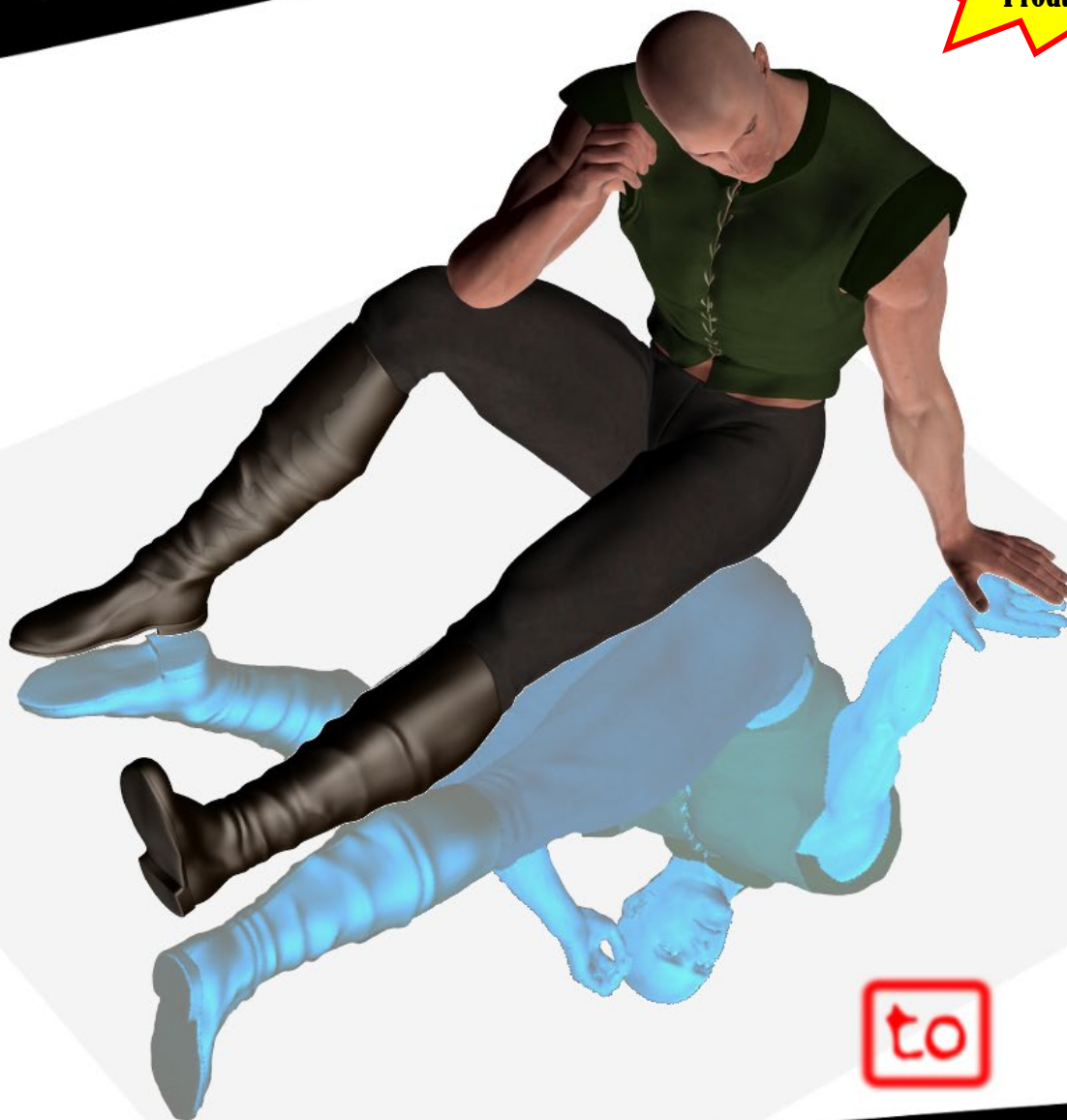


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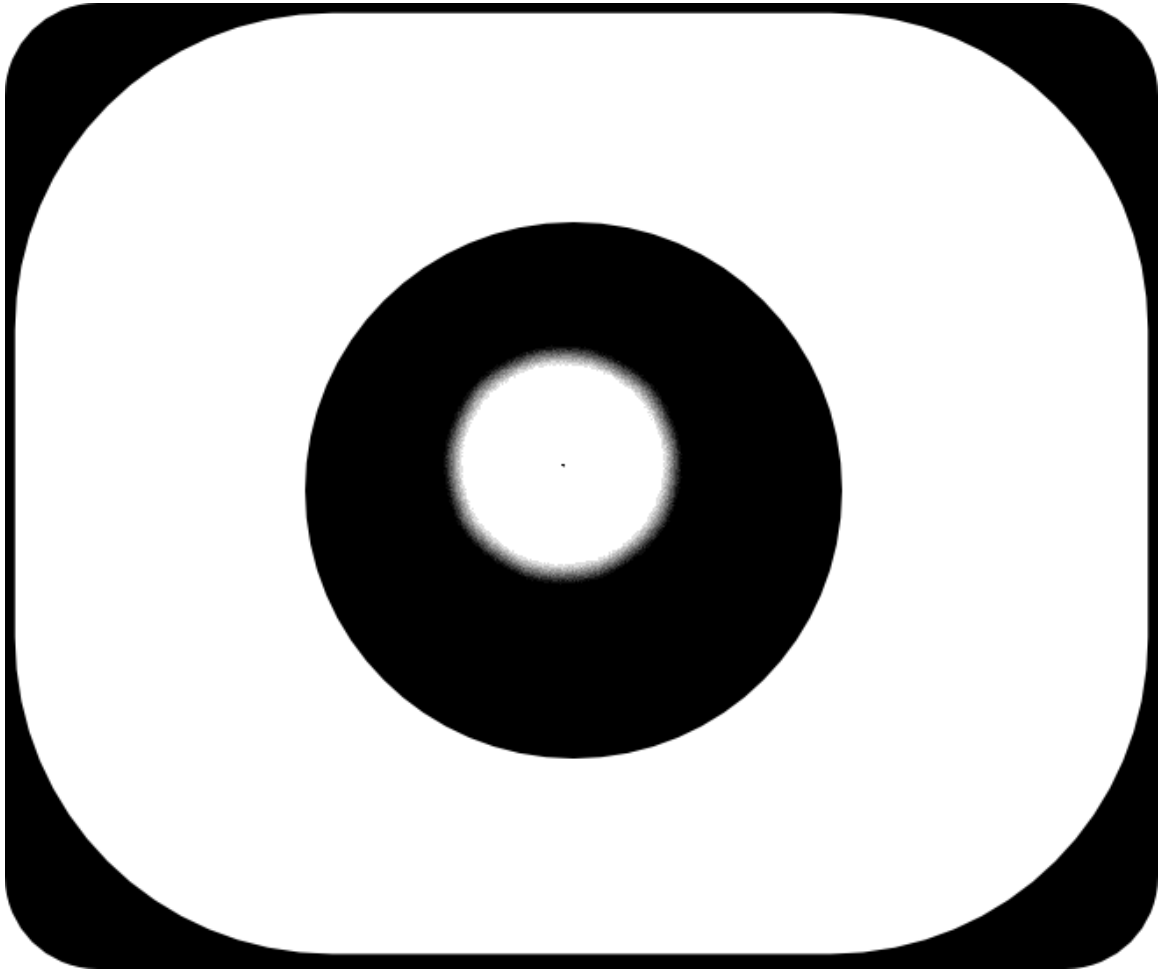
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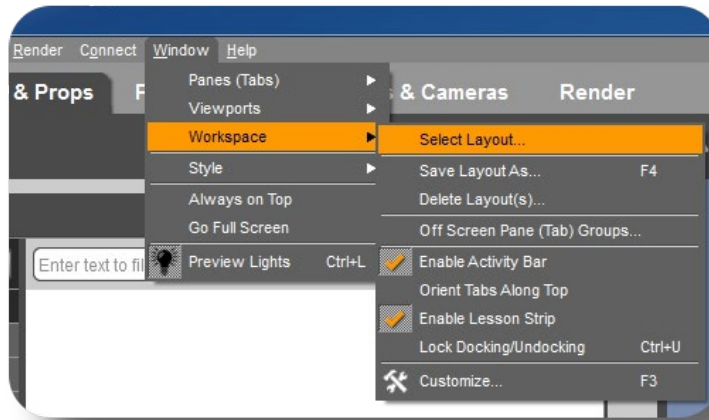
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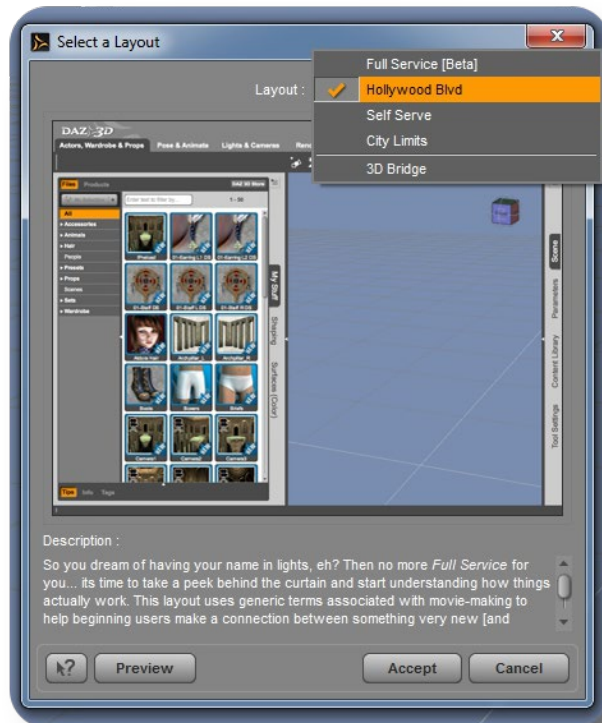
Chapter 1: Introduction



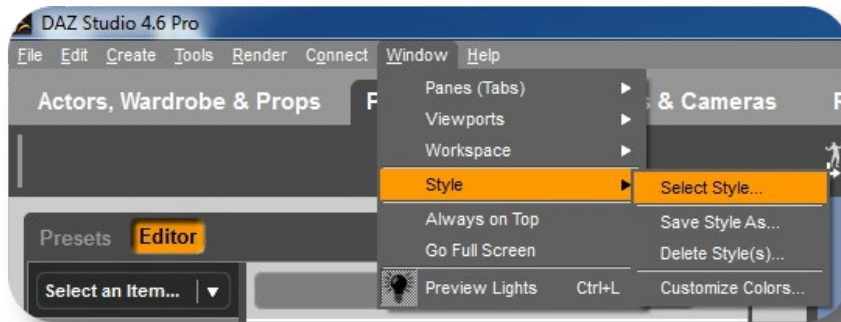
There are multiple layouts that you can use in DAZ Studio. To find them and change your settings, go to **Window->Workspace->Select Layout**.



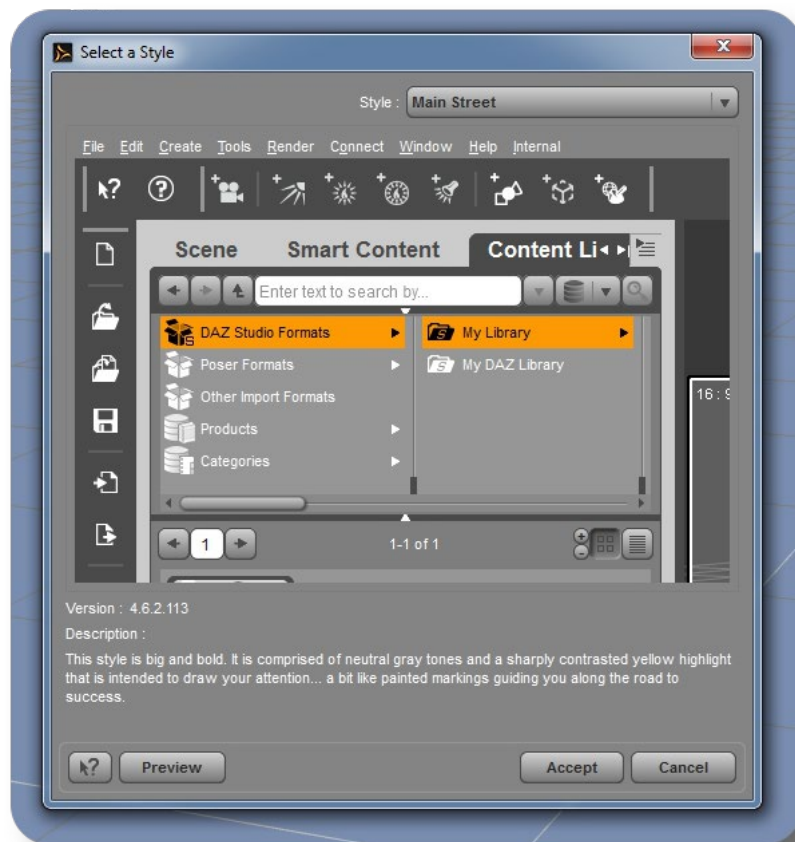
This tutorial will be using the '**Hollywood Blvd**' layout. Choosing the same layout setting will make it much easier to follow along.



In DAZ Studio, there are multiple styles that you can use. To find them and change your settings, go to **Window->Style->Select Style**.



A style window will popup. Select the '**Main Street**' style, then hit '**Accept**' in order to use the same style that we use in this tutorial.

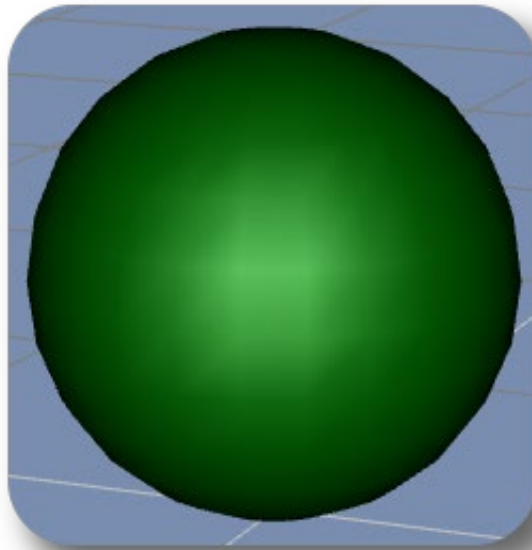


Surfaces & Color Terms

In this tutorial we'll be going over different types of ways you can adjust surfaces and colors of objects in DAZ Studio. Within these adjustments, some terms we will be using include **Diffuse**, **Specular**, **Glossiness**, **Ambient**, **Reflection**, and **Refraction**. Some of these terms may be unfamiliar, so let's go over what they mean in the next few sections.

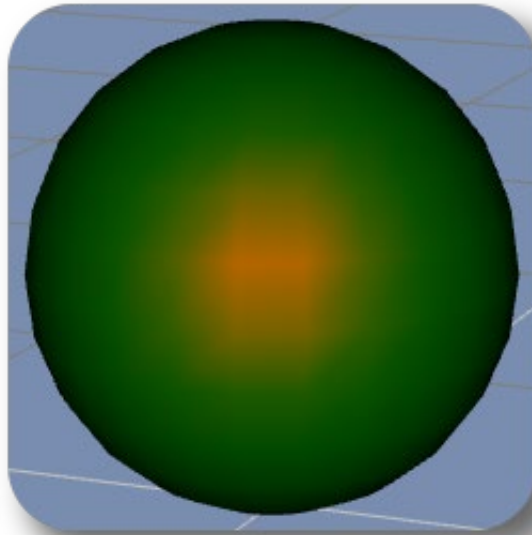
Diffuse

When light hits an object, the **Diffuse** color comes from the roughness of the object, which makes light disperse in many directions when it hits the surface. This essentially gives an object its color. Therefore when we make the **Diffuse** color of an object '**Green**' (shown below), the color of the object itself shows as green.



Specular

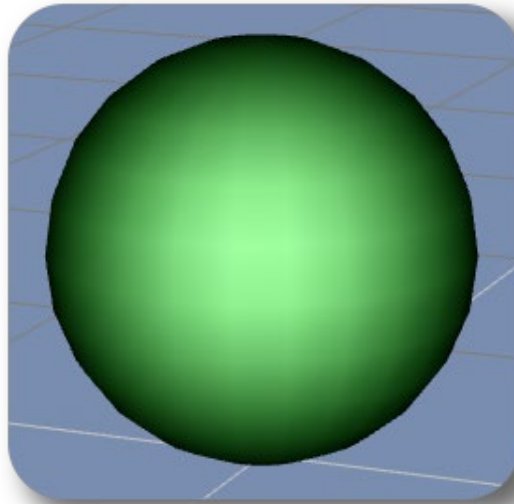
When light hits an object, the **Specular** color comes from when the light bounces back in one general direction (unlike diffuse which bounces back in many directions). So when we change the **Specular** color of an object to 'Red' (shown below), we see the **Specular** light show as **Red**.



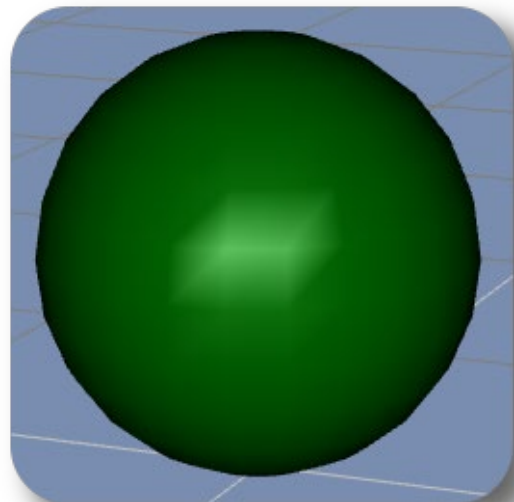
Glossiness

The **Glossiness** is the attribute that decides how much area the Specular Light will reflect off of an object. A lower value of **Glossiness** will make the Specular Light reflect off more area. Whereas a higher value used for **Glossiness** will make the Specular Light reflect off less area.

(Glossiness: 5%)

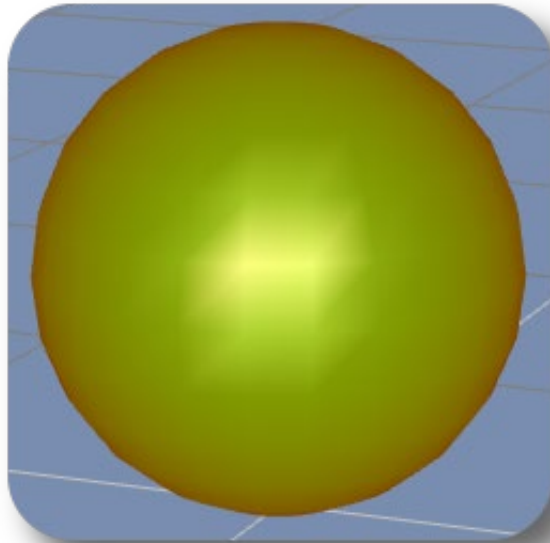


(Glossiness: 100%)



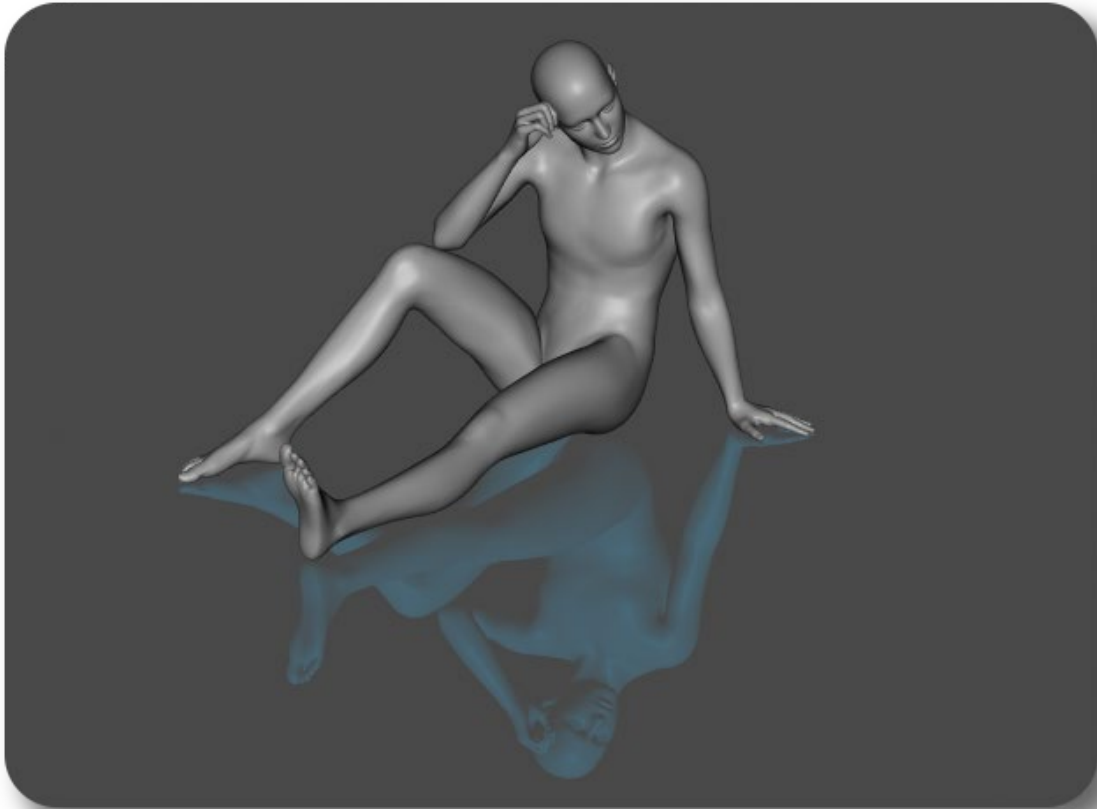
Ambient

The **Ambient** color is the shading of an object. Initially the **Ambient** color is black, giving the object black shading. If we were to change the **Ambient** color to something like '**Orange**', it would give all shading on that object an orange color. Since all shading is now **Orange**, it gives it a glow-like look.



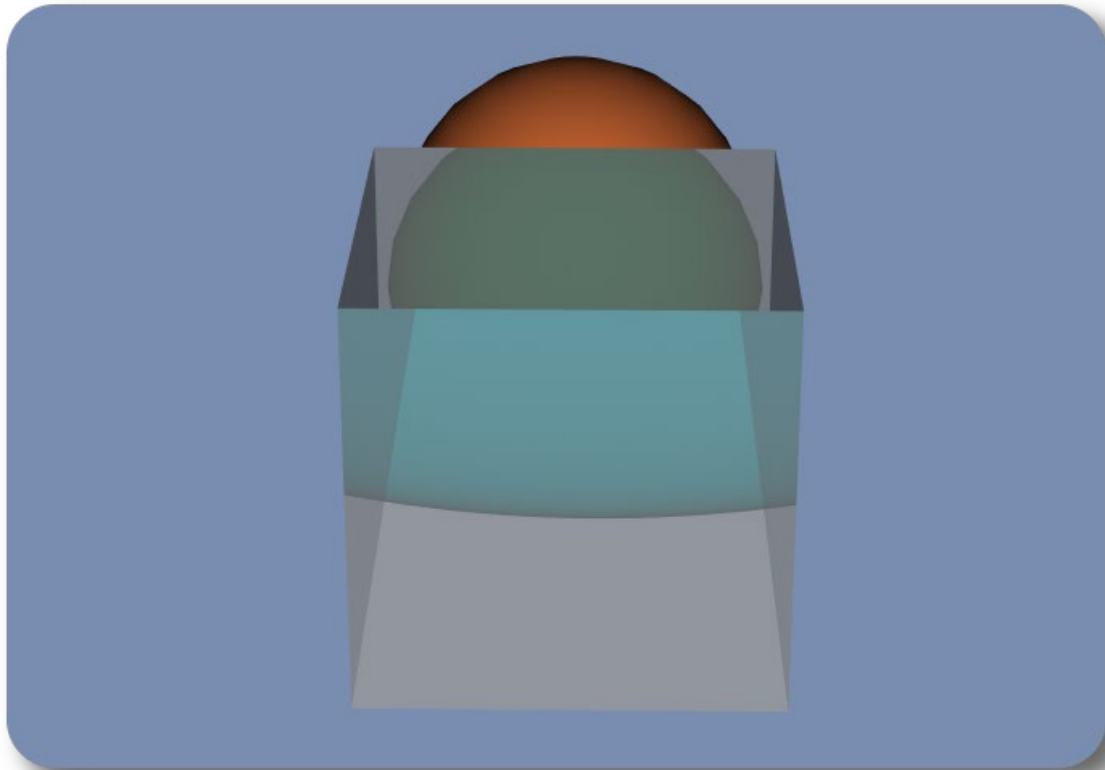
Reflection

The **Reflection** color is the color of an object's reflections on its surface. In this case the below figure is being reflected off of the plane, and since the plane's **Reflection** color is Blue, anything that reflects off of it will appear blue.

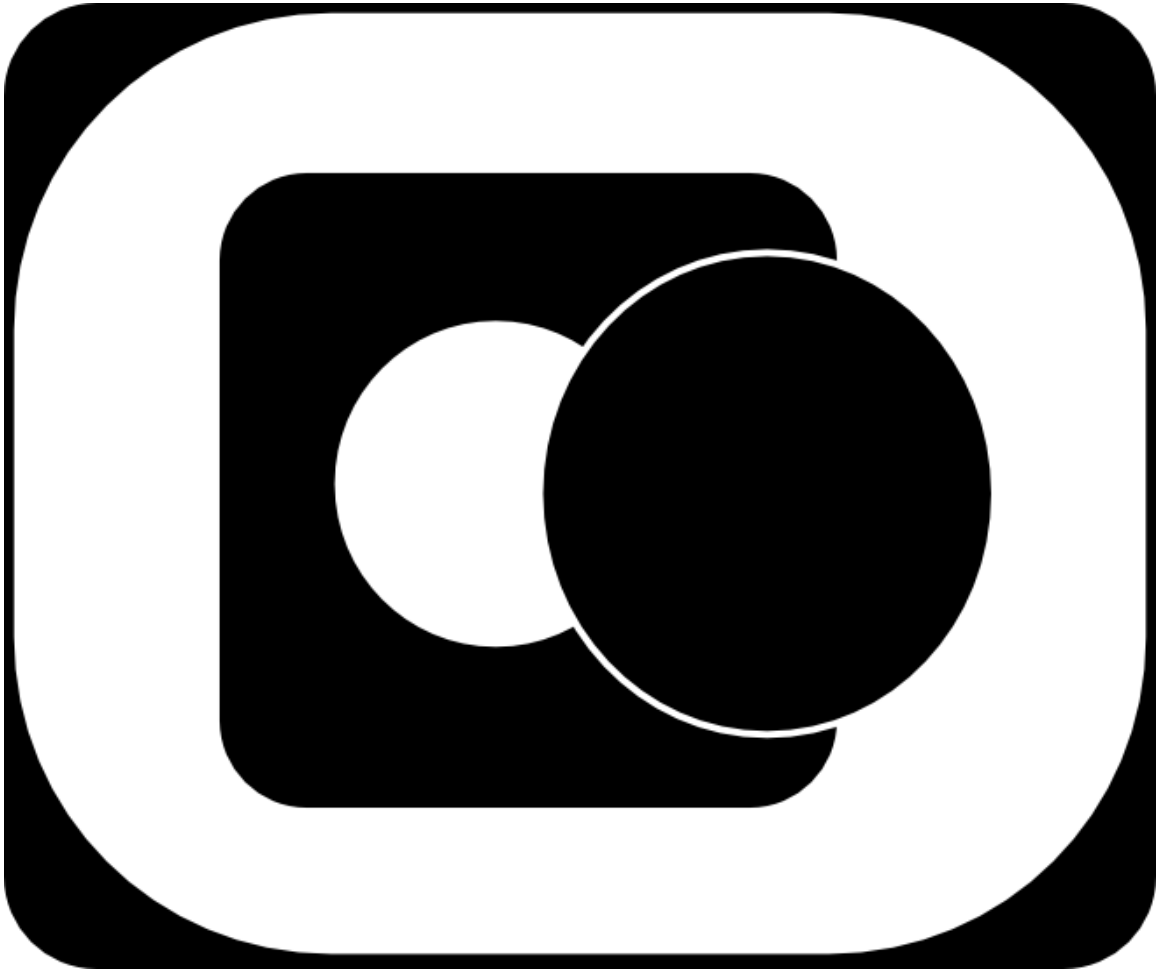


Refraction

The **Refraction** color is the color of an object as it's light passes through a transparent object with an index of refraction. The index of refraction changes how the light moves through the transparent object, and if there is an index of refraction, any object that can be seen through it will be refracted and have a color tinted to the current **Refraction** color. In this case, the **Cube** has a **Refraction** color of 'Blue', so when the **Orange Sphere** is shown through it, it appears **Blue**.



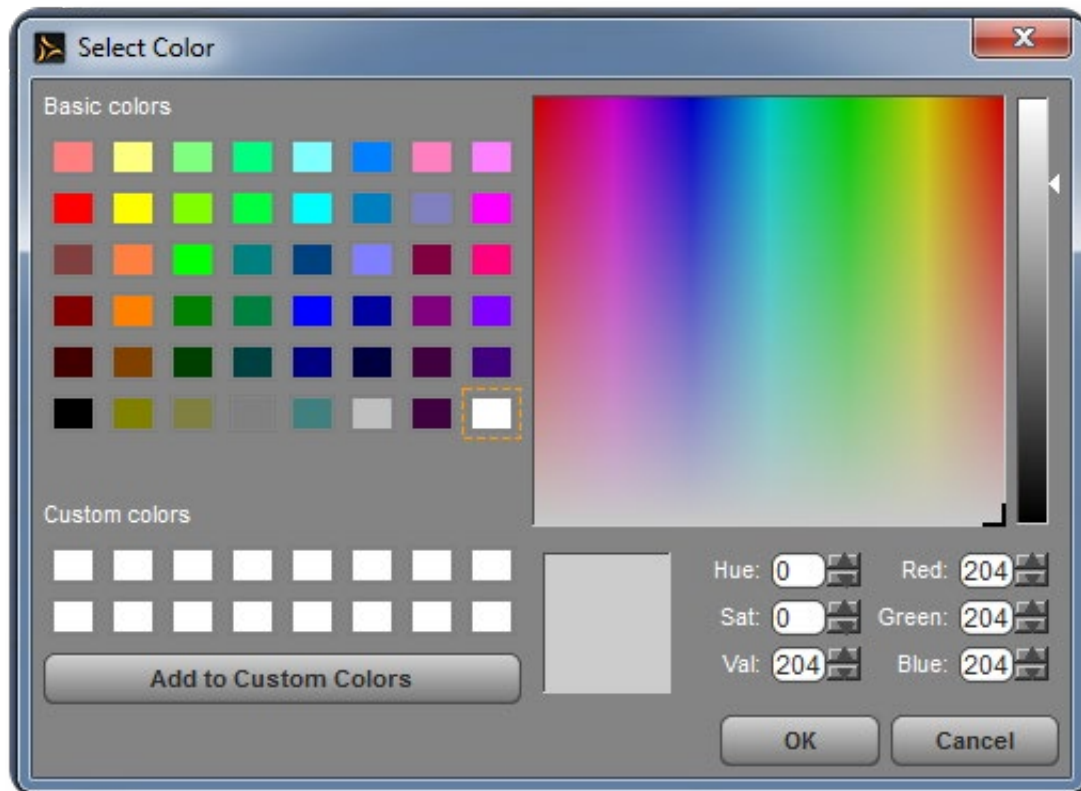
Chapter 2: Basic Surfaces & Colors



Color Dialog

This is the **Color Dialog** box. This will be needed a lot for this tutorial. Whenever you need to change the color of an attribute, you can use this to get the perfect color you need.

First off there are 2 sections in the Color Dialog. The left side is the **Basic colors**, and has some predefined colors that you can quickly use for your projects. The right side is the **hue palette** which can be used to pick very specific colors based on the **RGB**, **hue**, **saturation**, and **brightness** of the color.



Here are the locations of the basic colors on the color dialog:



1. Red
2. Blue
3. Yellow
4. Orange
5. Green
6. Black
7. Pink
8. Purple
9. Brown
10. White

On the hue palette, the crosshair indicates the current RGB, Hue, and Saturation. To the right of the **hue palette** is a vertical bar. The arrow on that bar indicates the **Value (Val)** of the color.



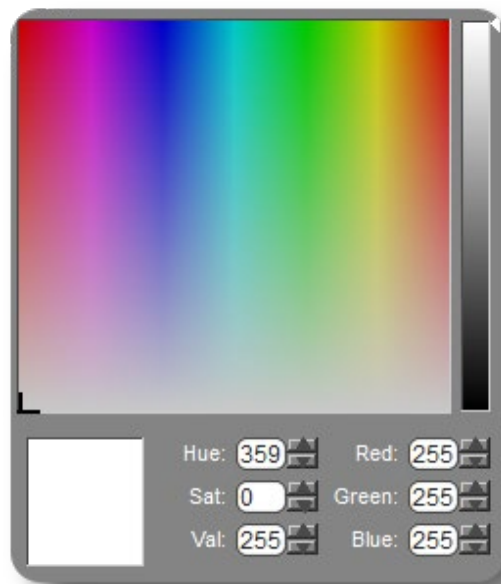
You can click on the hue palette to change the crosshair's location.



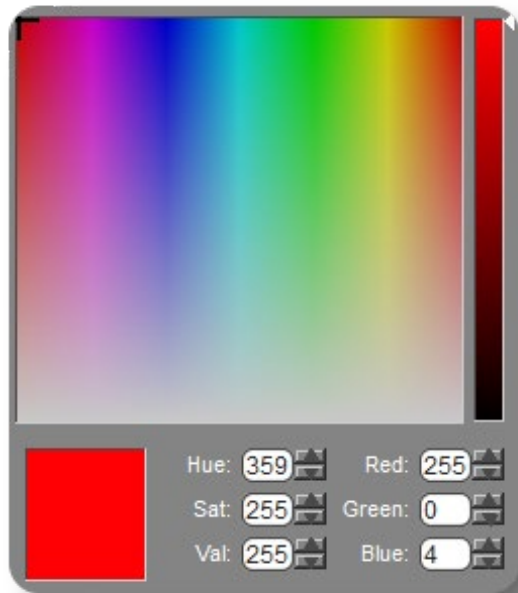
Moving the crosshair horizontally changes the **Hue**. Putting the crosshair at the very right gives us a **Hue** of 0.



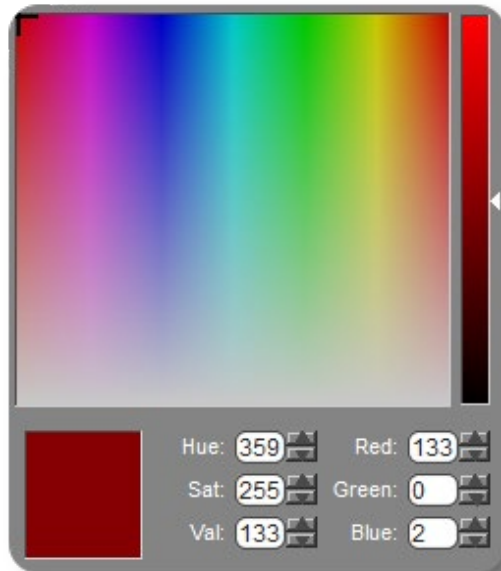
Placing the crosshair at the very left gives us a **Hue** of 359, which means we have a total of 360 **Hues** to choose from. Also notice when the crosshair is at the bottom of both sides, the **Saturation (Sat)** is 0. Moving the crosshair vertically changes the **Saturation**.



If we move the crosshair to the top of the palette, we get a max **Saturation** of 255, which means we can have 256 **Saturation** values to choose from.



If you click and drag the arrow on the right vertical bar, you can change the **Value** of the color. This essentially changes it's brightness.



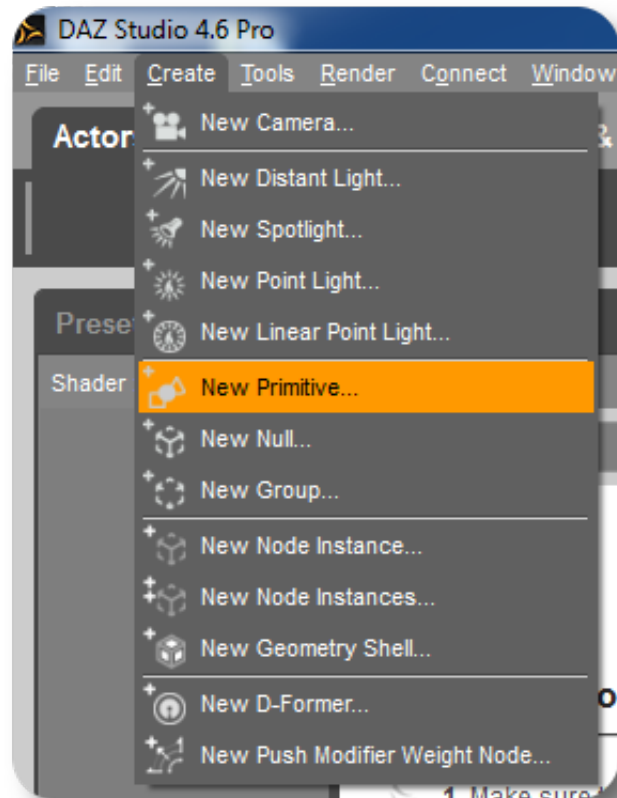
The **Hue, Saturation, and Values** (HSV) all determine the **RGB (Red Green Blue)** of the color. An alternative to using the hue palette is to manually enter the **Red, Green, and Blue** values into the textboxes, or even manually enter the **Hue, Saturation, and Value** values.



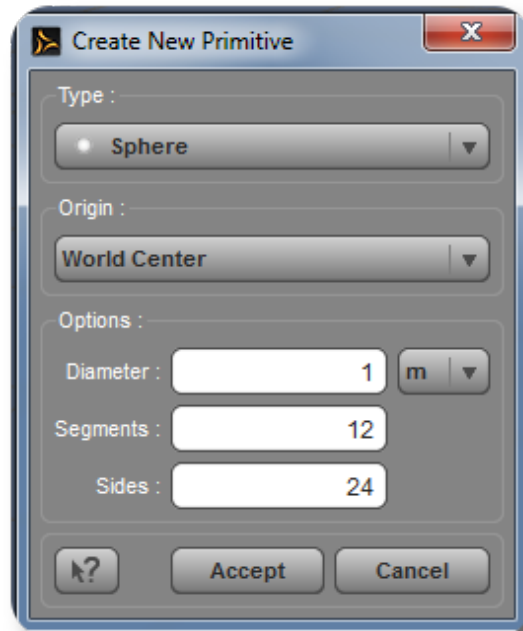
Primitives

To learn about surfaces and colors, we need an object to work on, so let's create a new primitive to work on.

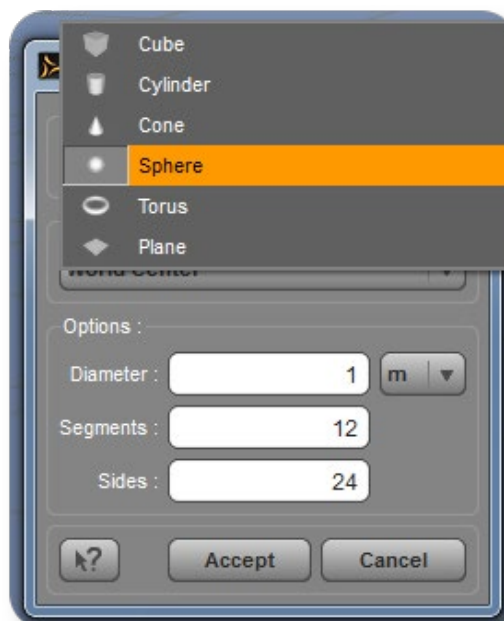
Go to: **Create -> New Primitive**



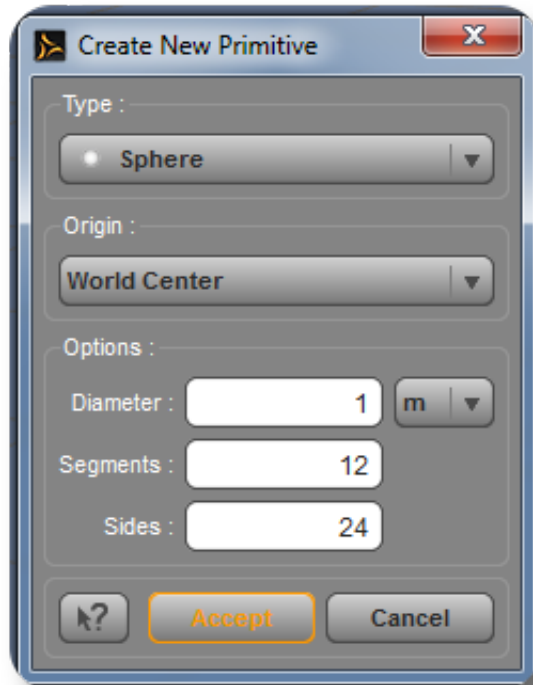
A popup menu will appear to choose which primitive you want to make, where you want its origin, and what its individual attributes should be.



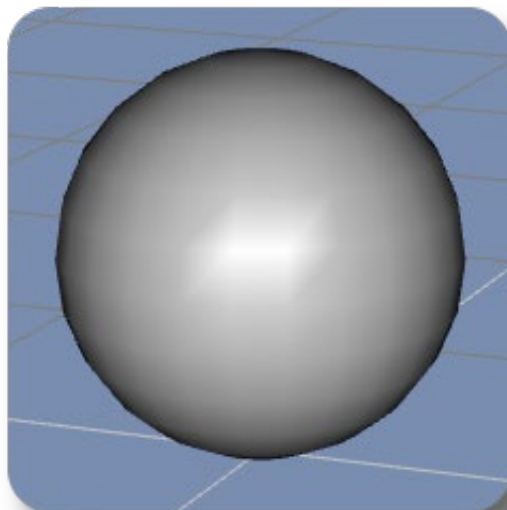
You can click the '**Type**' dropdown menu to get a list of all the primitive shapes that you can make.



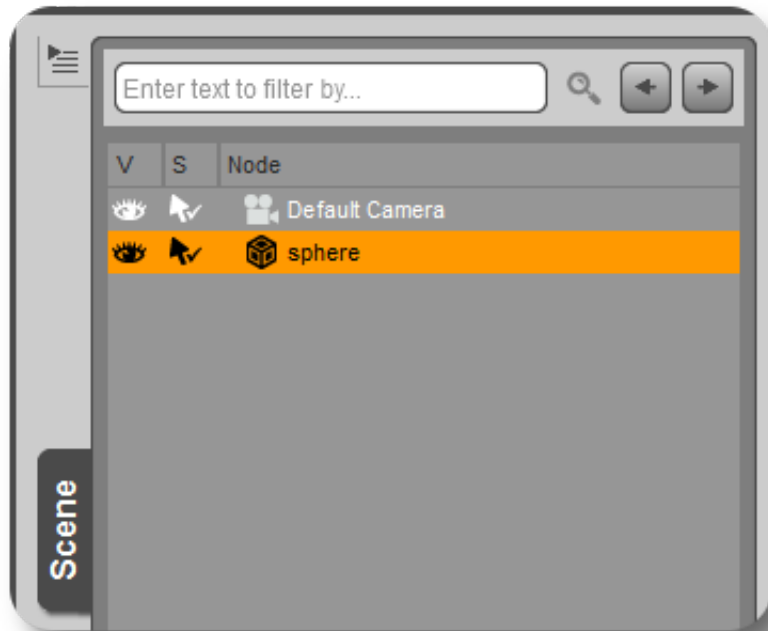
Go ahead and select the **Sphere** Type and hit '**Accept**'.



Your new sphere primitive will appear in the center of your scene by default.

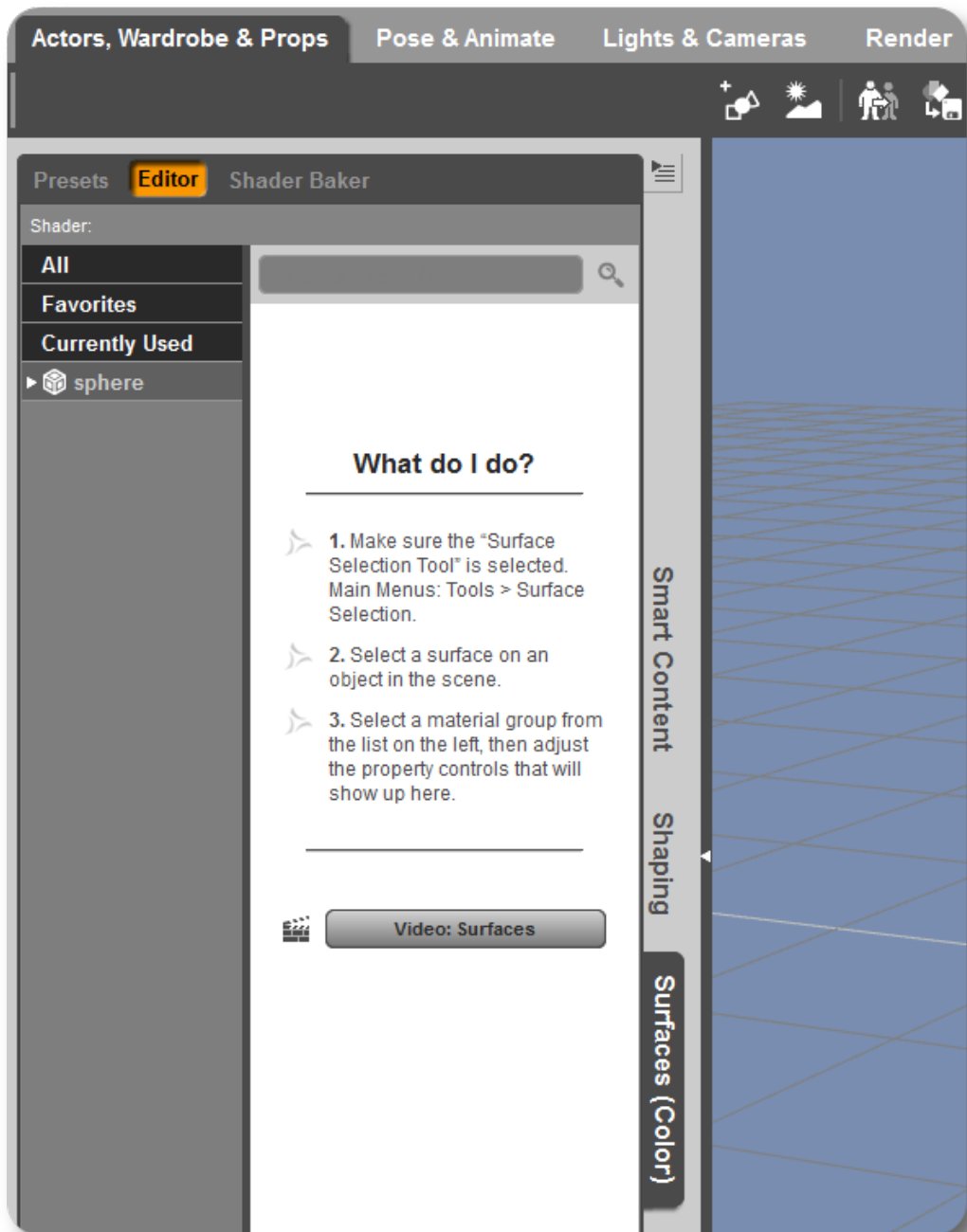


Go to the Activity panel on the right side of your scene and select the **'Scene'** tab. Now select your primitive from the list of objects.



Surfaces (Color)

Now with your **Sphere** selected, you can head to the Activity panel on the left side of your scene and click the '**Surfaces (Color)**' tab shown below.

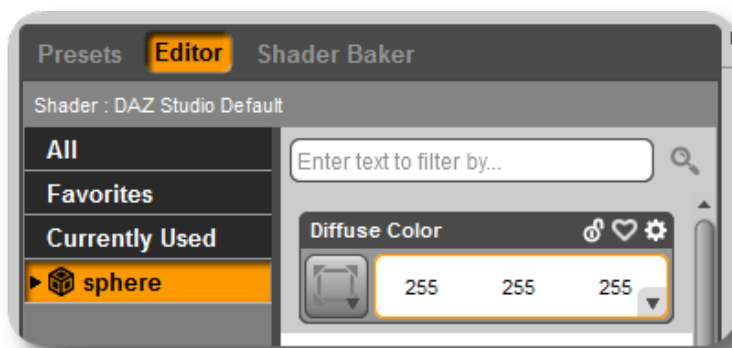


Diffuse Color

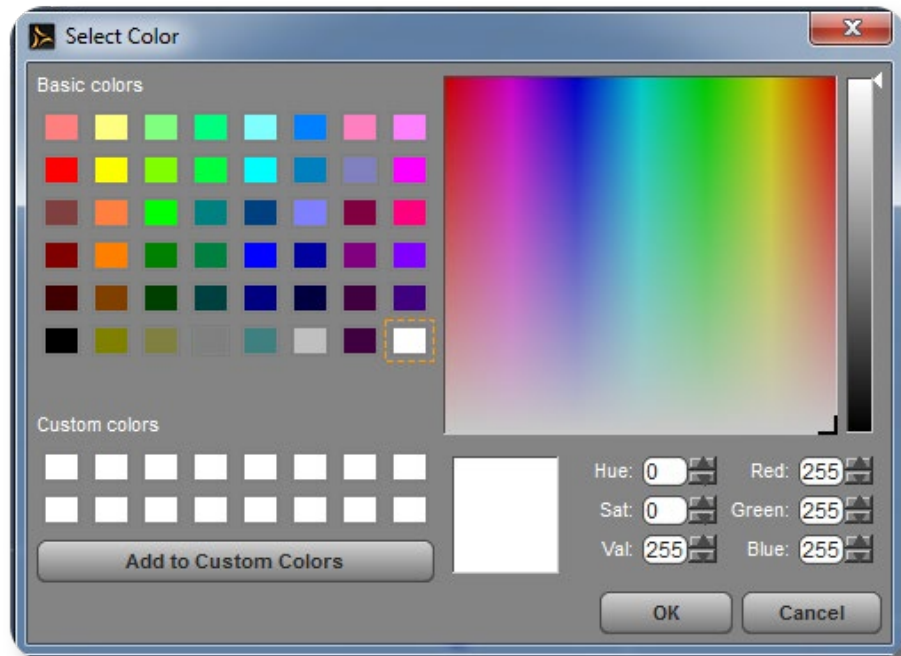
You'll notice an option to select your object to the left, in this case 'sphere'. Left-click on it to open up the '**Surfaces (Color)**' options for your primitive.



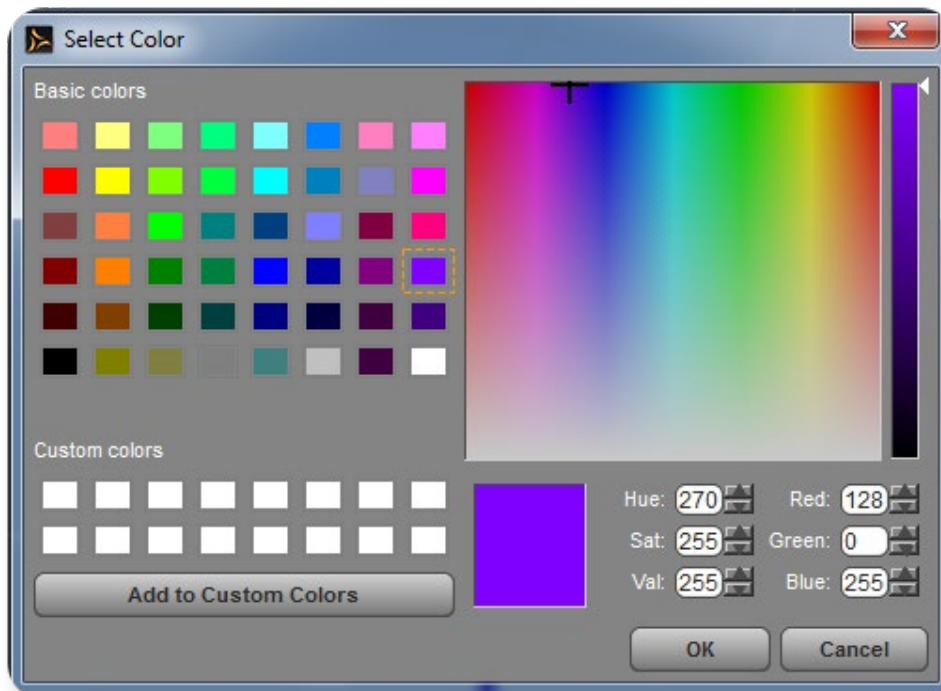
At the very top you'll see '**Diffuse Color**'. Something you'll remember from our discussion in Chapter 1.



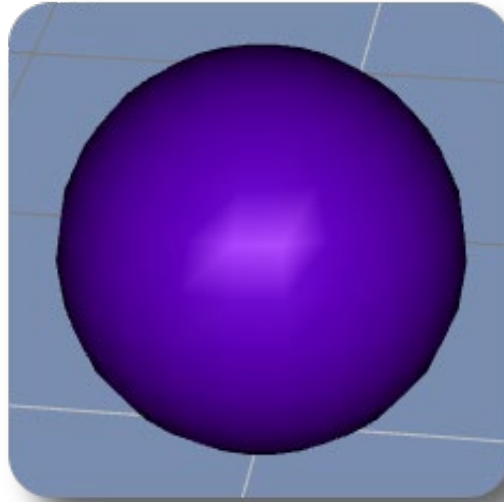
If you left-click on '**Diffuse Color**' you'll get the Color Dialog popup.



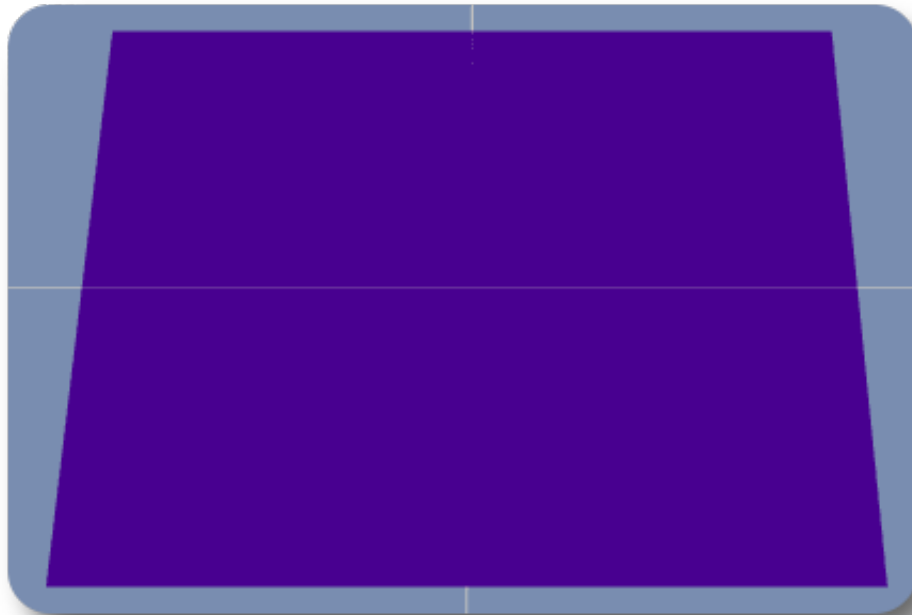
You can then select a new **Diffuse Color** for your primitive. Here I picked a shade of purple.



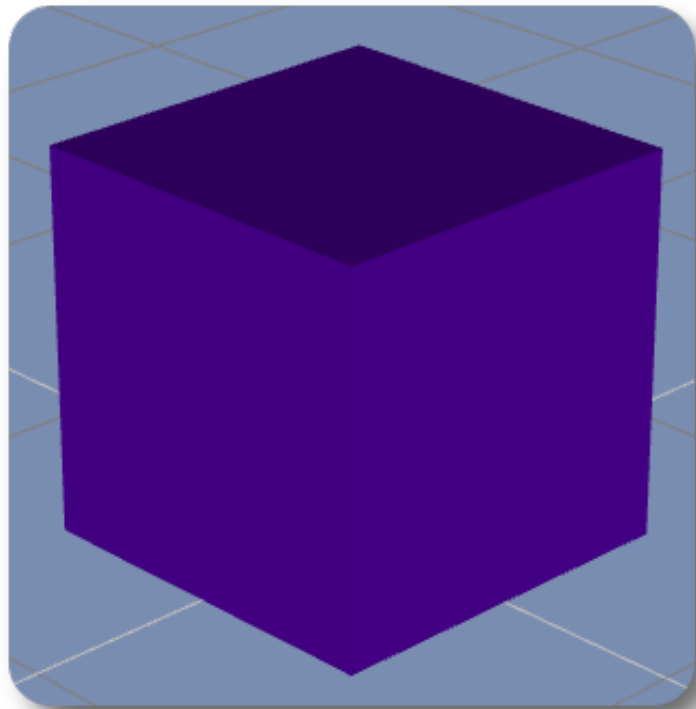
Remember that the Diffuse Color is more or less the actual color of the object. So when you change the Diffuse Color you are changing the object's color. So now we have a purple **Sphere**.



This is what the purple Diffuse Color looks like on a **Plane** primitive.

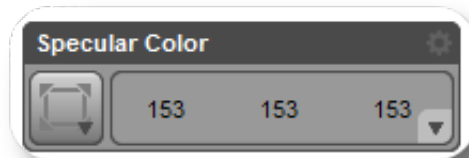


This is what the **Cube** primitive looks like with a purple Diffuse Color.

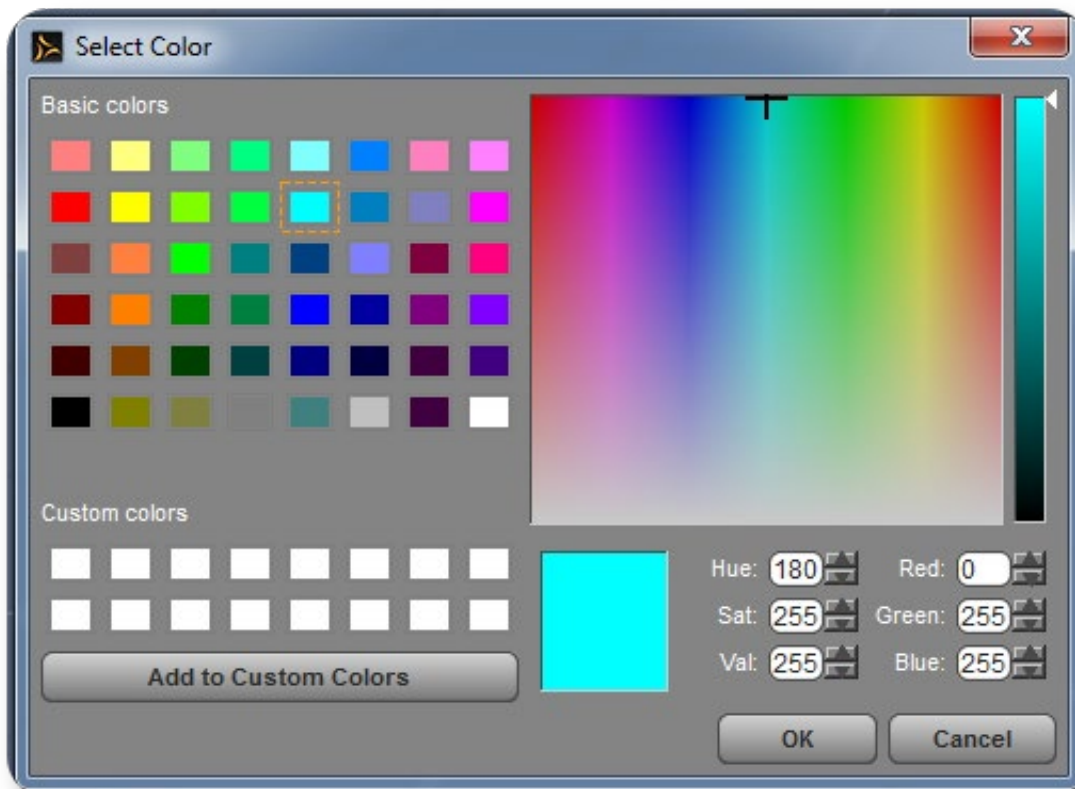


Specular Color

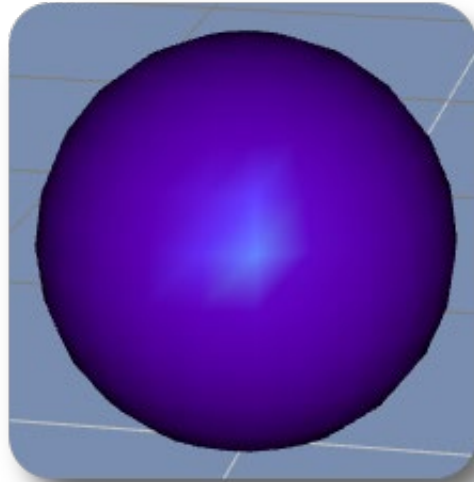
Now that we have worked on Diffuse Color, let's start learning about **Specular Color**. Below the Diffuse Color section, you'll see the '**Specular Color**' option; just left-click it to open the Color Dialog.



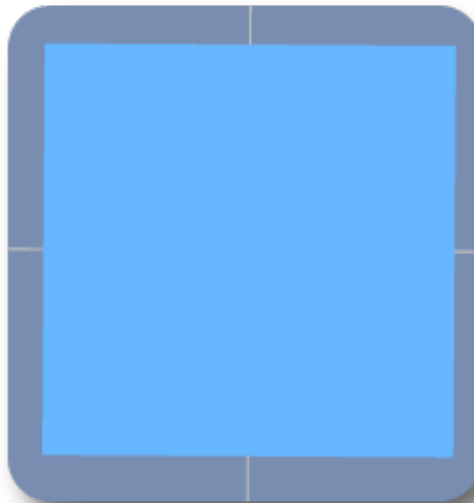
When the Color Dialog appears, select the color you want your '**Specular Color**' to be. I chose a shade of blue in **Basic colors**.



Now, the area where the light shines on our primitives will have a blue tint. For the **Sphere** you'll notice a small section in the middle where the light is shining back.



However for the **Plane**, because it is flat, the specular color encompasses the entire plane when you look directly at it.

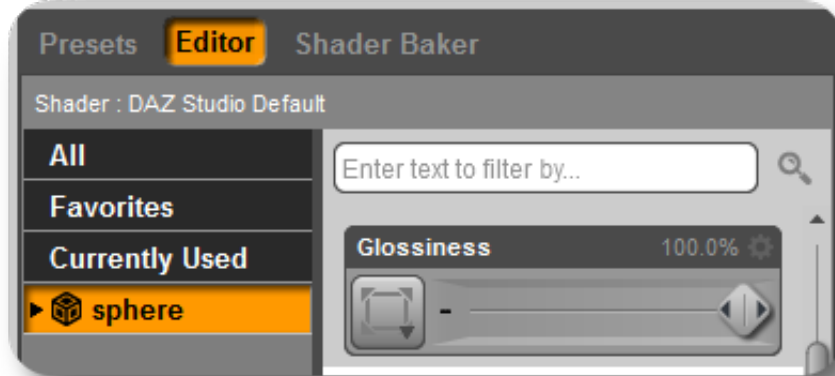


Similarly for the **Cube** the specular color shows dominant when looking directly at the flat surface of one of the sides.

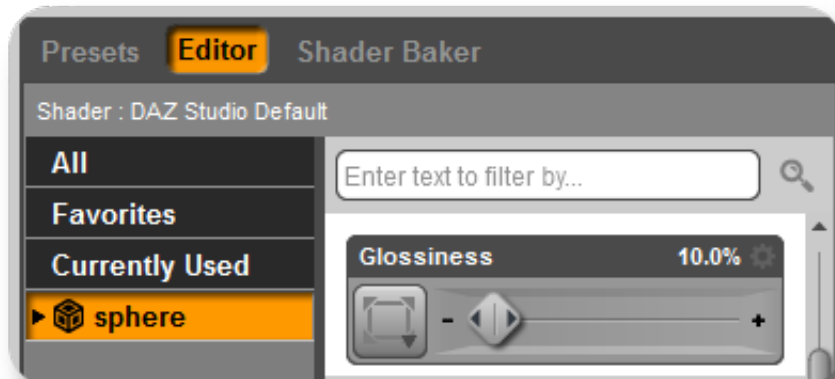


Glossiness

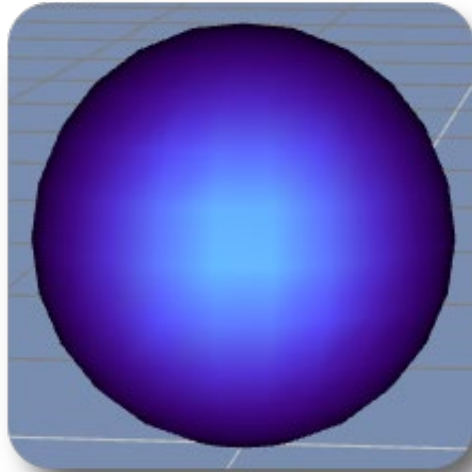
The next attribute we are going to talk about is **Glossiness**. **Glossiness** changes how much of the specular light bounces off the objects surface. It is much easier to see the interaction on a sphere. Find the '**Glossiness**' option.



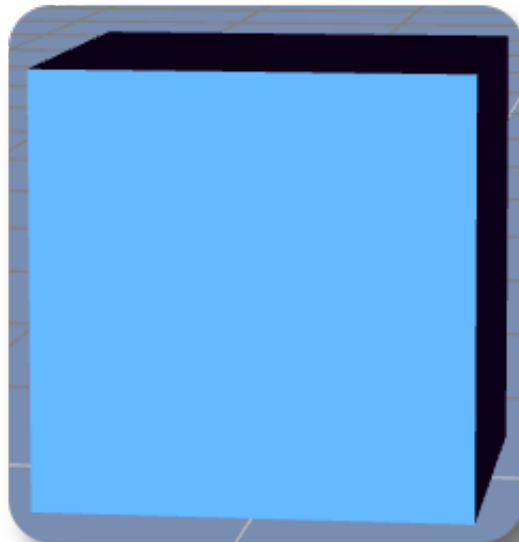
Let's change the **Glossiness** to 10.0%.



For our **Sphere** primitive, you'll notice that the Specular Color is much larger in area on the surface. This is because the sphere is much 'shinier' thus reflects the specular light on a larger area of its surface.

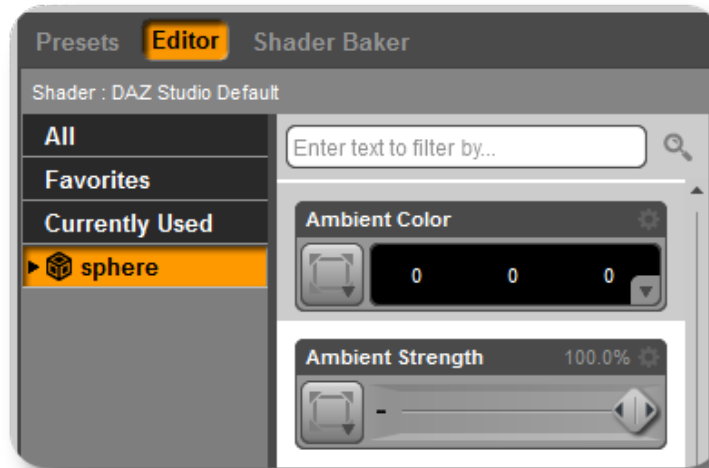


On a **Cube** or **Plane**, the only way to show this interaction is by noticing that the specular light appears more dominant when not looking directly at the flat surface. The side now appears more blue, even when looking at it from an angle.

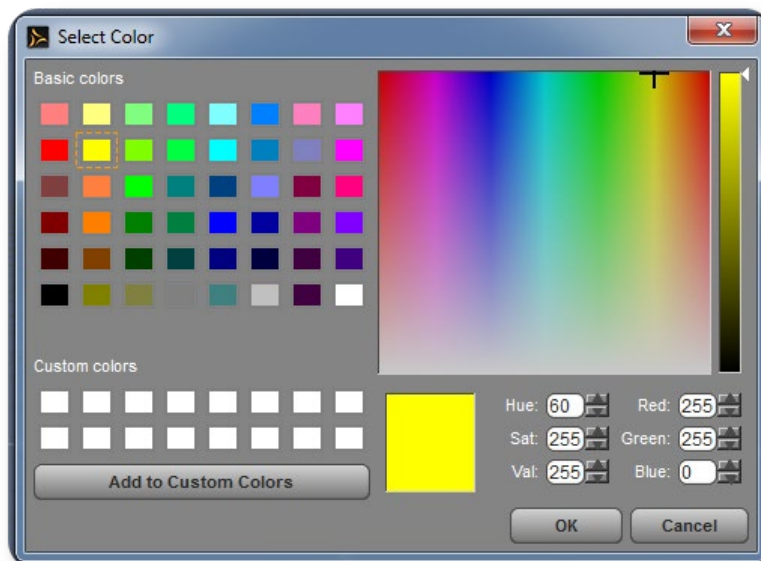


Ambient Color

Now we will talk about the **Ambient Color** of an object. The Ambient Color attribute changes the shading of an object. Initially the shading of an object is Black, so you'll usually see Black shading on the edges of your objects. Now find the '**Ambient Color**' option.



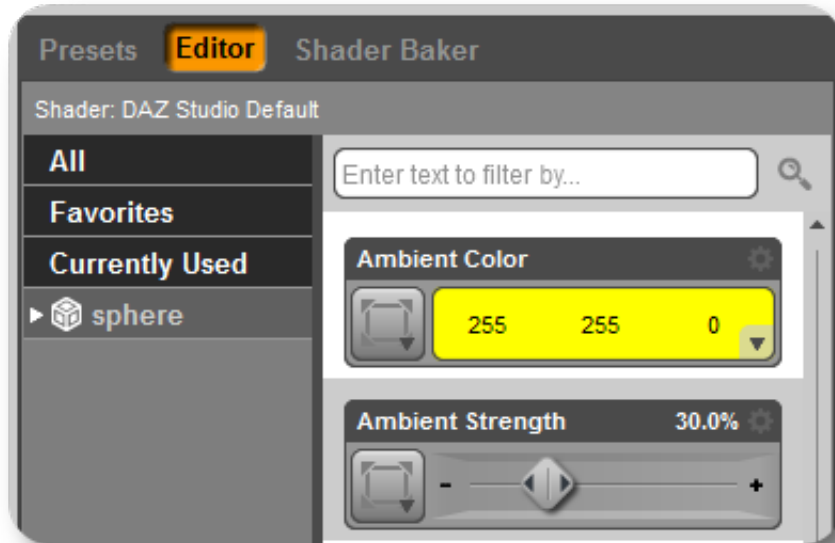
Pick an Ambient Color from the Color Dialog. I chose a yellow color from the **Basic colors** section.



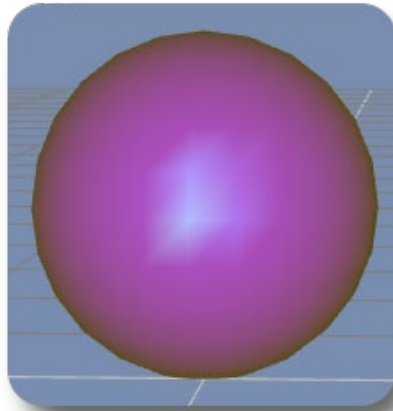
Initially, the yellow will encompass the entire primitive. This is because there is a lot of shading on one object and our '**Ambient Strength**' is set at **100.0%**.



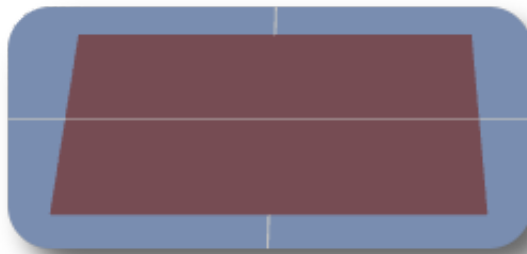
Change the '**Ambient Strength**' to something less, such as **30.0%**.



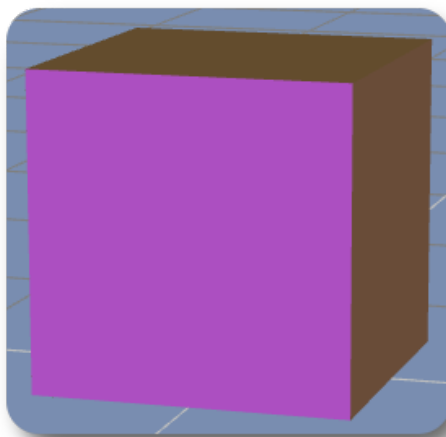
Now the **Sphere** maintains its other attributes while having its Ambient Color appear yellow. This gives our primitives a look as if they are glowing.



A **Plane** now has yellow tint.

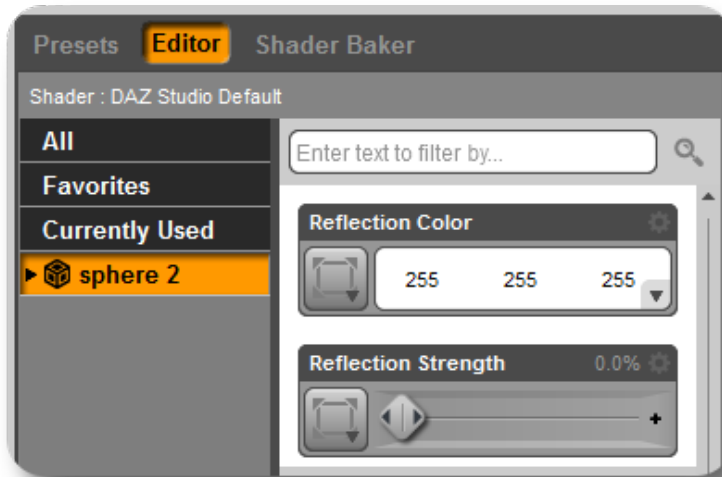


A **Cube** now has it's darker sides give off a yellowish glow.

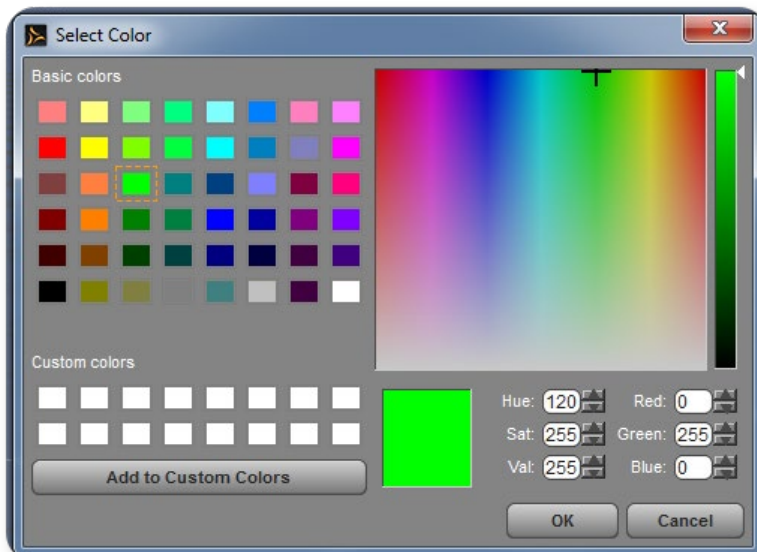


Reflection Color

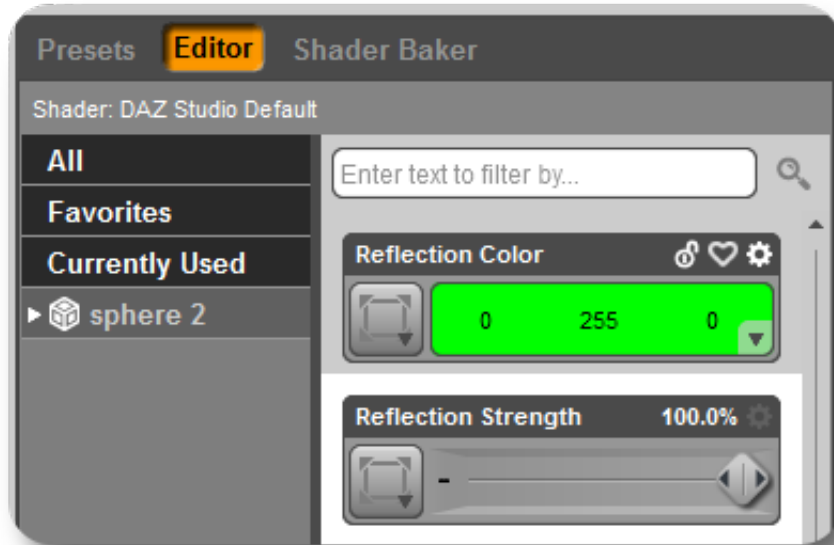
The next attribute is the **Reflection** of an object. Changing the **Reflection** of an object changes the way others appear when reflecting off of the object. Before changing any of these values, I'd recommend creating a new primitive Sphere (sphere 2) to work with.



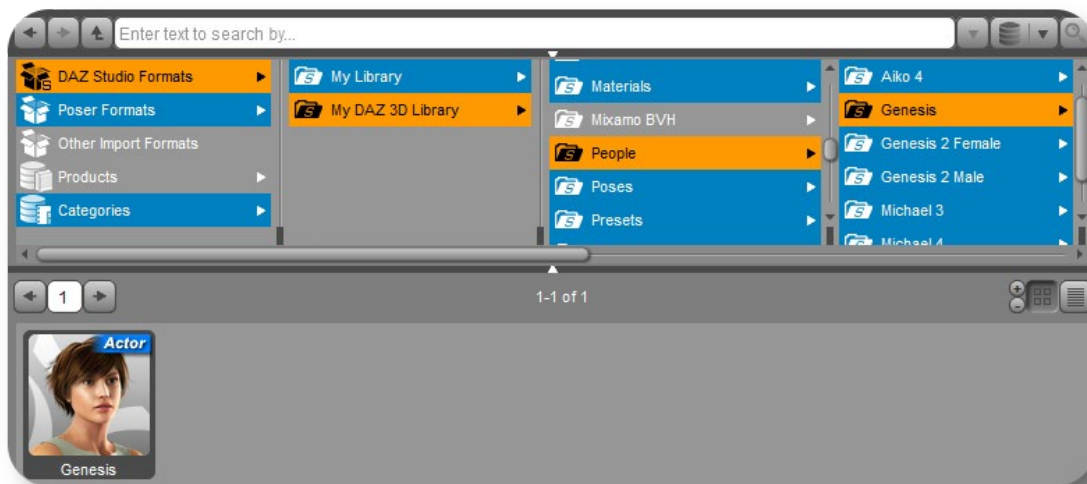
Let's pick a **Basic** green color, for our '**Reflection Color**'.



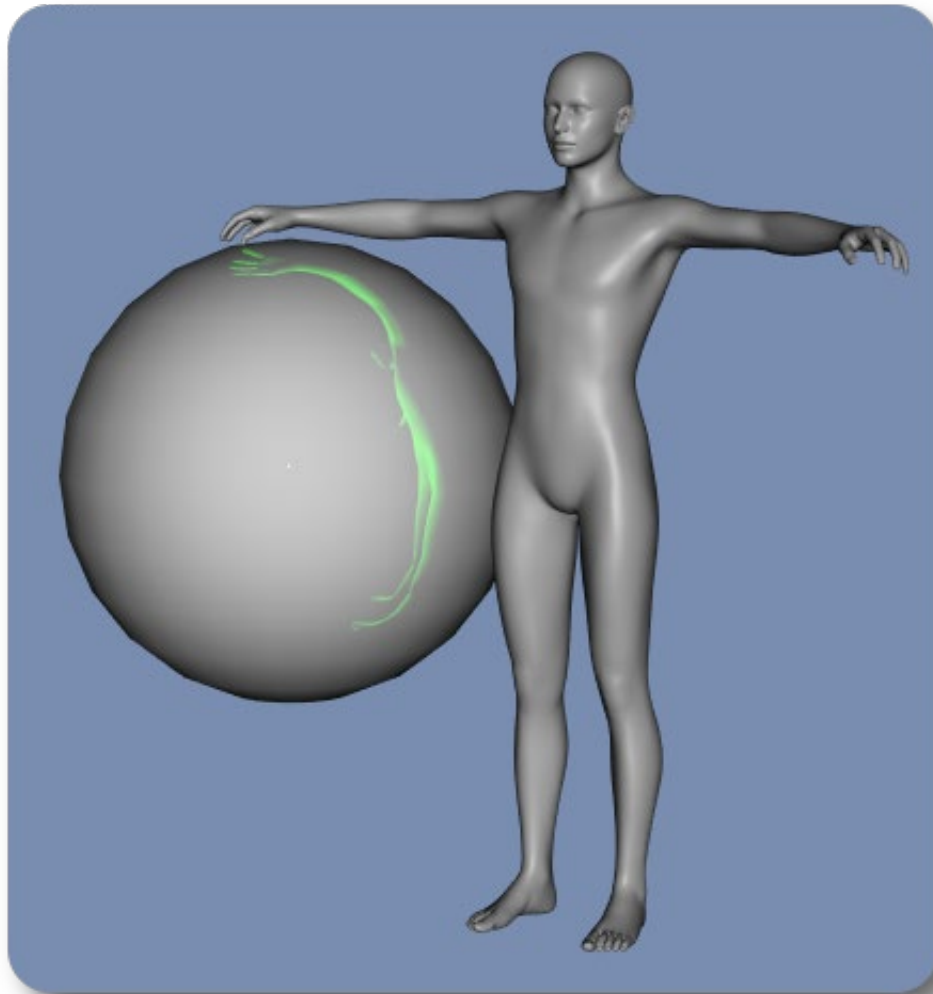
Let's change our '**Reflection Strength**' to **100.0%** so we have the most distinct reflections off of our primitive sphere.



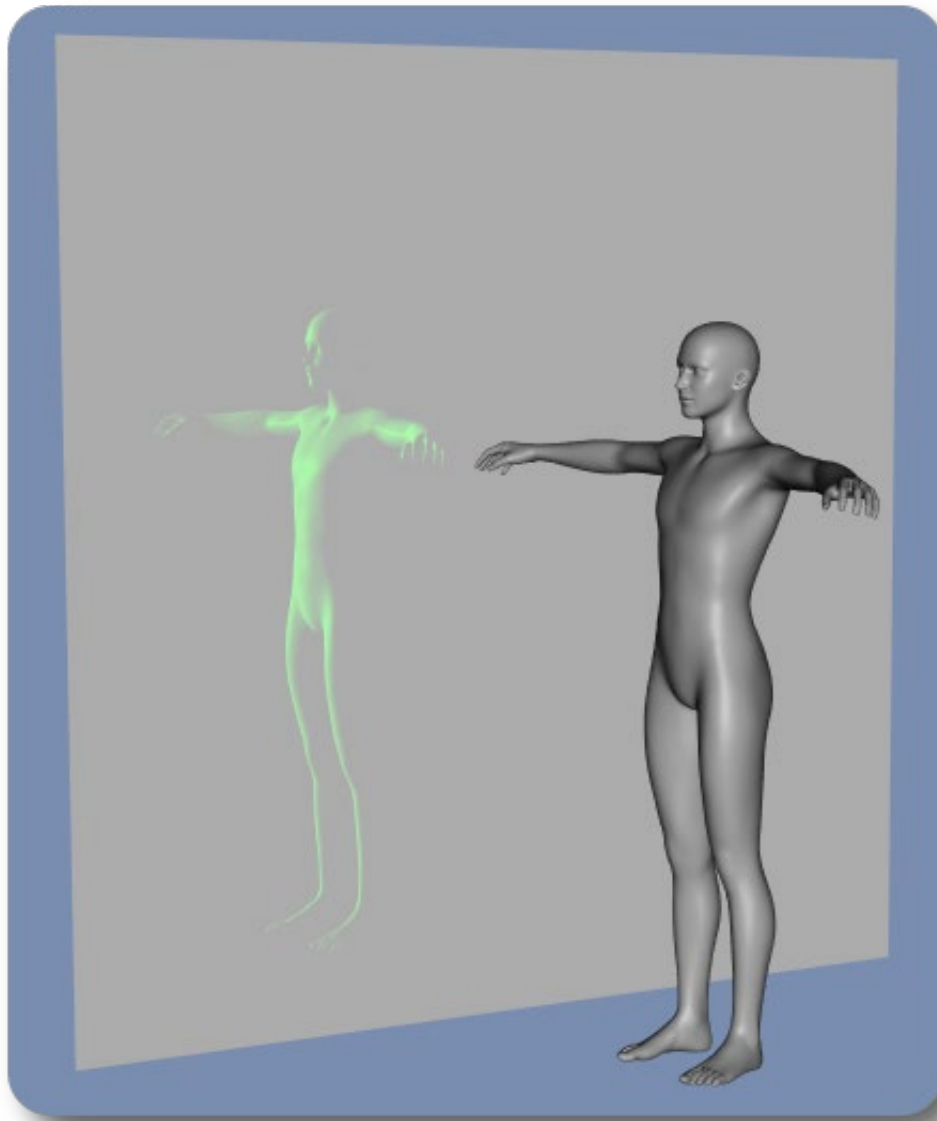
Let's load in a figure to reflect off of our primitives. Load in a figure, such as the **Genesis** figure. You can find the Genesis figure in the Content Library as shown in the image below. Just load it into the scene along with your primitive(s).



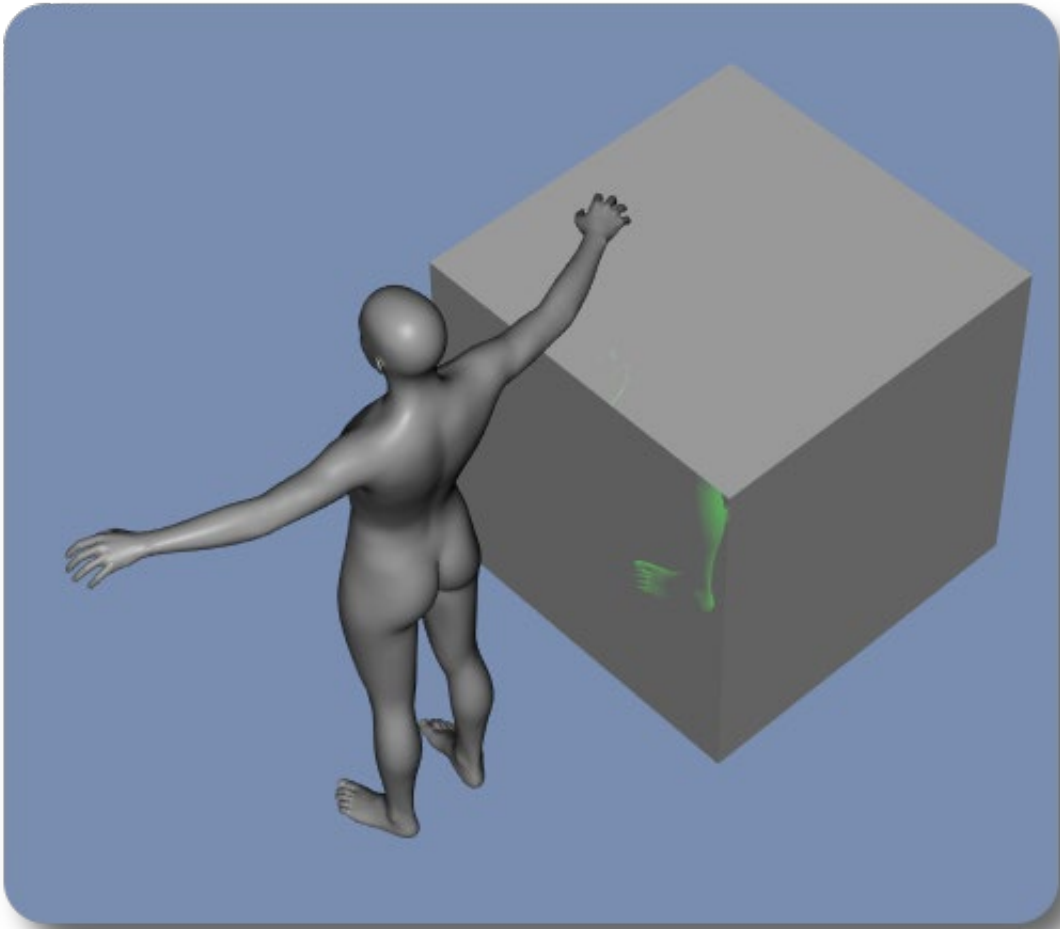
With our '**Reflection Color**' for our **Sphere** set to **Green**, our figure's reflection appears green.



With a **Plane** primitive, we can “mirror” a green figure.

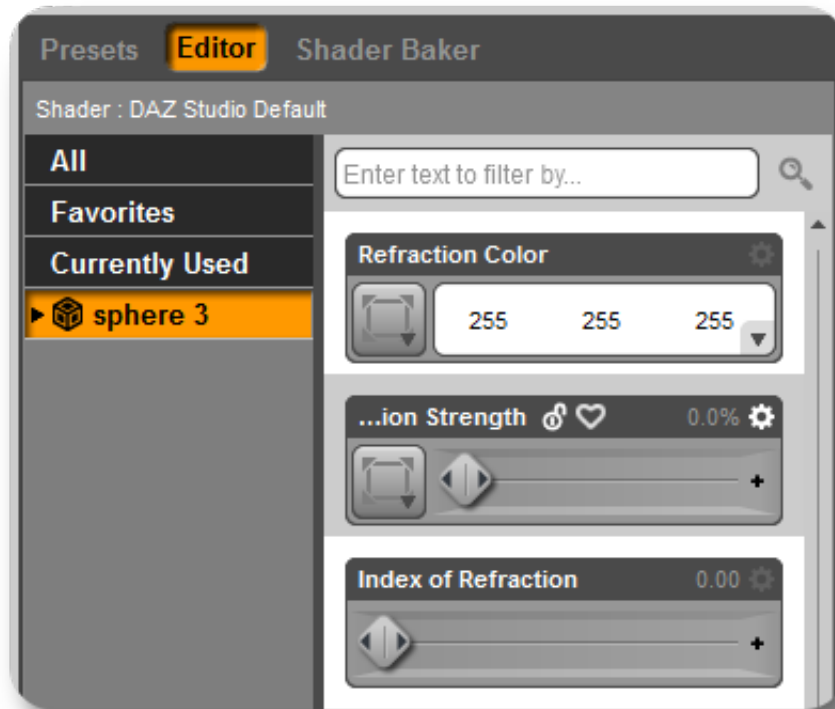


And similarly, also with a **Cube** primitive's reflection.

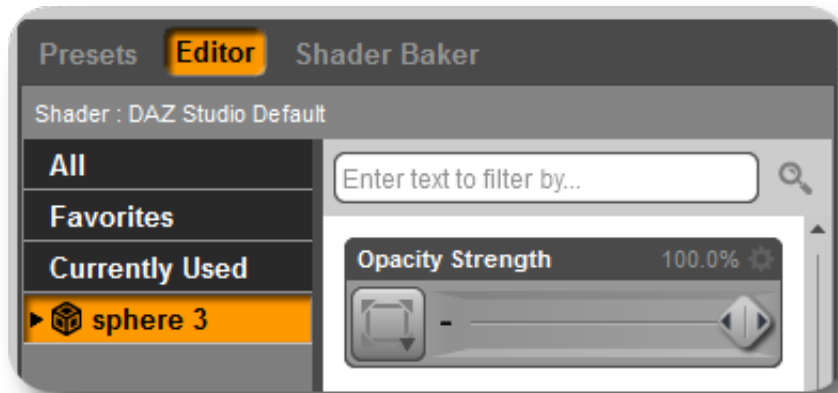


Refraction Color

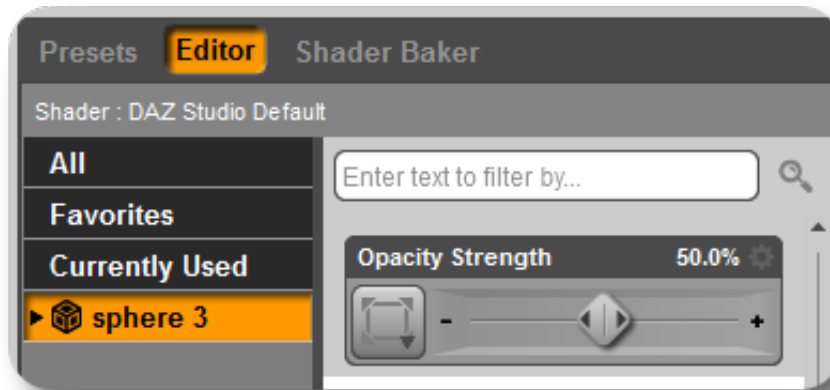
The final attribute we will talk about for this Chapter is **Refraction**. Refraction is the bending of an object's light when passing through a transparent object. This only happens if we have set a value for the '**Index of Refraction**', which signifies how much it bends, 0 being none. Let's make another brand new primitive Sphere (sphere 3) for testing Refraction.



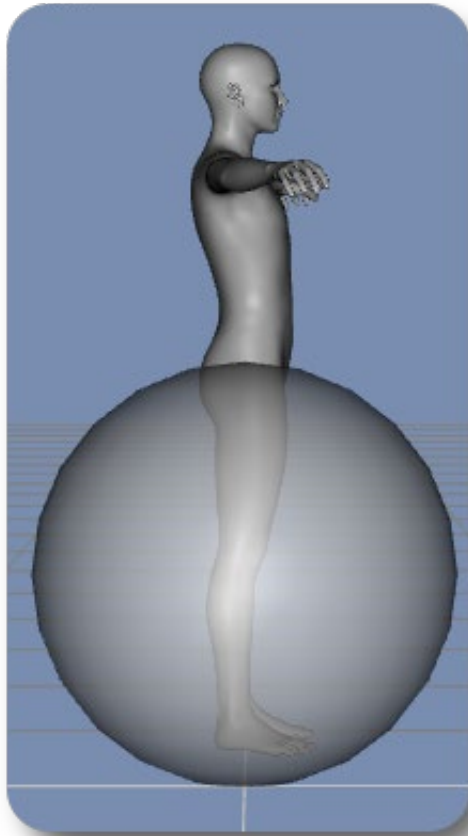
Before messing with our Refraction attributes, let's first make our primitive transparent. To do so, find the '**Opacity Strength**' attribute.



Then change the '**Opacity Strength**' to something less than **100.0%**, which means no transparency. I chose **50.0%**.



Now you'll notice the figure can be seen through our primitive.

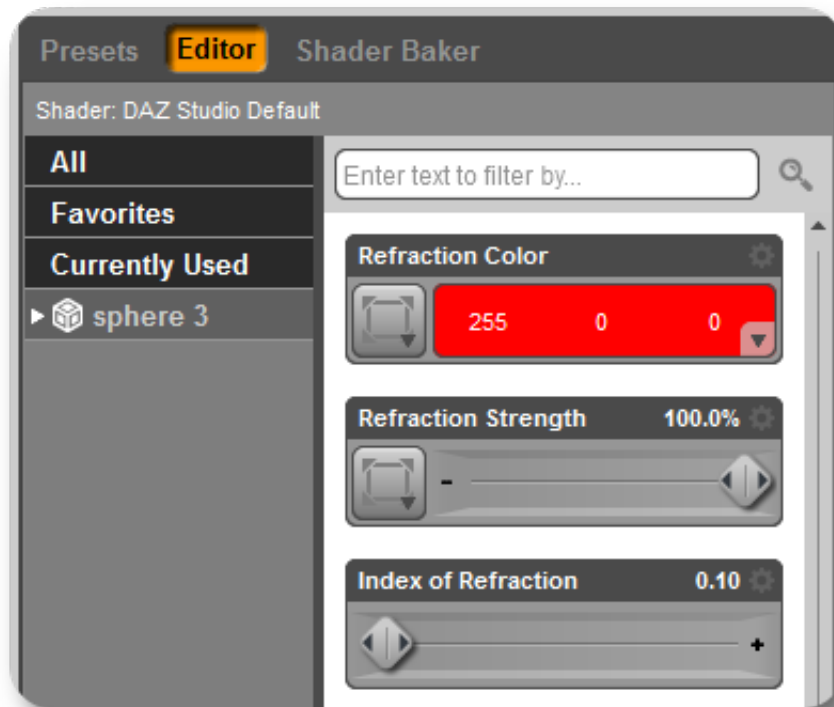


Let's now change some Refraction attributes.

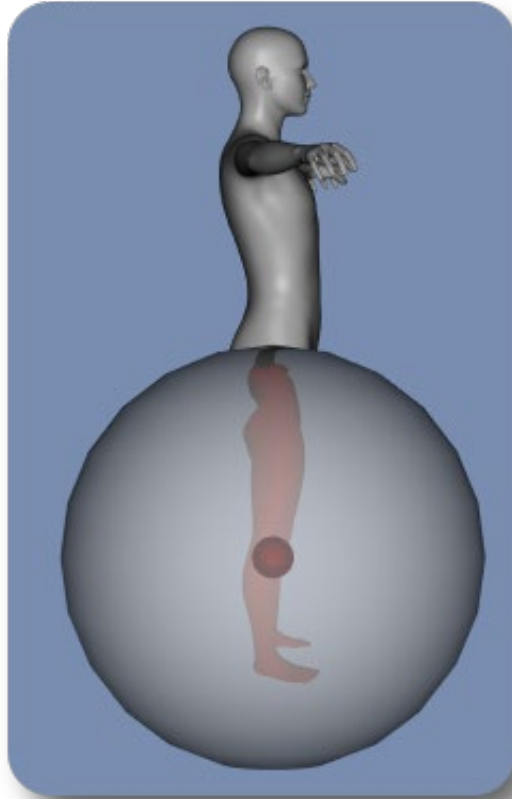
Let's change the '**Refraction Color**' to a **Basic** red color.

Let's also max out the '**Refraction Strength**' to **100%**. Note, the higher the **Refraction Strength**, the stronger the **Refraction Color**.

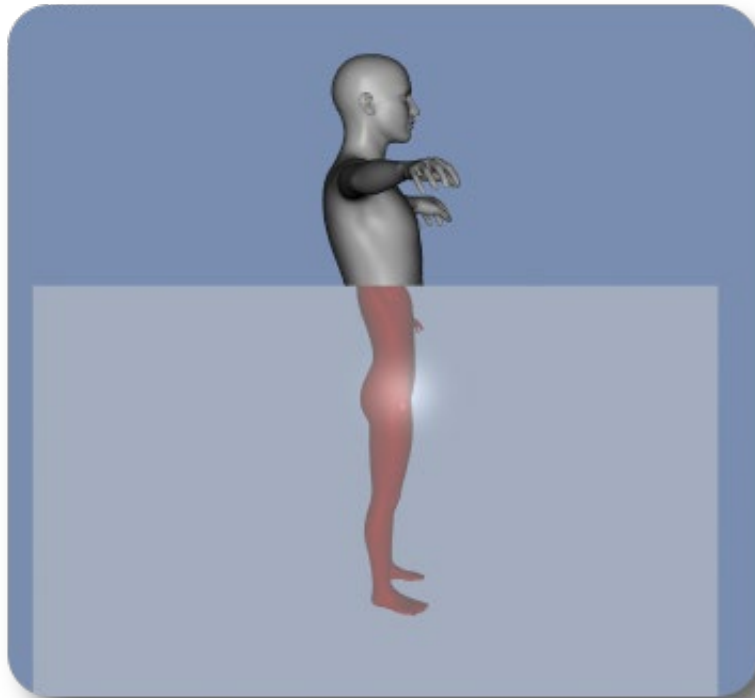
And finally let's set the '**Index of Refraction**' to just **0.10**.



With our **Sphere** primitive, you can see the light being bent inside the sphere, and a refracted image of the sphere itself at the very center.

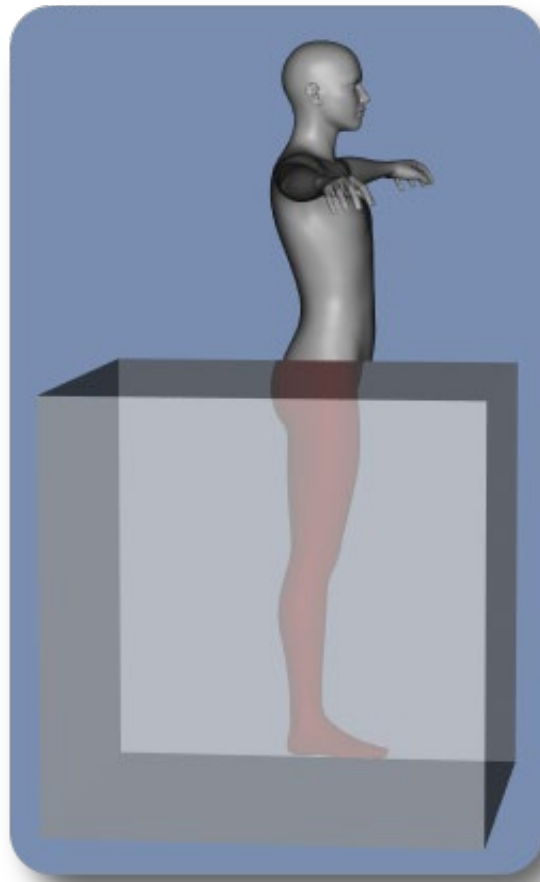


With the **Plane** primitive, the figure looks smaller once refracted through the transparent object.

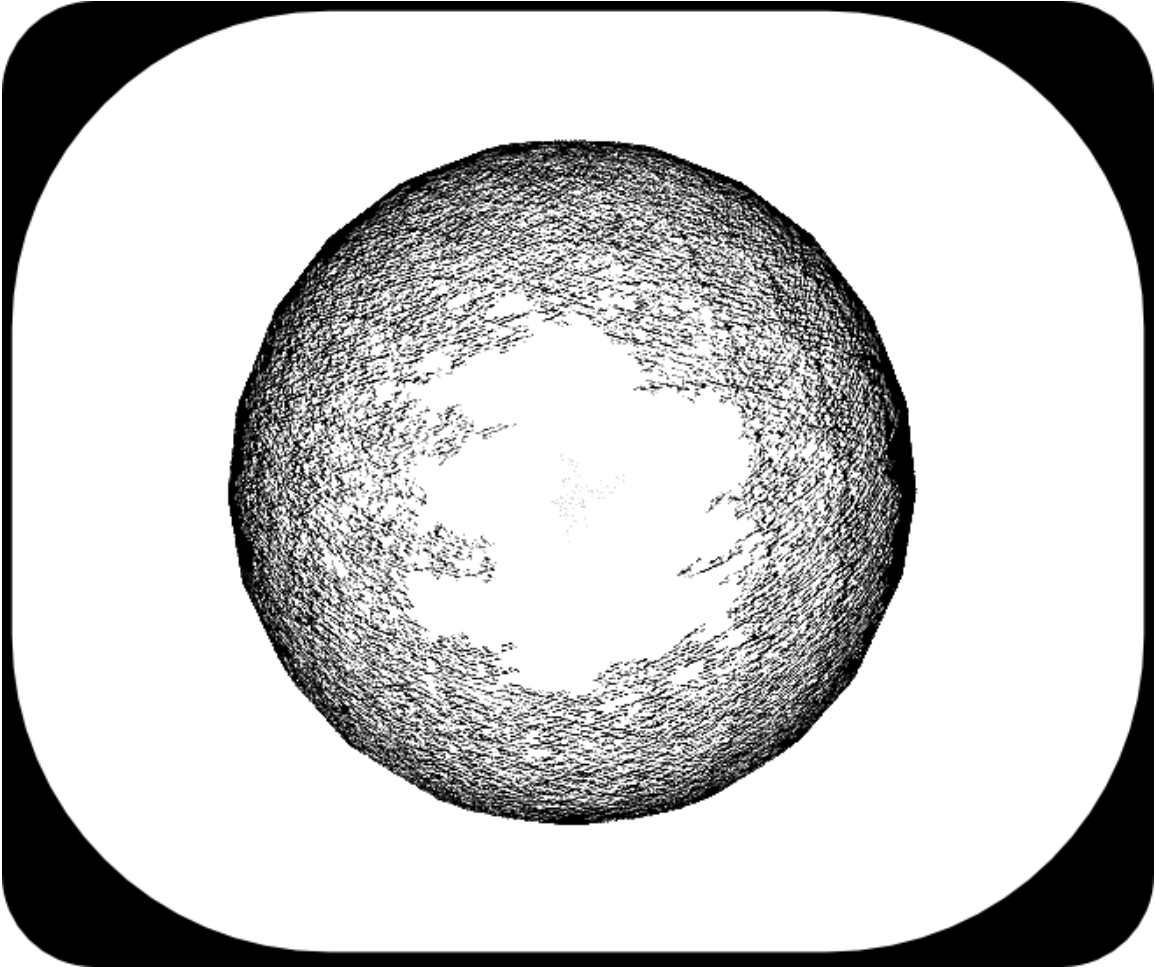


NOTE: This is the same effect as fish in the water looking smaller or larger than they really are.

And finally, how refraction looks using the **Cube** primitive.



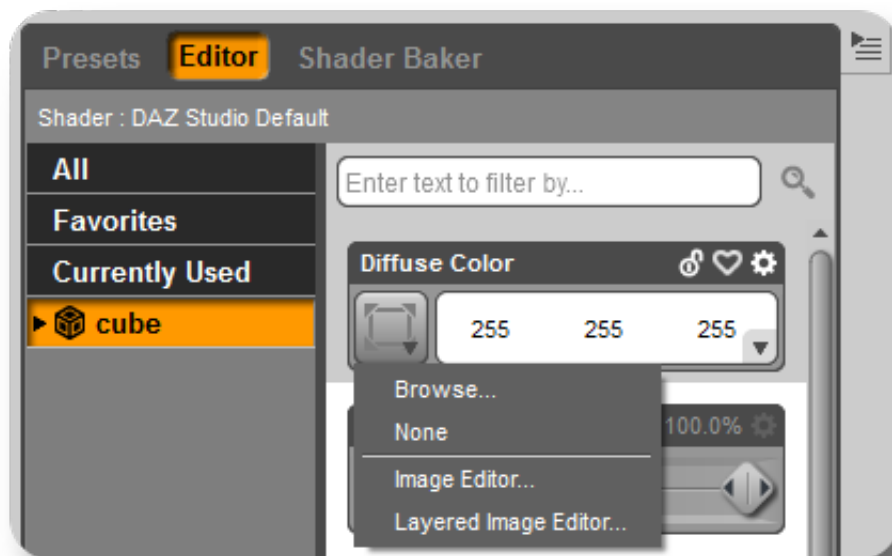
Chapter 3: Advanced Surfaces



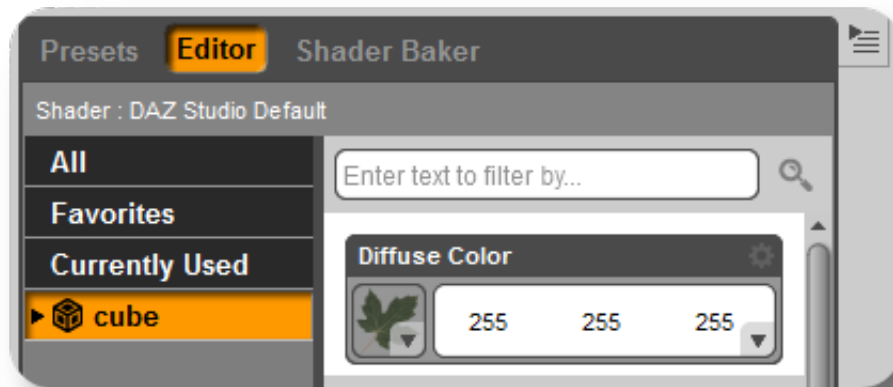
Textures

Let's talk about adding texture images to our object's surfaces.

To do this, go to the '**Diffuse Color**' attribute we used earlier and left-click on the box at the leftmost side for the dropdown menu. Select '**Browse...**' to search for an image to add onto your object's surface.



Once you pick your image, it will show up in the left box as a thumbnail.

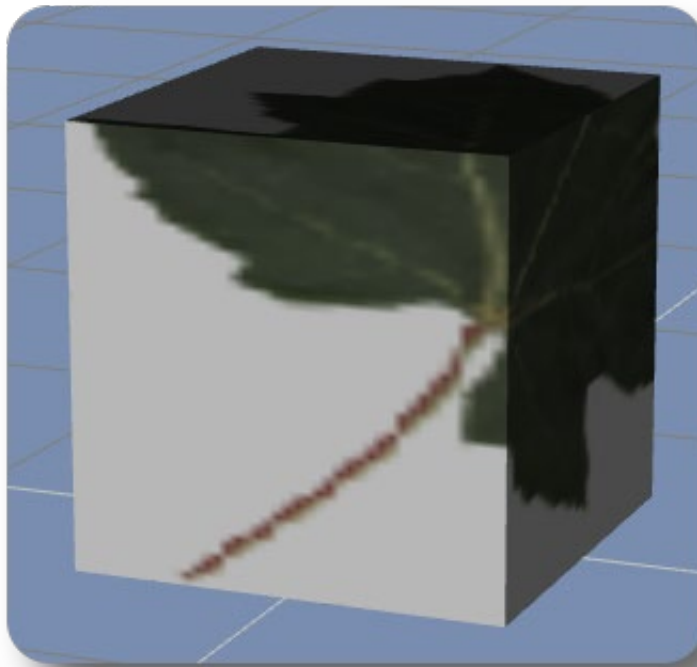


I chose the texture shown below.



NOTE: This texture image is included with this tutorial along with the accompanying opacity map image you will see in the next section (*SummerLeaf-10rr.png* and *SummerLeaf-10trans.png*).

You can see how the texture appears on a primitive **Cube**.



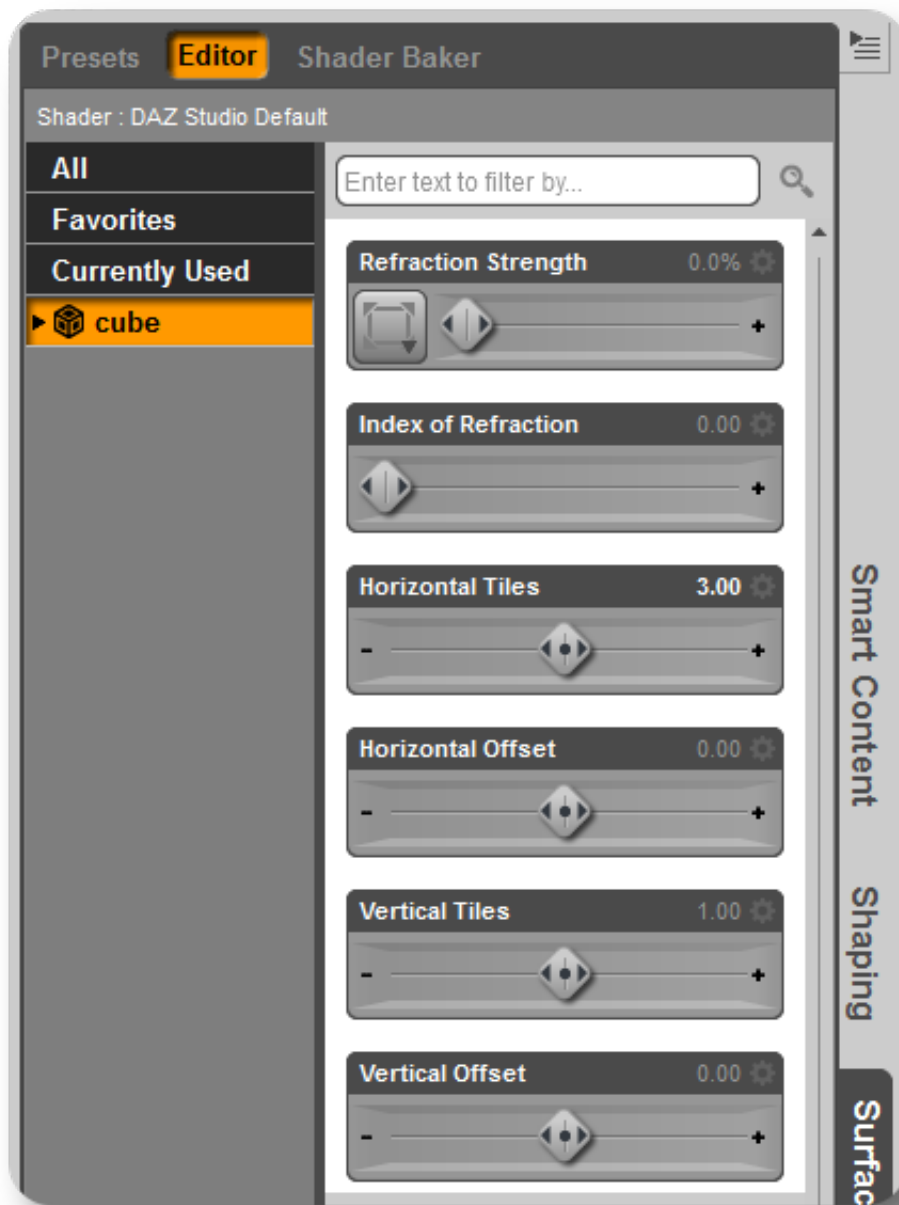
You can also see how it appears on a **Plane**.



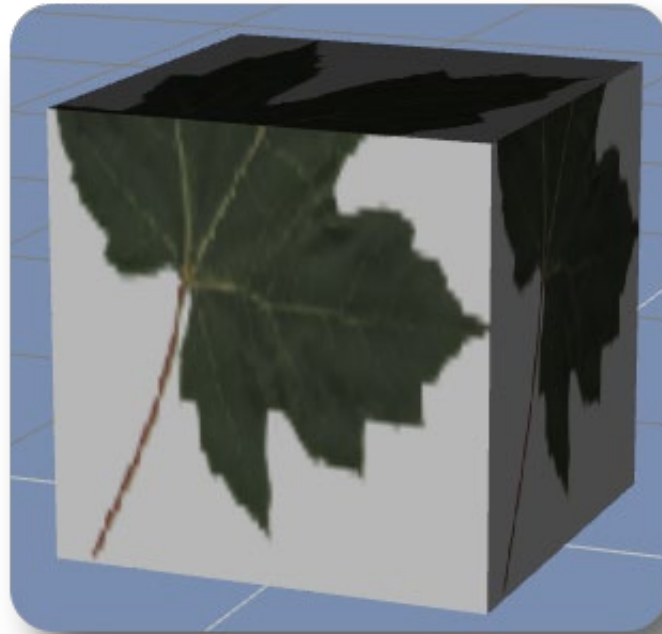
By default, your texture may not appear how you want it to. This is where the **Tiles** and **Offset** attributes come in handy. Look down the options below Refraction, to find the **Horizontal/Vertical Tiles** and **Offset** attributes.



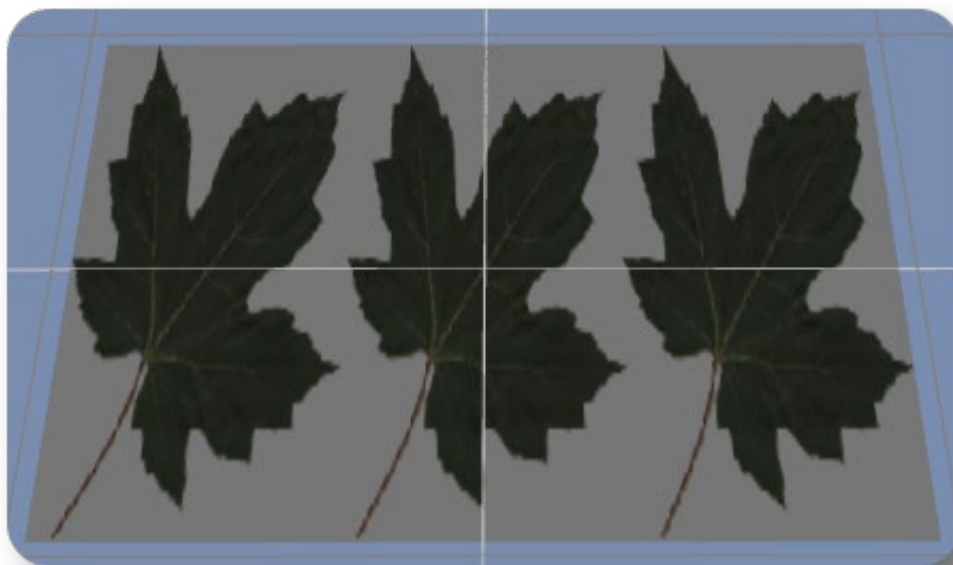
Let's begin with changing the '**Horizontal Tiles**' to **3.00**.



You'll notice that on a primitive **Cube**, the image squished itself Horizontally and now fits completely onto one side left to right.



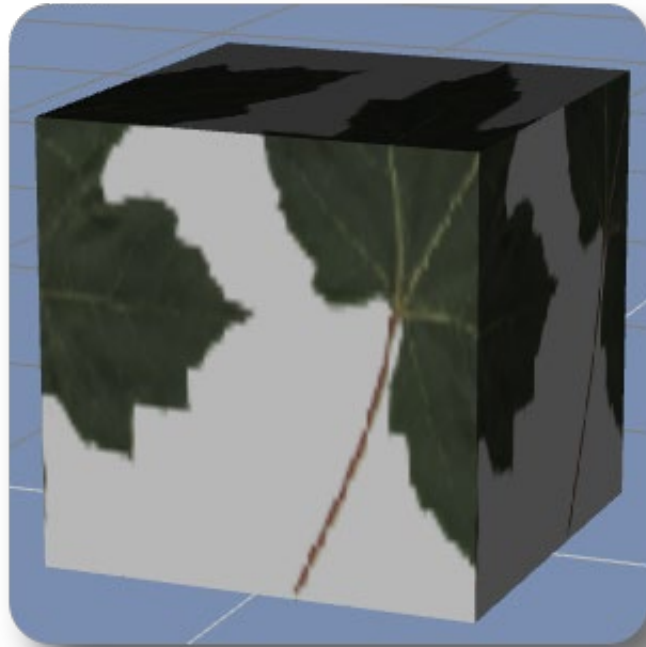
On a **Plane**, the image now has 3 copies of itself Horizontally.



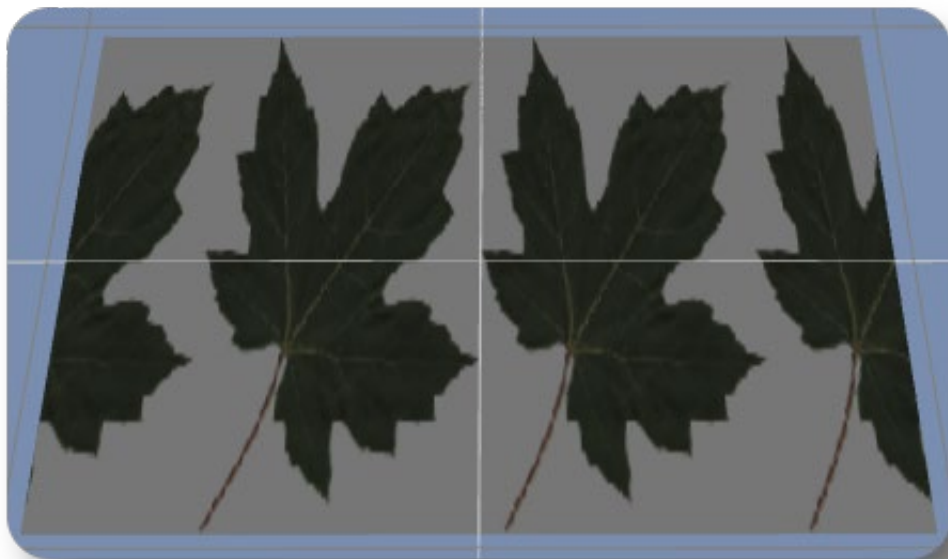
Next we'll change the '**Horizontal Offset**' to **0.50**.



Changing the Horizontal Offset to 0.50 moves the image half of its width horizontally. You can see how that looks on the **Cube** below.



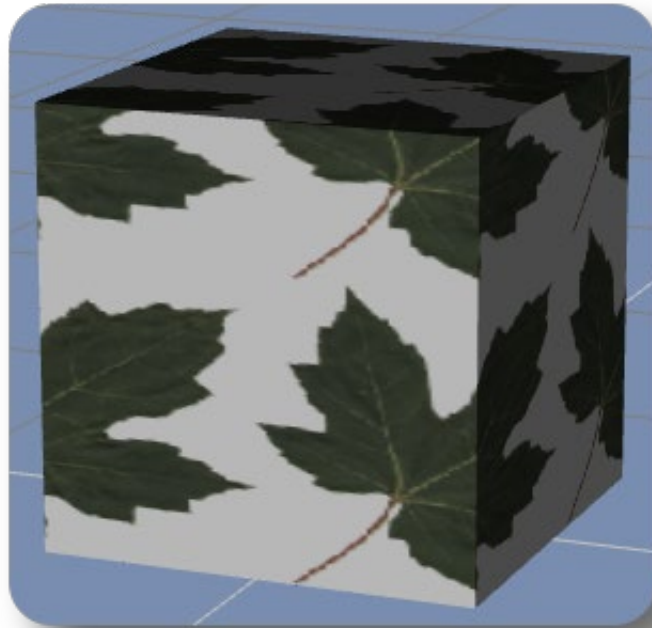
Here is the effect on a primitive **Plane**.



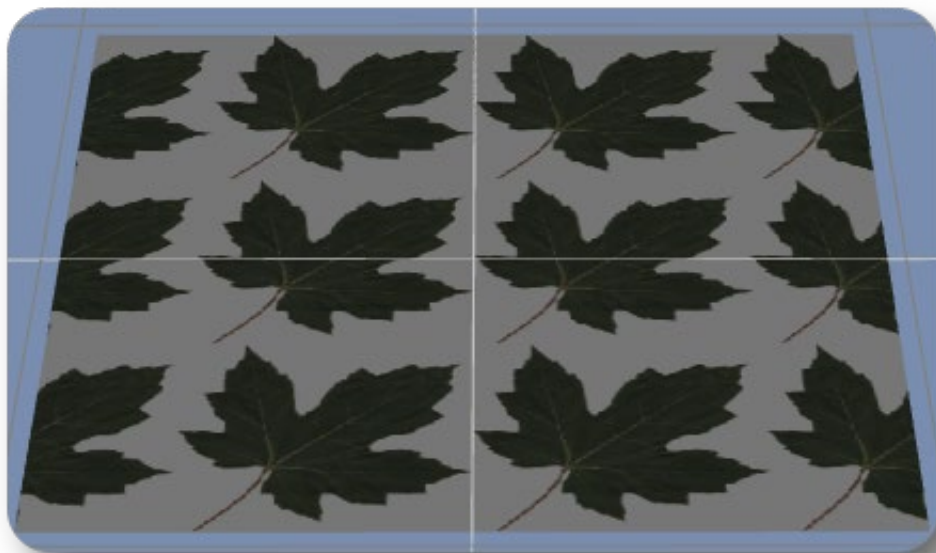
Now we'll change the '**Vertical Tiles**' to **3.00**.



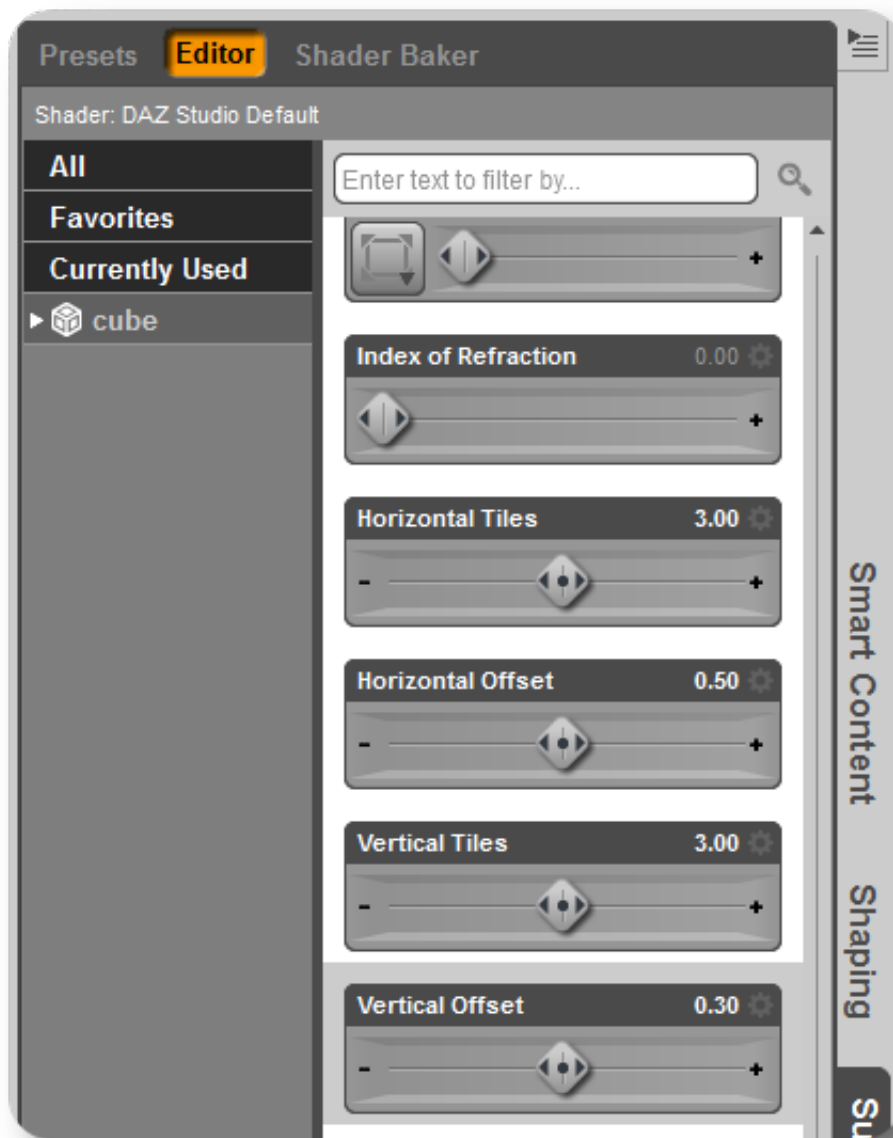
This squishes more images of the texture vertically into the same amount of area, but is hard to see exactly how it changed on the **Cube**.



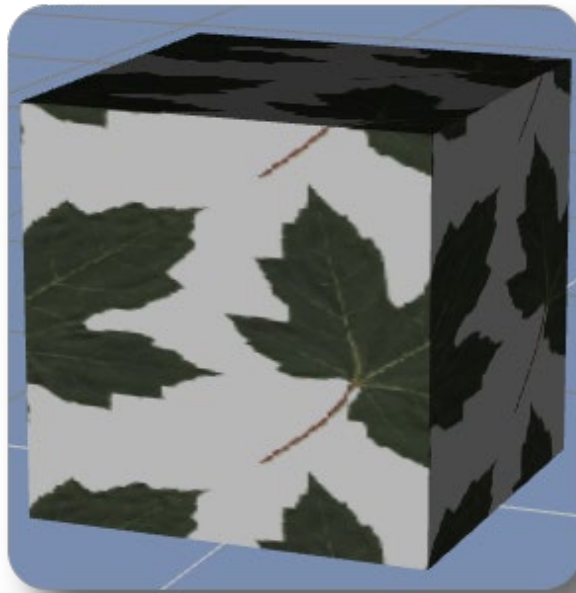
If we however take a look at the **Plane**, we can see that it squished 3 copies of the texture vertically into the same space.



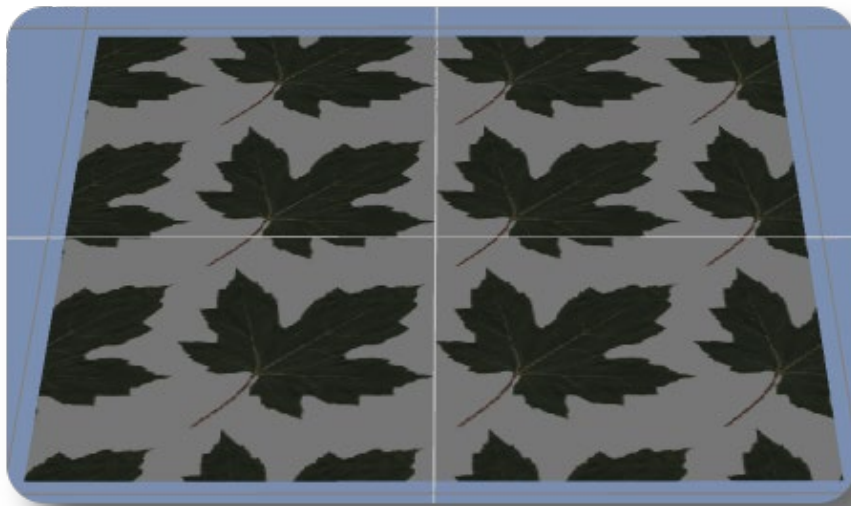
Lastly, we'll change the '**Vertical Offset**' to **0.30**.



After changing the Vertical Offset, we can see that the texture has moved itself vertically about 30% on a **Cube**.



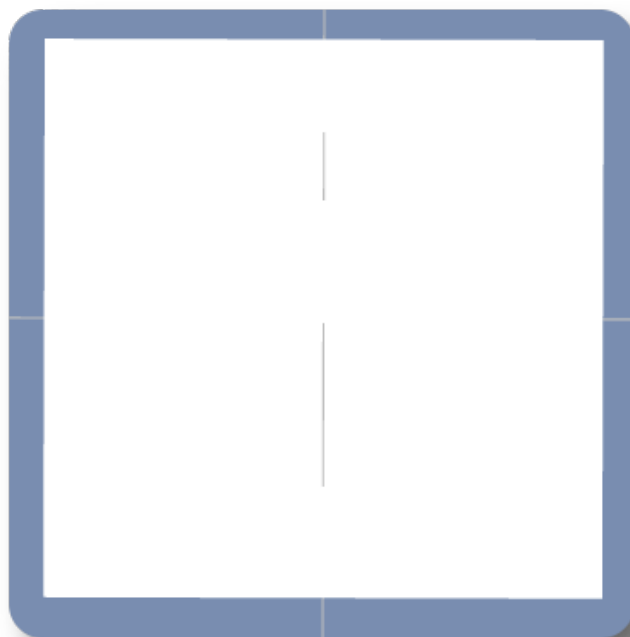
We can see this even clearer on the Plane.



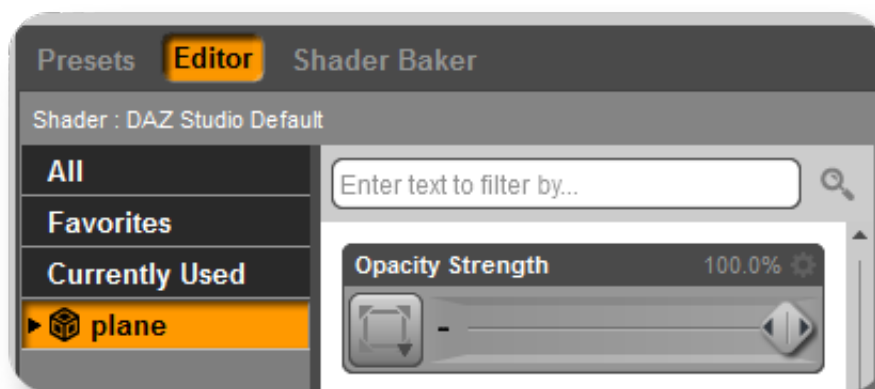
It's a good idea to mess around with all the different Tiles and Offset values to better learn how they work, and to better accurately move your textures how you need them to appear.

Opacity Mapping

You can also use **Opacity Maps** on your objects. Start a new scene and create a new **Plane** primitive.



Find the '**Opacity Strength**' attribute.



Now you can '**Browse...**' for an Opacity Map using the left-box.



Shown below is the **Opacity** mapping image I am using.



NOTE: Opacity map images are designed with black being totally transparent (invisible) regions and white being totally opaque (solid) regions.

The **Opacity Map** will be applied to your plane and become transparent in the black sections of the image. You can now see the floor around the leaf where the plane is now transparent.



You can even lower the Opacity of the entire plane by changing the Opacity Strength from **100.0%** to **50.0%**.



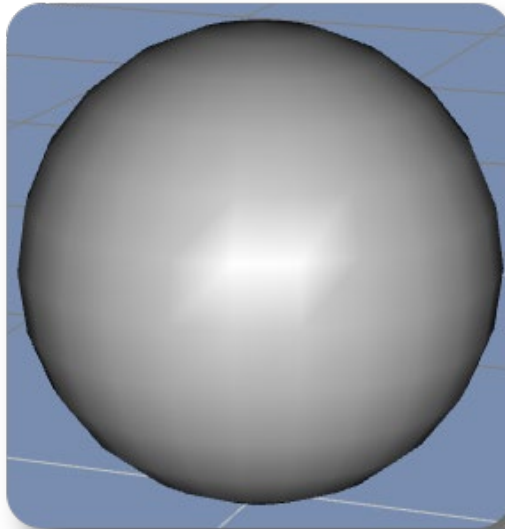
And now the plane is at 50% transparency and you can partially see the floor through the leaf.



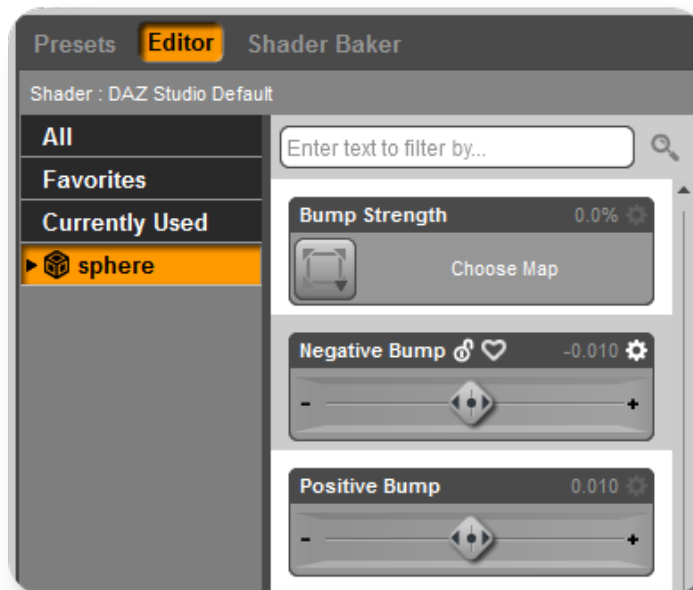
Bump Mapping

Now we are going to be working on Bump maps. Bump maps add a bumpy texture onto your objects when rendered.

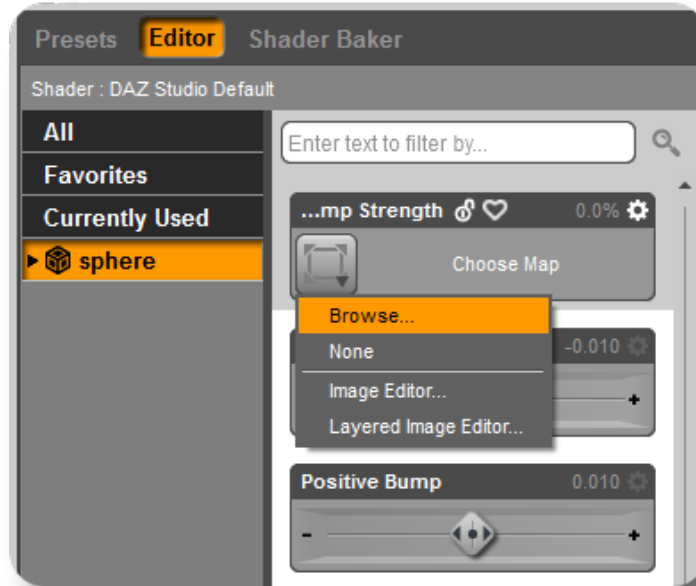
Go ahead and start a new Scene then add a new primitive **Sphere**.



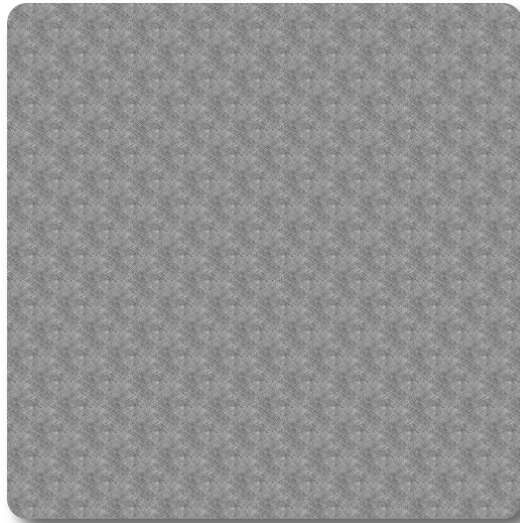
About halfway down the '**Surfaces (Color)**' tab on our sphere, you'll see some **Bump** attributes.



Similar to the way we added a texture to our object, click on the box on the left side of '**Bump Strength**' then select '**Browse...**' to find and open up a **Bump Map** image you want to use.

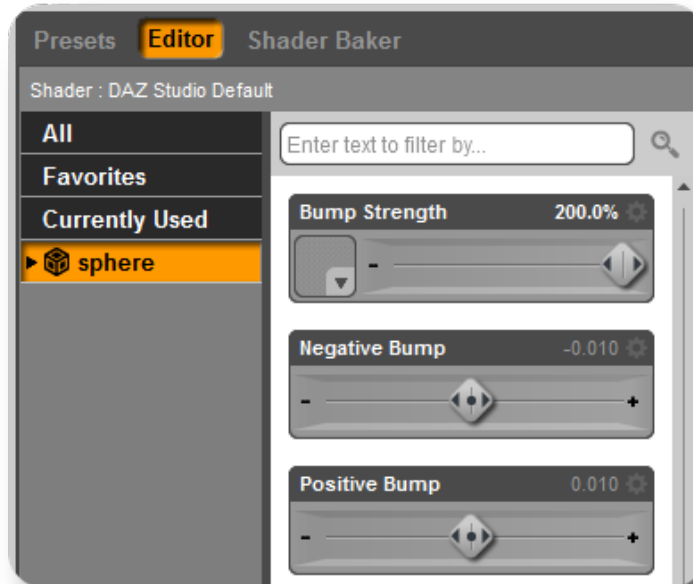


The below image is the **Bump Map** I used for this example.

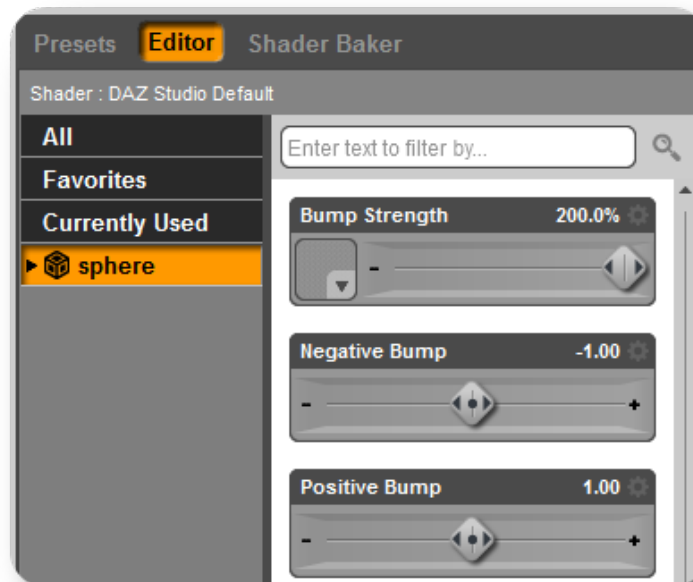


NOTE: The above image is included with this tutorial for use in this Bump Mapping section along with the following Displacement Mapping section (*Example_BumpDisp.jpg*).

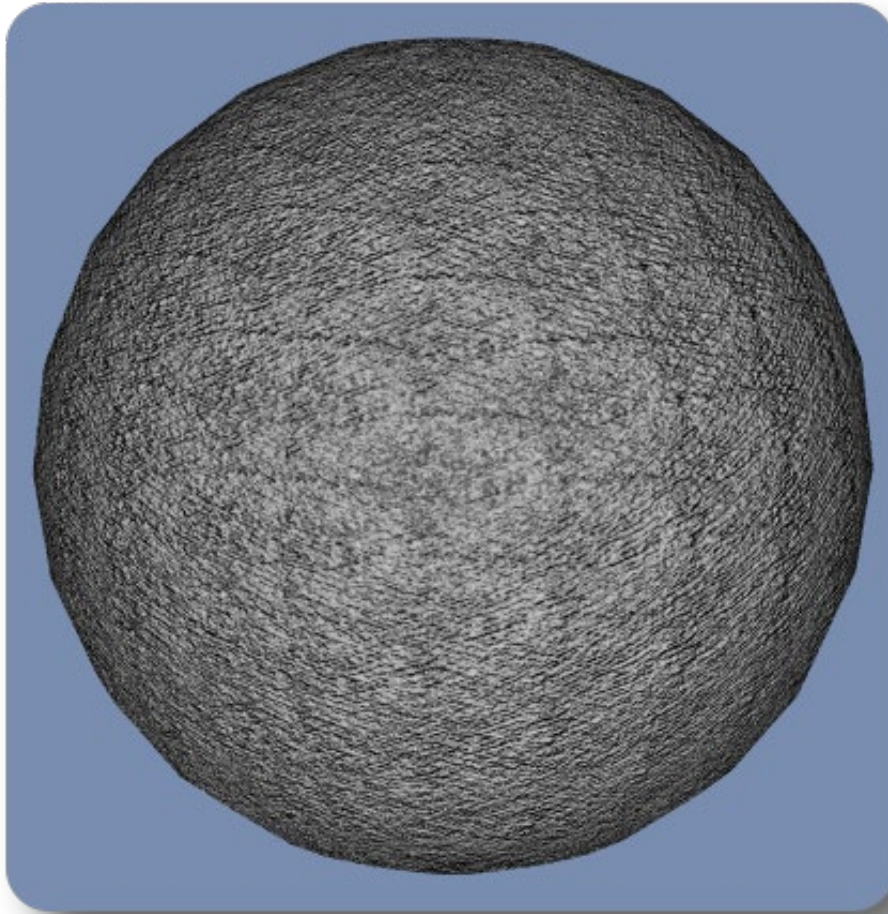
Once loaded, go ahead and max out the '**Bump Strength**' at **200.0%**.



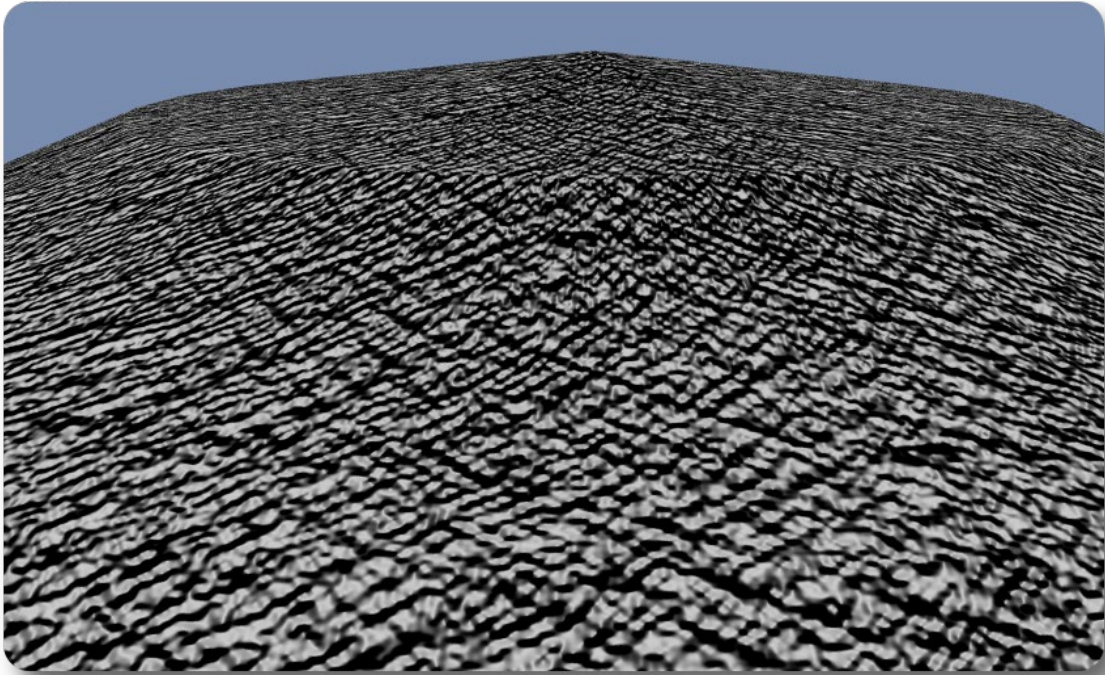
Initially the '**Negative Bump**' and the '**Positive Bump**' values will be so low that when you render the image you can't notice the **Bump Map**. We need to change those values to something higher so we can see the effect on our object. Go ahead and change the '**Negative Bump**' to **-1.00** and the '**Positive Bump**' to **1.00**.



When the Sphere is rendered, you can see the **Bump Map**'s effect on the sphere's surface.

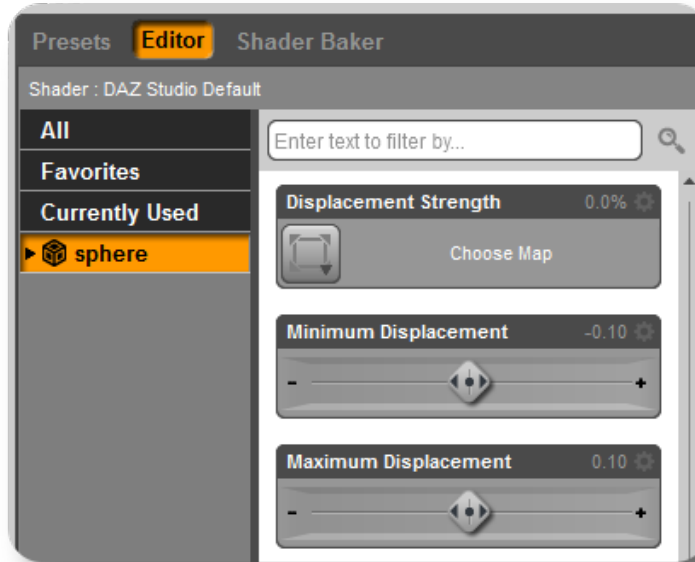


Below is a close up view of the rendered Sphere with applied **Bump Map**.

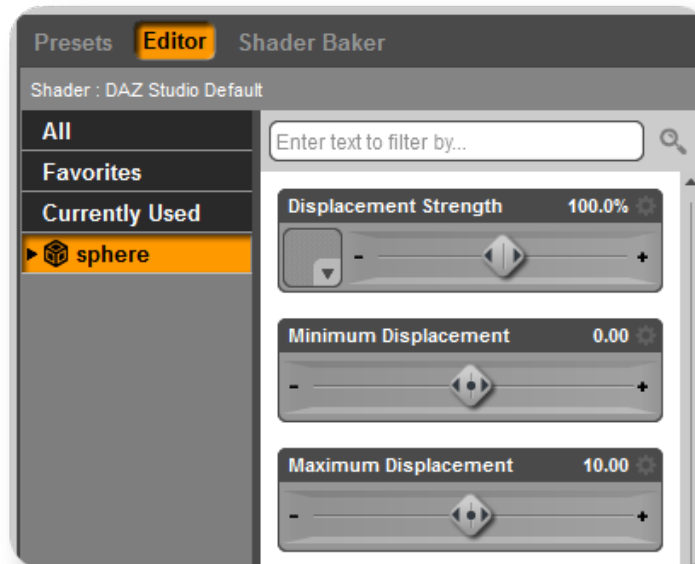


Displacement Mapping

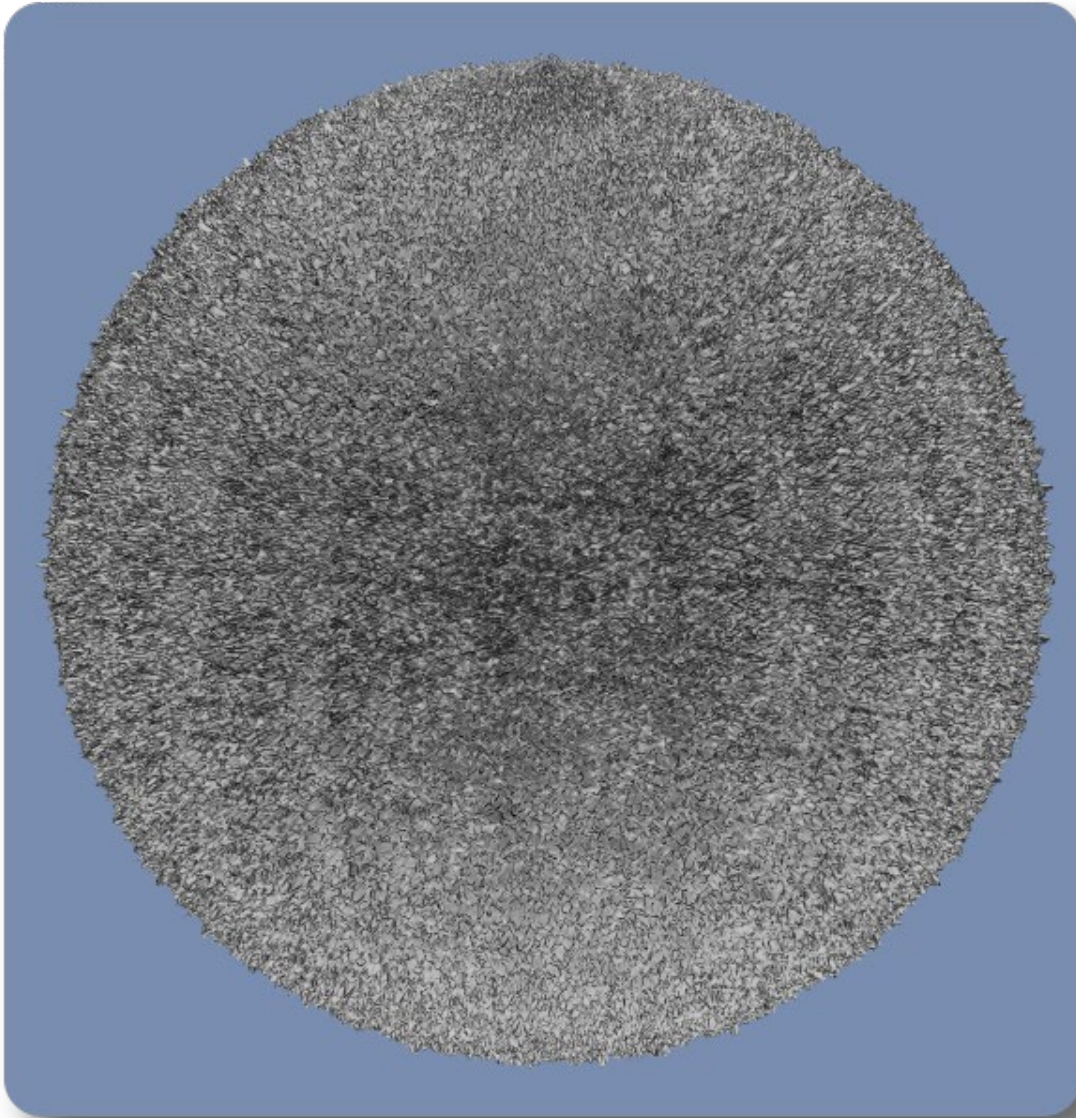
We'll now talk about **Displacement Maps**. Create a new Scene and make a new sphere and look for the attribute **Displacement Strength**. Click on the box to the left select '**Browse...**' for a **Displacement Map** to use.



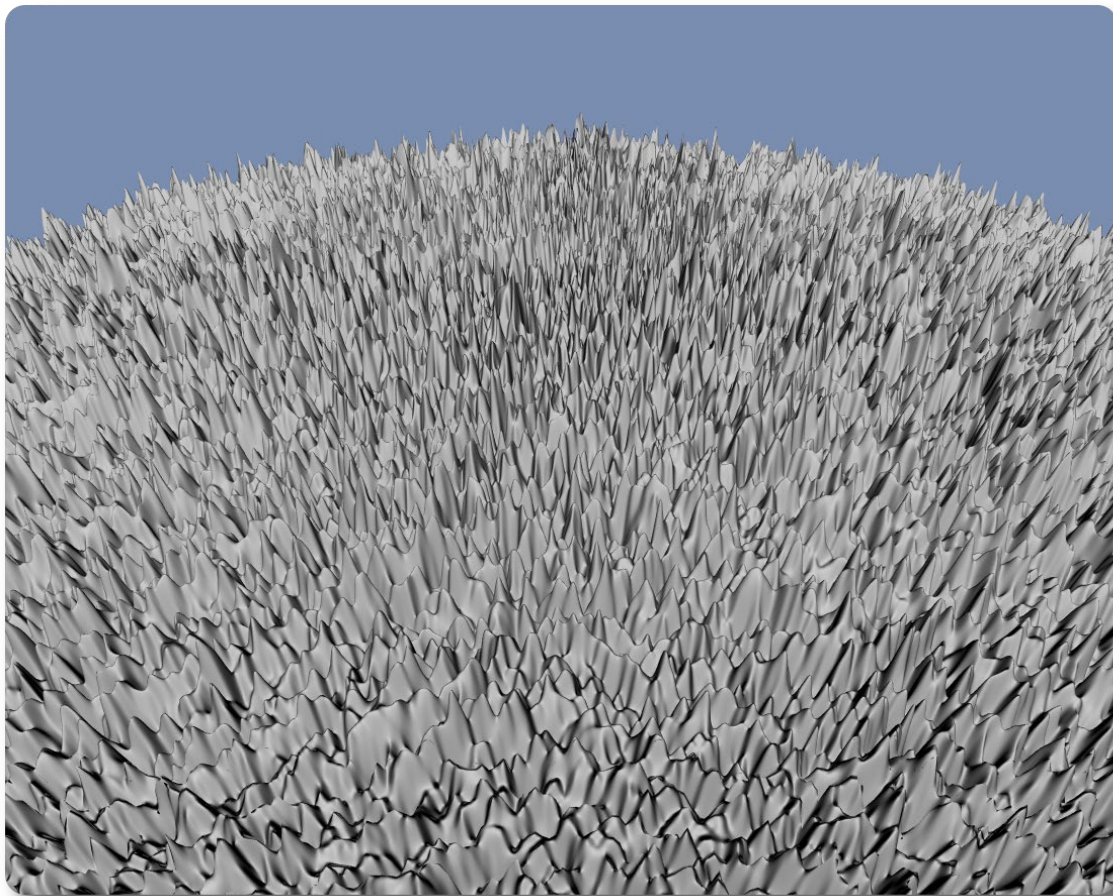
I used the same image for the **Displacement Map** that I used for the Bump Map. Once loaded, change '**Displacement Strength**' to **100.0%**, '**Minimum Displacement**' to **0.00** and '**Maximum Displacement**' to **10.00**.



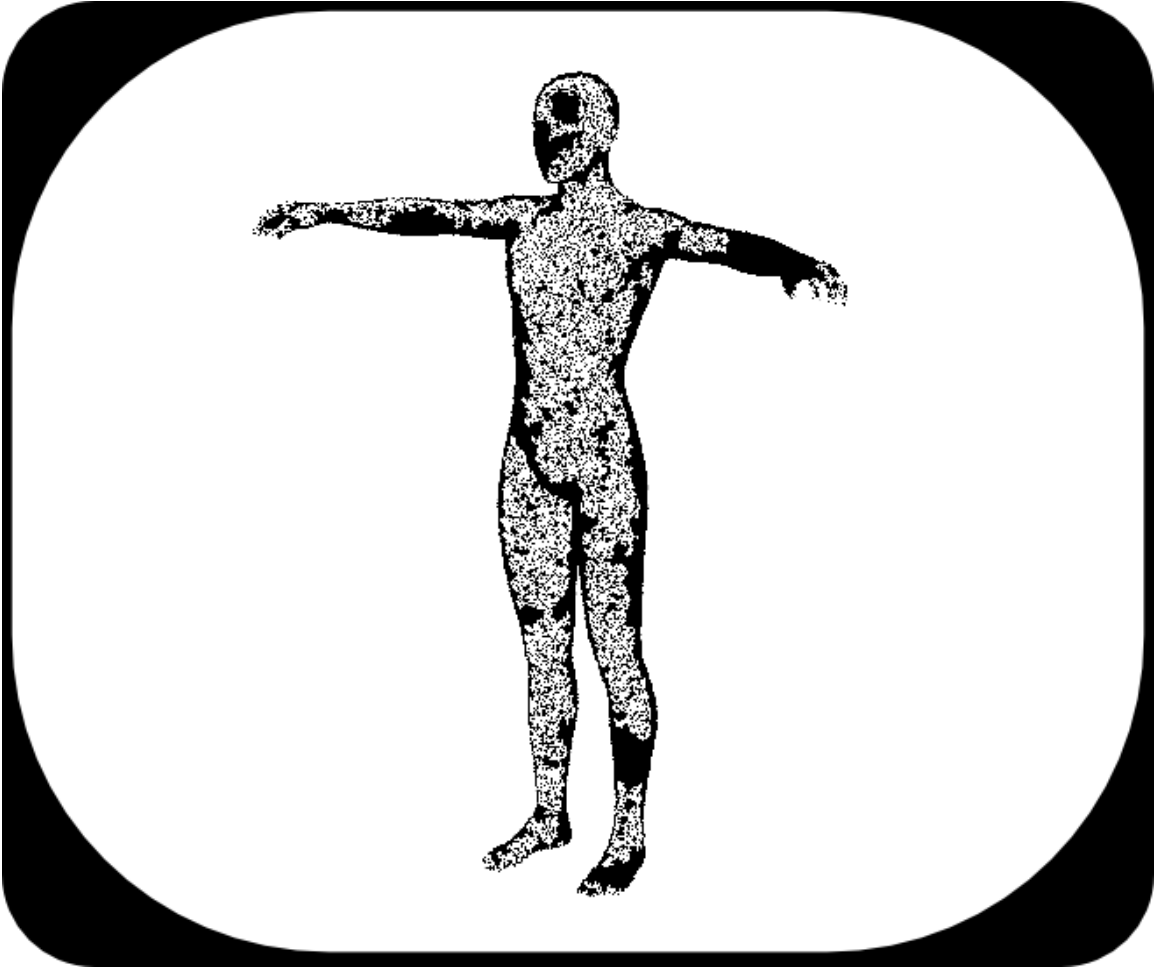
We can render our Sphere to see the results of the **Displacement Map**.



Here is a closer look at the rendered Sphere.

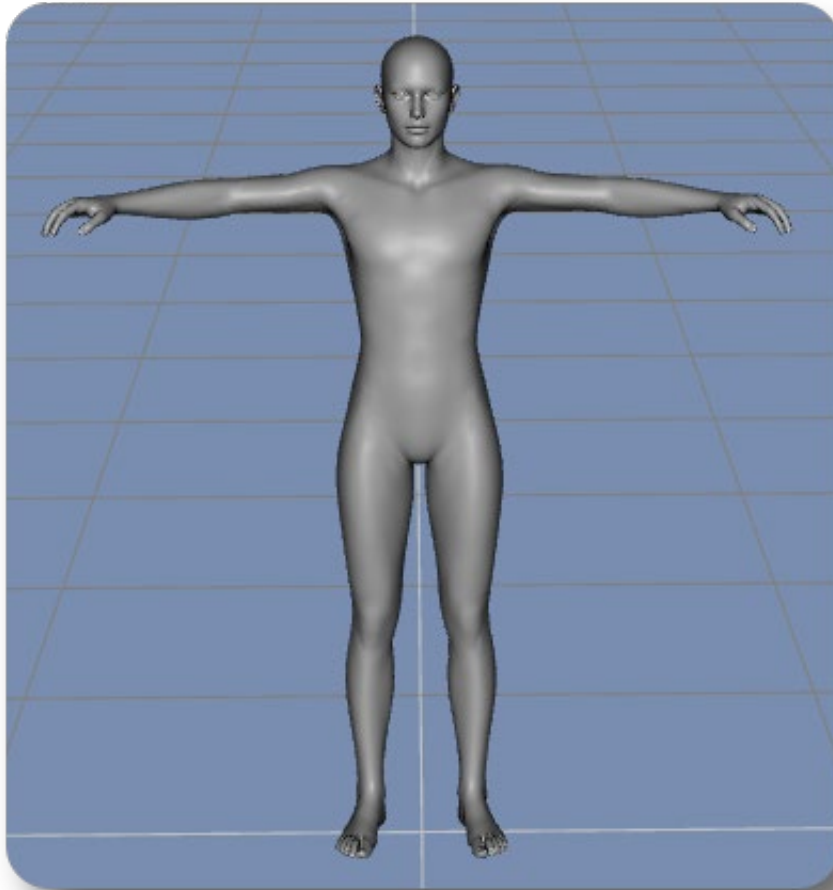


Chapter 4: Applied Techniques



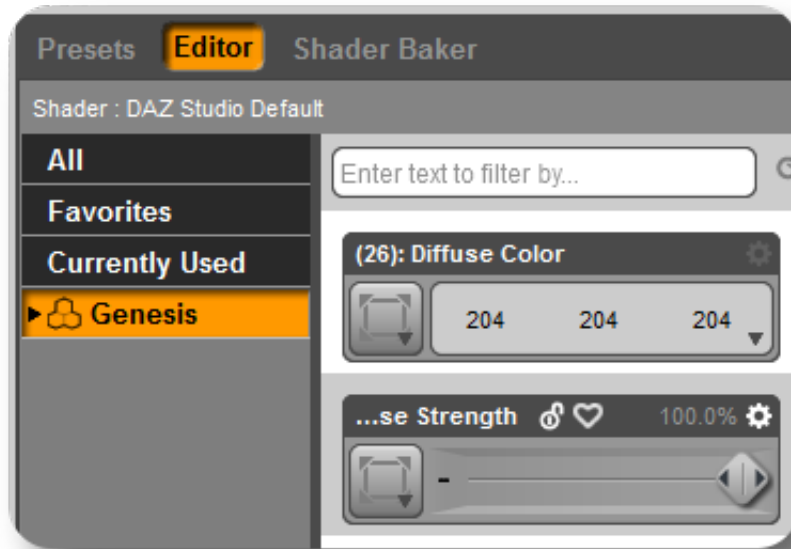
Utilizing Surfaces

Make a new scene and load a **Person** into your scene. Once again I chose to load in the **Genesis** figure.

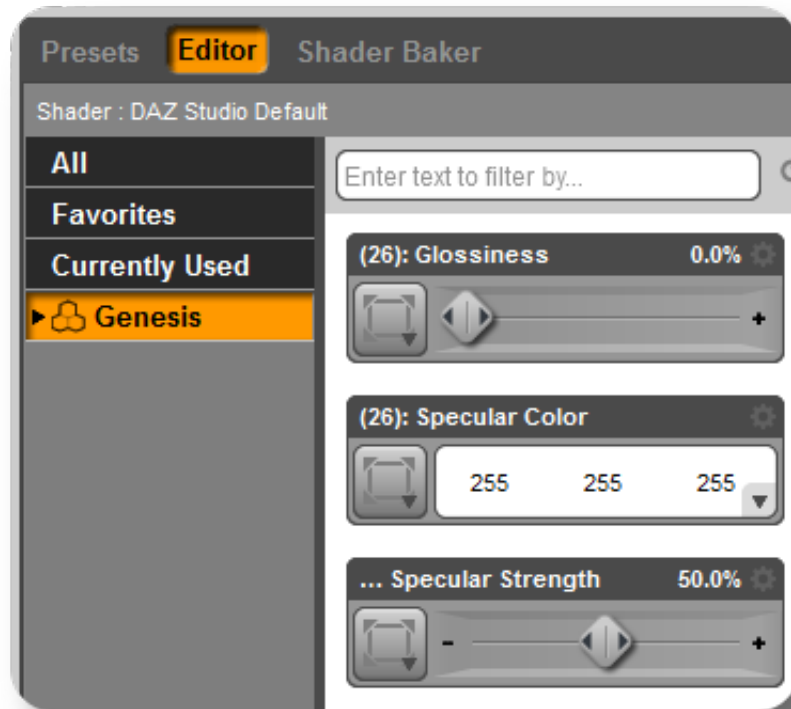


It's time to use some of the stuff we have covered and apply it to making some interesting figures. Let's start off with making ourselves a figure that looks like the **Silver Surfer**.

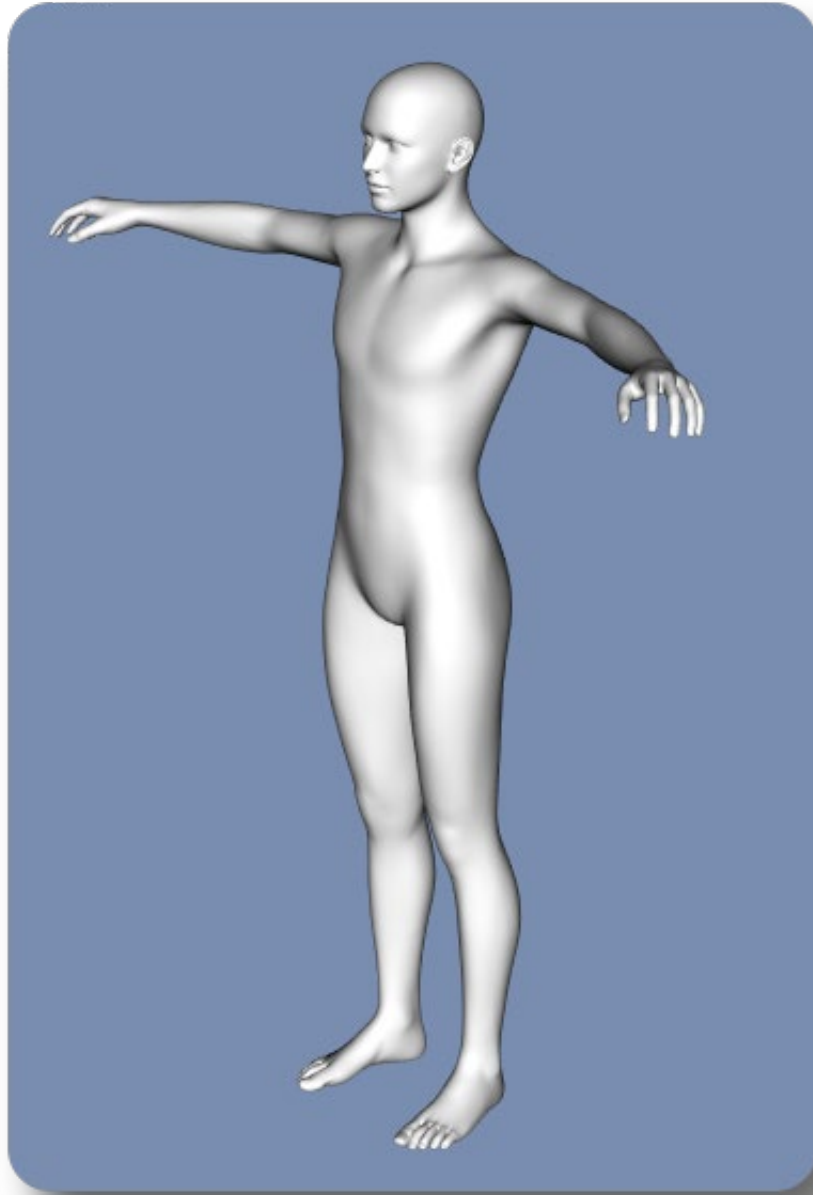
First we need to get the base color for him; the default gray color seems to be a good choice.



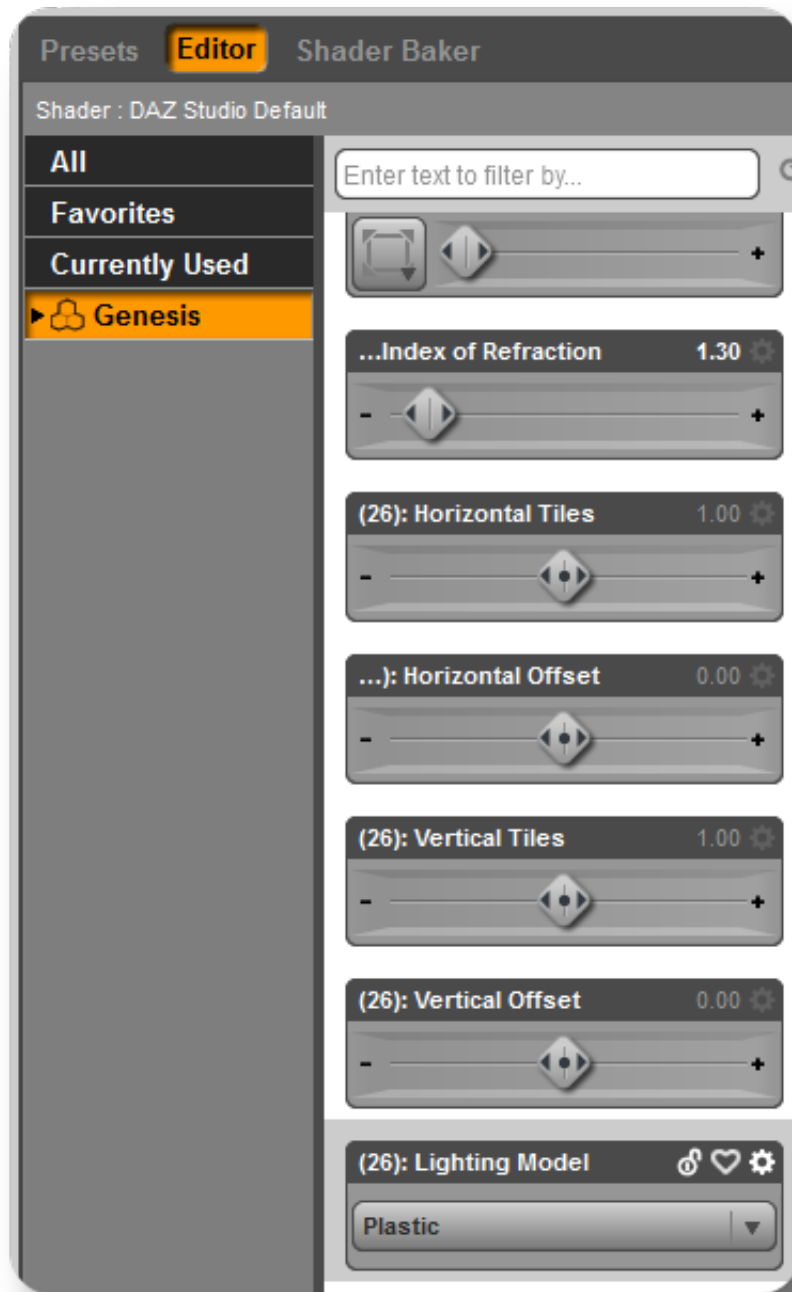
Let's set the Glossiness to **0.0%**. This will make him shiny. Make sure the Specular Color is white and change the Specular Strength to **50.0%**.



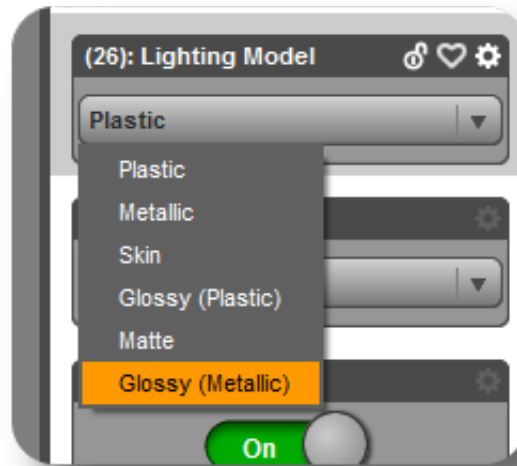
If we **Render** it now, we will get a gray figure that doesn't look much like what we want, but we are getting closer. There is one more thing we need to add.



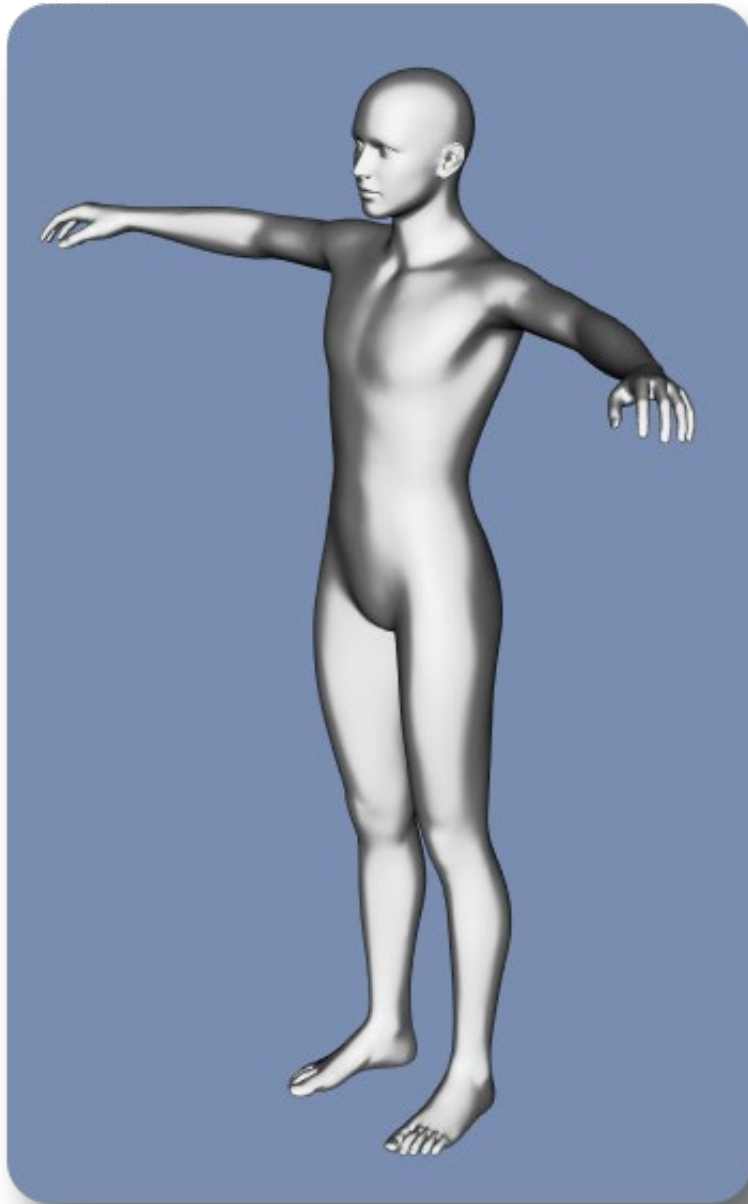
Find the '**Lighting Model**' attribute near the bottom.



We need to change this from it's current Model '**Plastic**' to something more metallic looking and shinier. Change it to '**Glossy (Metallic)**'.

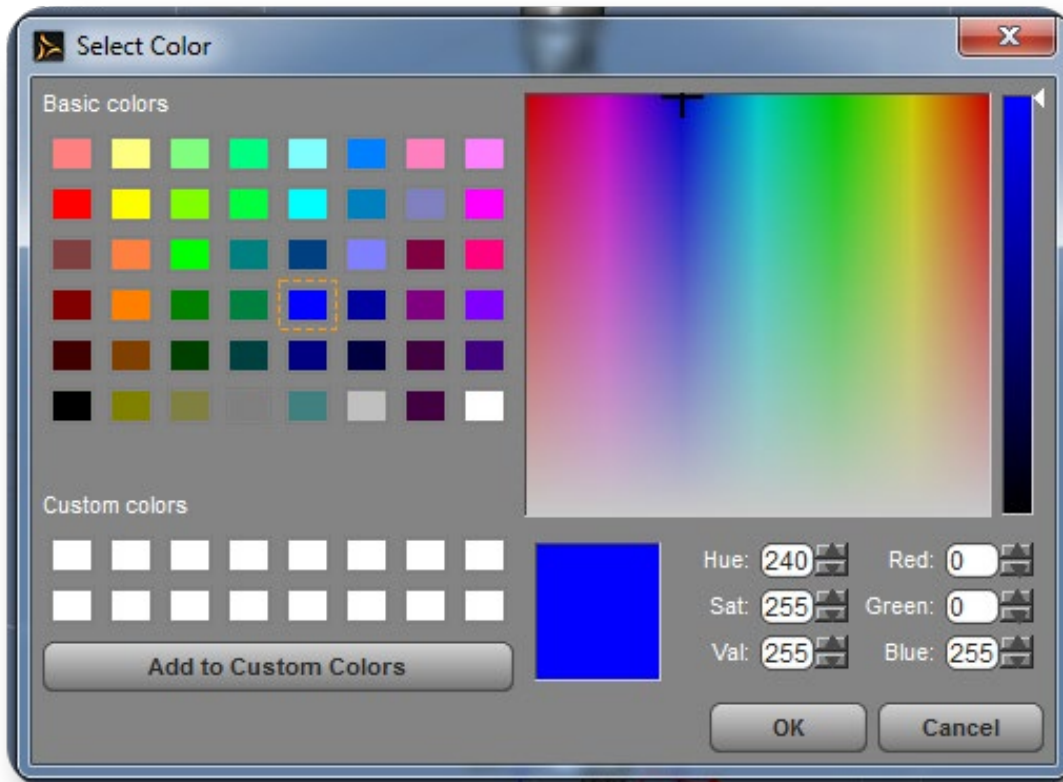


Now if we render our figure, we get a representation much closer to that of the **Silver Surfer**.

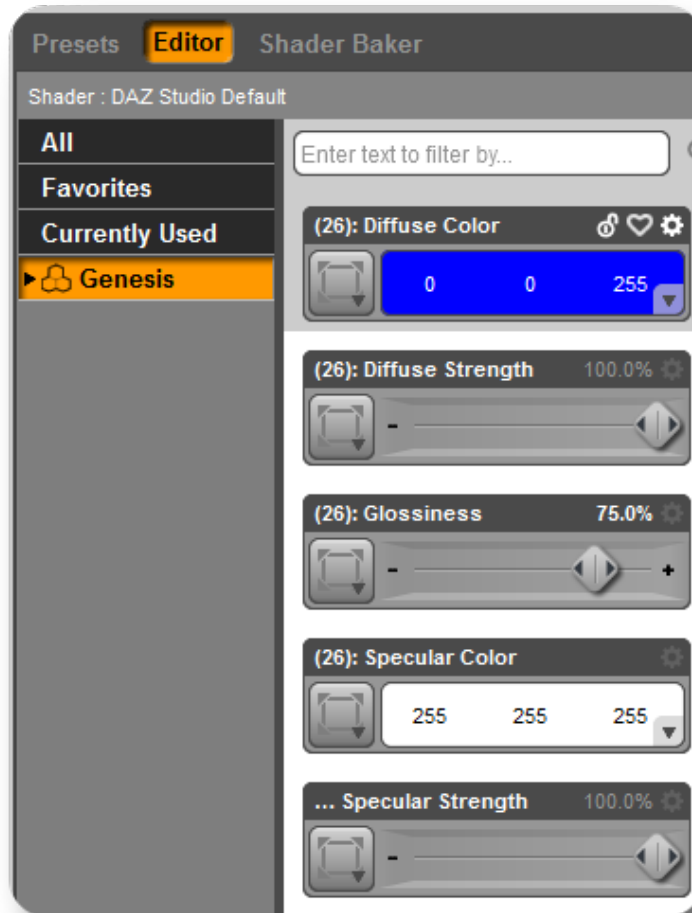


Now let's move on to our next figure, the making of a **Blue Man**.

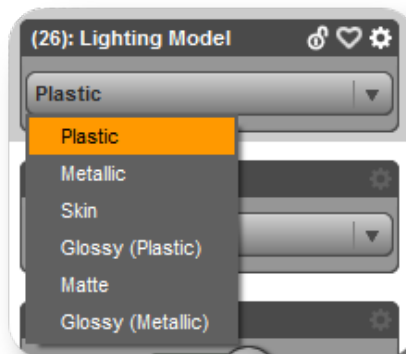
Let's pick a **Basic Blue** color.



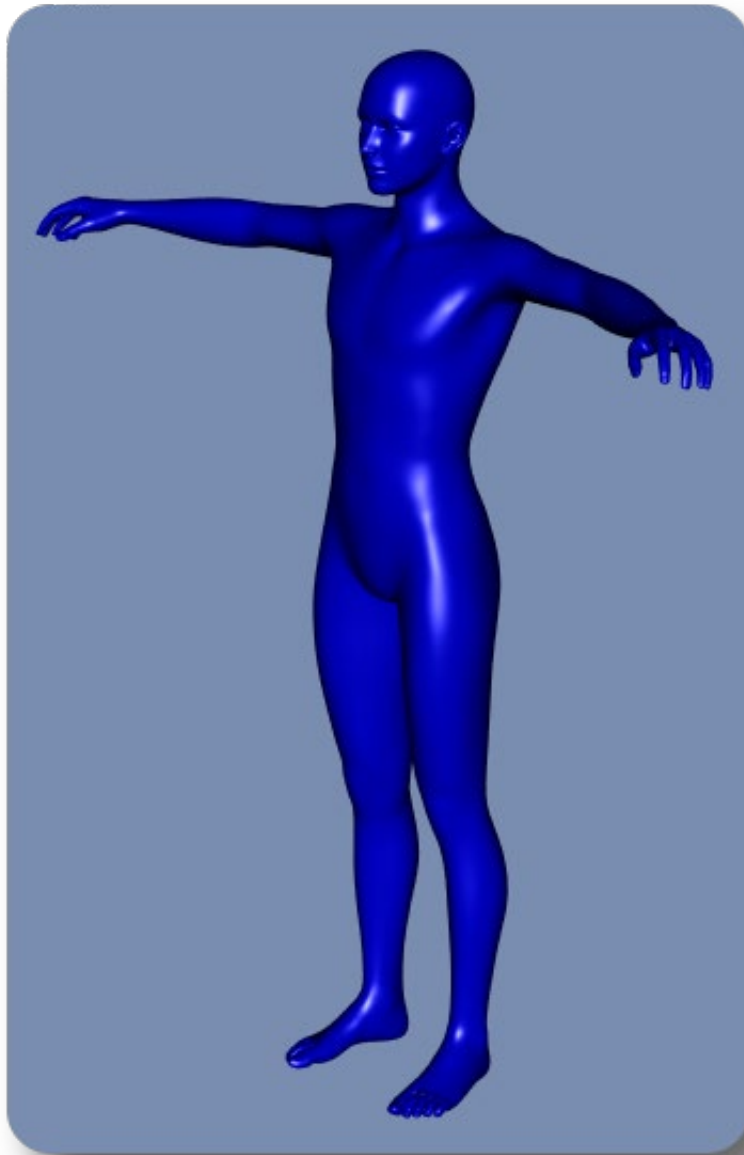
Now that we have our base color, let's change the Glossiness to **75%**, so that it's a little less shiny compared to our metallic looking Silver Surfer. Let's also make our '**Specular Strength**' **100.0%**.



Lastly we'll change our '**Lighting Model**' back to '**Plastic**'.

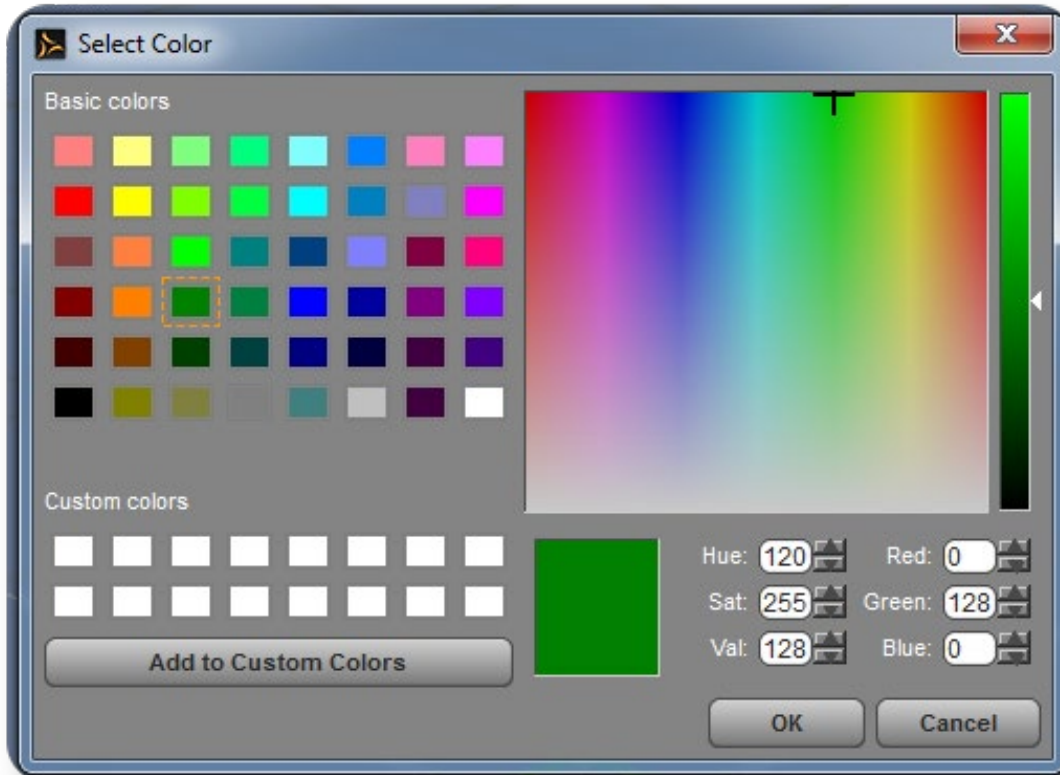


If we **Render** our figure we get a decent representation of a **Blue Man**. A little bit shiny, but not metallic yet more like rubber.

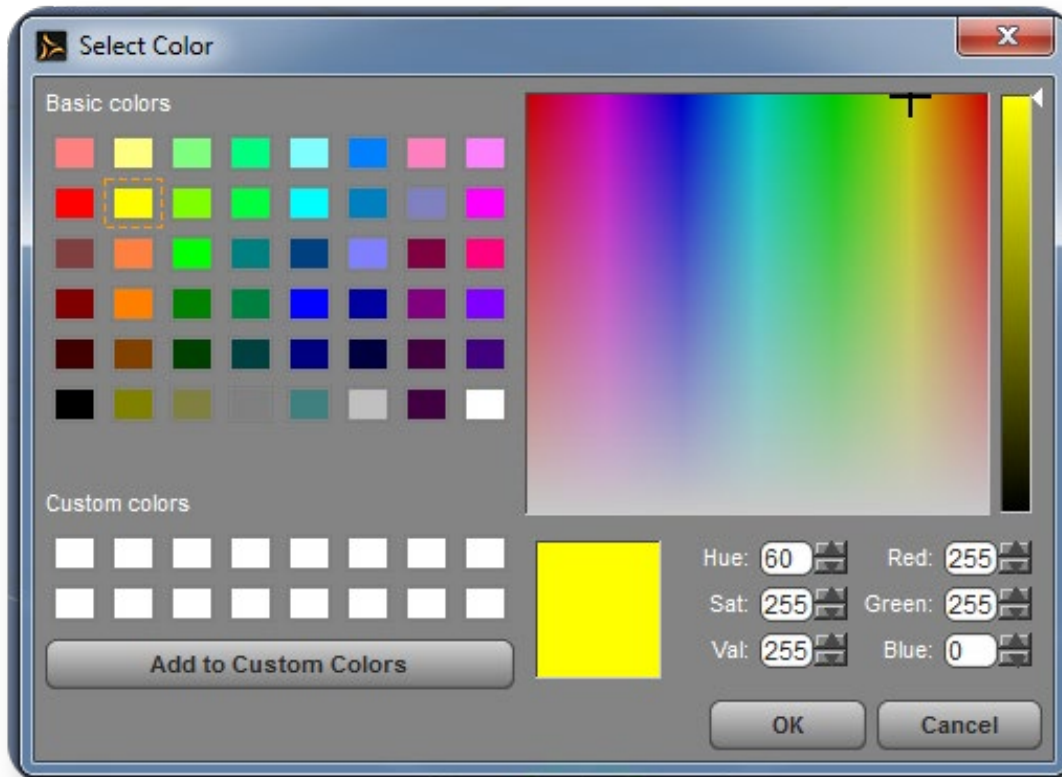


We are on to our last figure. This time we are going to take a few extra steps while making our **Green Alien**.

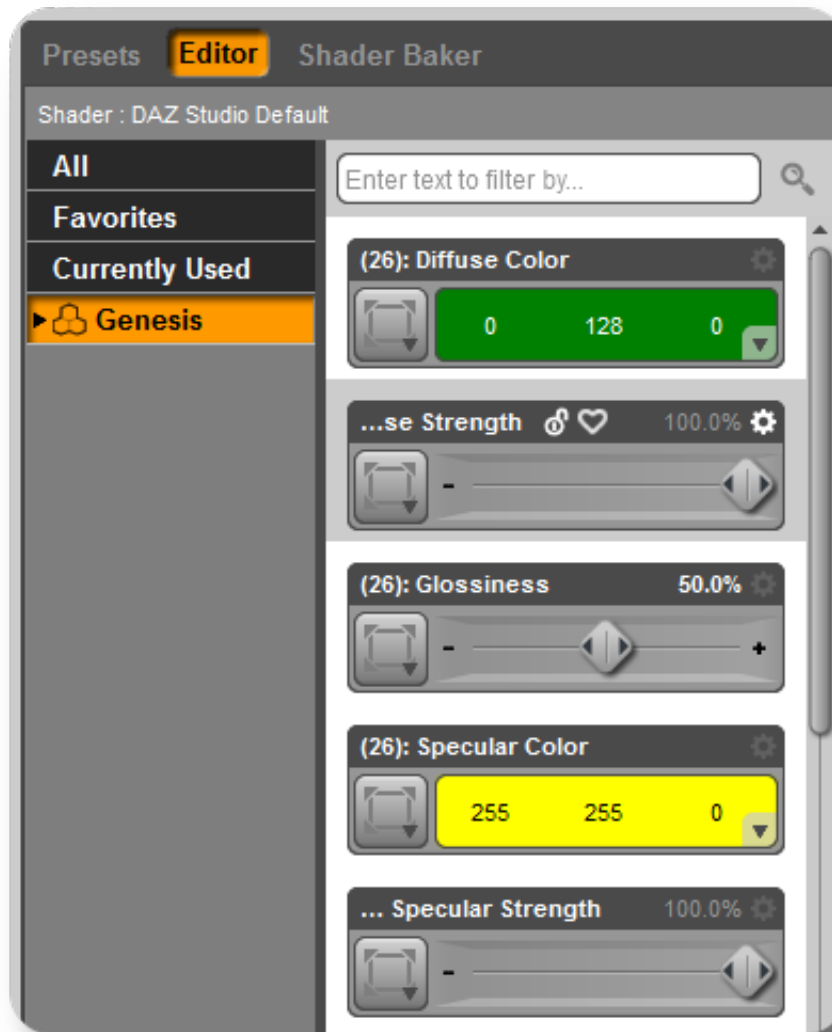
Obviously for a Green Alien, we need a base color of Green. So for a **Diffuse Color** I used a **Basic Green color**.



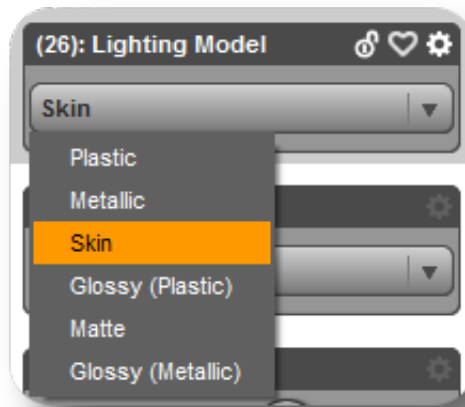
Now for our **Specular Color**, let's give our Green Alien a yellow color whenever light shines off of him. Choose a **Basic Yellow color**.



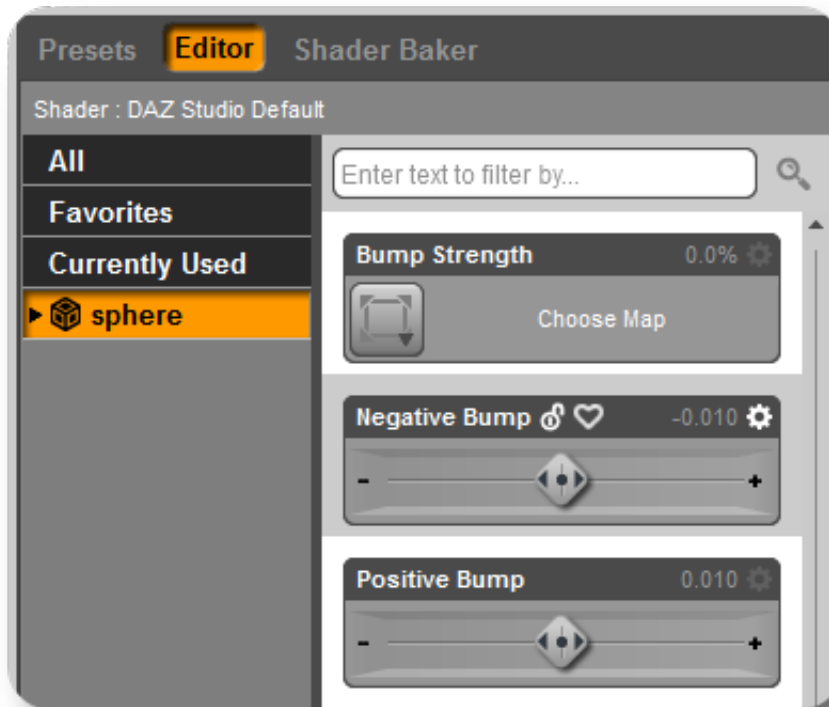
Let's change the '**Glossiness**' to **50.0%**.



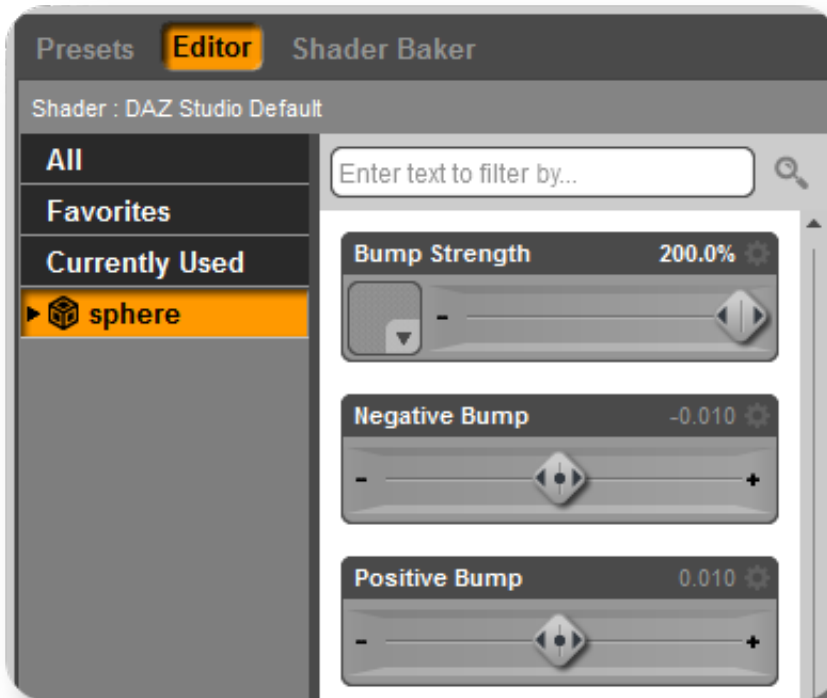
Then let's change the '**Lighting Model**' to '**Skin**', for something different.



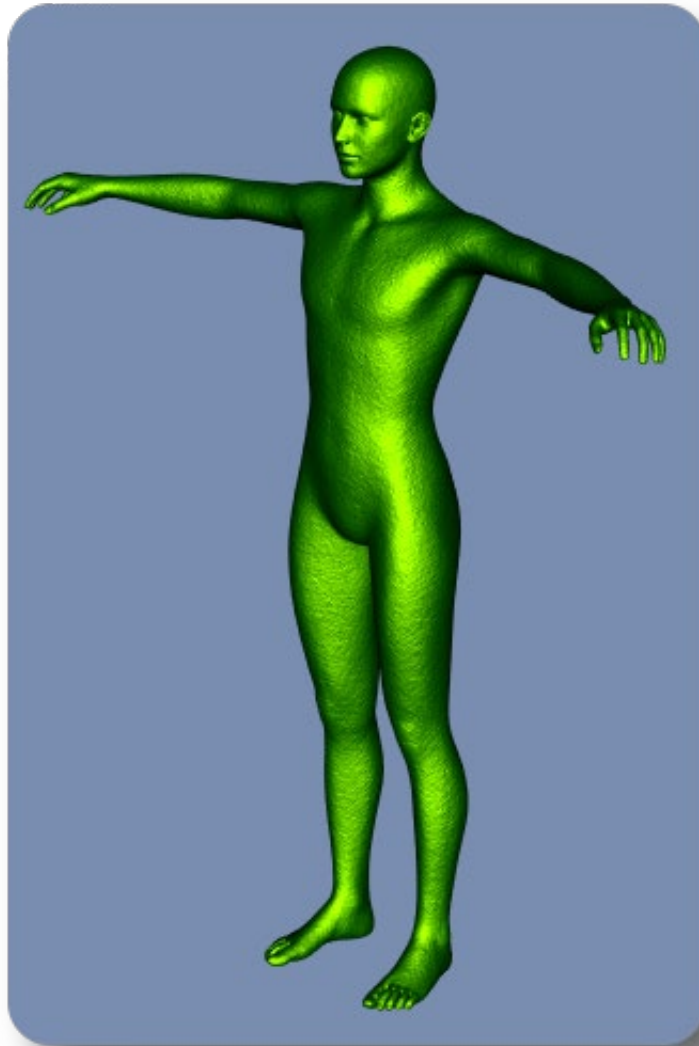
Lastly let's add a Bump map to our figure. We'll use the same one we used previously in the tutorial, nothing special needed.



Once we load it, we can then change the '**Bump Strength**' to **200.0%**. Now change the '**Negative Bump**' to **-0.25** and the '**Positive Bump**' to **0.25**. Giving the Negative and Positive Bumps low values will give the figure a slight texture to his skin without overdoing it.



After Rendering, we see we have a **Green Alien**, that has a tint of yellow where the light hits him, as well as a bumpy skin.



Conclusion

There are lots of varieties of surfaces you can create within DAZ Studio. Learning how to change the looks of your surfaces through textures, mapping, and colors is the hardest part, now all you have to do is use your own creativity to produce unique and interesting creations.

