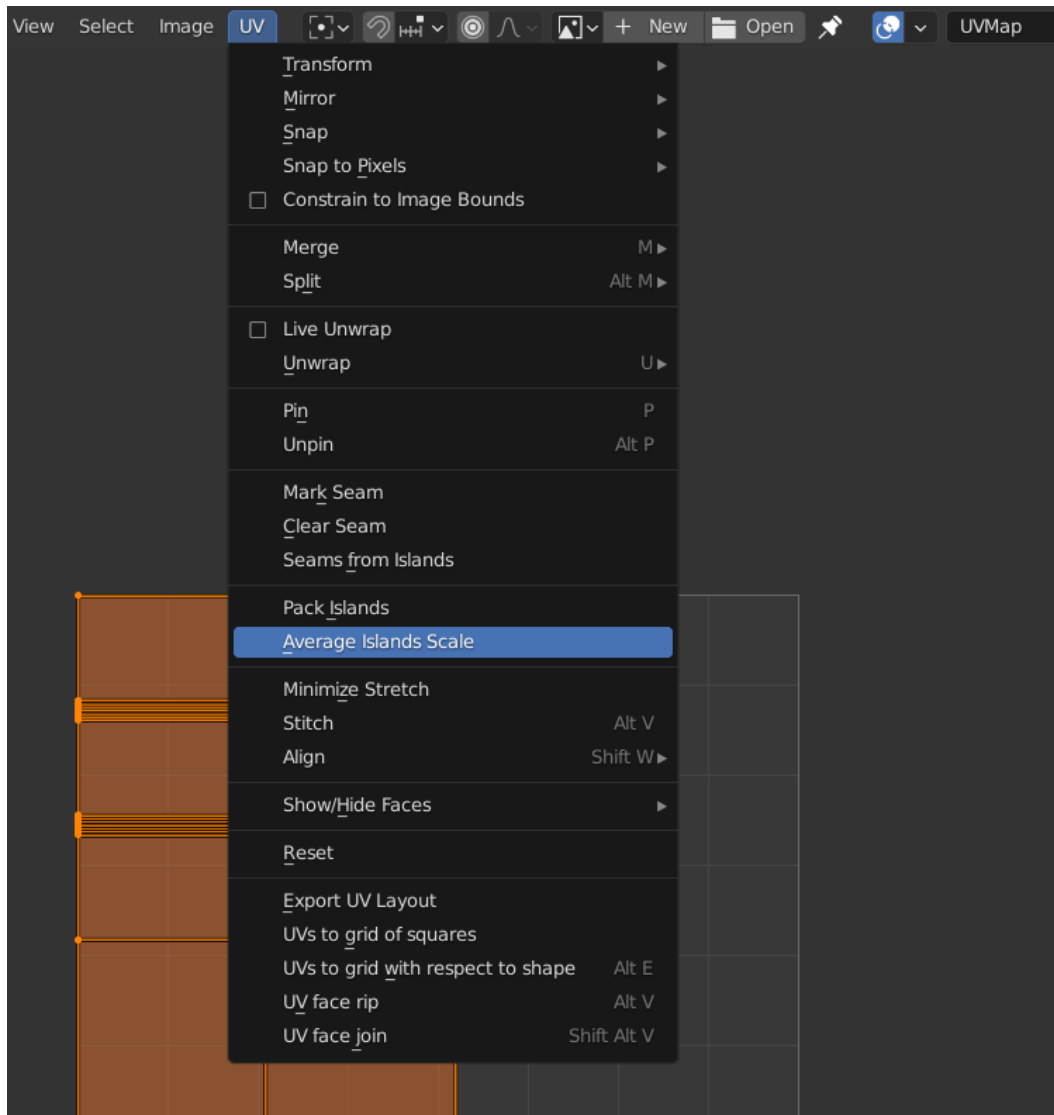
Hop over to the UV Editor, and make sure you've unwrapped your entire model (once again, Select All -> 'U' -> Unwrap -> Set unwrapping method to Conformal).

The last part is easy.



With everything selected,

- 1) Click on UV -> Average Islands Scale
- 2) Click on UV -> Pack Islands



Alternatively, if you have the [UV Packmaster 2 Pro addon](#), we'd recommend using that instead of Blender's Pack Islands feature. The result will be much more optimal.

That is an affiliate link, for full disclosure, but this tool has the best packing algorithm on the market and is something we use religiously. The reviews speak for themselves.

In case you're wondering, Average Islands Scale basically makes sure all the islands have the same texel density, and Pack Islands (whether using Blender's tool or UVPackmaster 2 Pro) makes sure the islands are packed as optimally as possible.

Back in the day, you would've had to scale and move the UVs manually for ages, so thank goodness for smart programmers creating tools that do it for us (I'm not one of them).

At this point, you should have an optimal packing solution and a uniform texel density across the mesh.

Things can get trickier with multiple texture sets, so if you want to learn more about that, check out my free [UV Unwrapping Masterclass](#) available on YouTube (or perhaps that's where you found out about this guide!).



Conclusion

And that's it!

This is 90% of what you need to know for hard surface unwrapping.

There are, of course, plenty of other advanced topics worth learning, such as texel density, island packing, texture sets and more, but this is all you need to get started and to get yourself a good unwrap, even as a complete beginner.

Furthermore, we have a course covering the more basic concepts, in case you prefer something a bit more structured: [Hard Surface UV Unwrapping in Blender](#)

We hope this guide provides some value and clarity to you, and hopefully you can use this as a quick reference until you fully feel confident in your unwrapping skills.

It takes practice, but eventually it will all become an intuitive process.

Thanks for downloading this guide and reading it, and here's to easier unwrapping!

Blender Bros

<https://www.blenderbros.com/>

