InaneGlory's Full Spectrum Lighting

The idea behind this product came from seeing some of the newest advances in the latest generations of LED lighting, and seeing if the same concepts could work in a 3d world. Surprisingly, using the same general ideas did have a significant, if subtle, effect on the renders.

Overview

If you are familiar with some of my other light sets, the design behind this set of lights will be familiar, if not, you're going to need some help understanding just what this light set is and how it works. The concept behind these lights is very simple and very easy to visually 'see' but not so easy to put down in words, so I highly recommend that you open up Daz Studio and follow along with me on this next bit. Once you have Daz Studio open, load up the IG Full Spectrum Light set. In the viewport you should see a few objects appear, as well as a white 'C' in the middle of your scene. Zoom out till you can see that attached to the 'C' are four 'bones' and at the end of these bones are four objects. These are the actual lights themselves. Now, while still zoomed out, select the lights in the scene tab and then open up the parameters tab. There you should see headers for lights 1-4. Under each header are sliders that give you complete control over the movement of each of the lights. You can play around with each slider till you get a feel for the light set as a whole. For each light there is an entry called Light Geometry. This pull down menu allows you to change the actual geometry itself, giving you the ability to choose between 8 different designs, each with its own characteristics and style. 'Default Shape' is nothing, effectively turning off the light completely. This can be very helpful when using all four lights is more than what your scene needs. Hopefully this quick overview will start to show you just what this light set can do and its versatility and ease of use.

Full Spectrum Lights

Full Spectrum Lights are emissive materials so all the controls for adjusting the light they create are actually on the Surfaces Tab, instead of the Parameters or Lights Tab, like the built in Daz Studio lights. On the Surfaces Tab you should see a whole bunch of surfaces with Light in the name. Each of the four lights is actually made up of 5 different emissive surfaces that blend together into one single light source. All the presets and options for Full Spectrum Lighting have been designed to seamlessly adjust each of the five sub-surfaces together as one single unit.

Geometry Switching

Using the old idea of geometry switching we can turn one single set of lights into an infinite variety of light sets. All together there are 8 different types of lights you can use (plus the option of having no light at all). Each light has its own unique flavor. Generally, bigger lights give you softer shadows, while smaller lights give you more defined shadows. The two main differences between the round lights and the panel lights is that the round lights give more pleasing reflections than squares or rectangles. The other difference is that the Panel lights come with barn doors that can be used to help direct and control the direction of the light. The ring light is another attempt at creating an even softer shadows. The wand light is a new style of light just now being used in photography. The long thin rectangle gives you a unique feel perfect for adding that special accent of light to your scene.

Color and Color Temperature

Fully explaining Color Theory and Color Temperature Theory is really far beyond the scope of this poor little user's guide. Simply put, Color Theory is the idea that pure white light is created from a blending of colored light from all across the visible spectrum. The RGB system used in Daz Studio (and most computer graphics programs) is meant to be a simplified version of the visible spectrum. So what we 'see' as a beam of white light isn't made up of rays of white light, instead it is actually made up of multiple rays of light from all across the spectrum (red, blue, green, etc.) that we perceive as white.

Color Temperature is a theory that all light has a specific color cast (or tint) when created, and that the color cast is dependent upon the light's temperature (measured in degrees Kelvin). Light with a lower temperature contains more rays of light from the lower part of the spectrum creating light with a reddish cast. Light with a higher temperature contains more light from the higher part of the spectrum creating light with a blueish cast. While light may contain a color cast (or tint) it is still made up of rays from all across the color spectrum. There may be more red, or more blue rays, but the overall light is still a combination of all colors combined, and reading as (mostly) white. In the 3d world we are dealing with a simulation of light and in our simulated world light has only one color to it instead of being the combination of all colors. While a needed compromise this is a fundamental change in the nature of light.

How does all this affect what you get with Full Spectrum Lighting? Each of the 5 sub-surfaces that make up each light are specifically tuned to a different color temperature so that the light as a whole is created by combining lights with different temperatures together. Giving you light that, like light in the real world, contains light from all across the color temperature range.

Full Spectrum Settings

Each set of presets for the lights works independently of each other. Changing the Intensity of a light doesn't affect the color or temperature. Changing the spectrum (temperature) of the light won't affect the intensity or color etc. Each set has presets that will change each light individually, plus one that will change all four of the lights together.

Color Spectrums

The Color Spectrum set of presets allow you to change the distribution of color temperatures across all five materials that make up each light. These presets can give your lights a warm (red) or cold (blue) tone. The default tone gives you results that are slightly warmer that what you would get using plain white light.

Color Filters

Built off of designs for real world photographic and cinematography light gels, these filters add a touch of color to your lights, while still maintaining the unique mix of color temperatures. The set of blended colors use a mix of different shades blended together giving you a more natural feel instead of a flat monotone uniform color. The Storaro set is named after and the colors recommended by the famed cinematographer Vittorio Storaro.

Intensities

Obviously, these preset adjust the intensity (strength) of each light. Don't get hung up on numbers. What is set up as the default strength is just that, default. Your scene might need more light; it might need less. There isn't a right or wrong here only what works and what your scene needs.

Premade Light Setups

These presets are similar to character presets that you can apply to other figures (like Victoria etc.). You need to load up the lights, and have them selected in the scene tab, before applying one of these presets to it. What these do is pose each of the lights, adjust the materials for light intensity and apply changes in the geometry switching so you have the right lights set up, in the right place, and at the right relative strength. These presets will over right anything else you have done to the lights. Color Spectrum is set to default, and color is set to white. Intensities vary. These premade setups are meant to be suggestions, or starting points for you to customize based on the needs of your unique scene. There are four different sets of setups with the 1st in each series being set up with the light high above your scene and each subsequent preset dropping the lights lower down in your scene. Some of the last couple presets might end up putting some of the lights under the level of the default ground plane. The Double Keys Set uses light 1 & 2 as your primary lights with both lights on one side of the scene giving you a feeling of strong light coming from one primary direction. The Split Keys Set also uses light 1 & 2 as your primary lights but with each of them being on the opposite side of the scene giving you a clean, overall well-lit feel. The Single Key sets use only light 1 as the primary light source and can give you a more dramatic light to dark feel. This set has no left or right orientation but can be rotated as needed. The last set is two presets that are meant to be used on a second set of Full Spectrum Lights. These are designed to add ambient background light to your scene without needing to fall back on an environment light. Al of the light in the promo scene was created using Full Spectrum Lighting only.

Poses

Similar to the Premade Setups these presets will position all of your lights into the correct position, but that is all they do. Unlike the premade setups they don't adjust light intensity or color or color spectrum settings.

Props

One of the faults in using emissive materials as lights compared to the standard built in lights, is the loss of the built in light pointer, and the ability to use the 'look through' feature on each light. To help compensate for that I have included a set of light pointers. Basically, dummy spotlights they will parent in place and give you these helpful posing tools if you want them.

Design Notes

I would love to say this is a revolution in lighting. Unfortunately, that word usually carries with it the connotation of being something big, bold and life shattering. The best one word I can come up with to describe Full Spectrum Lighting is subtle. Maybe we can call it a subtle revolution. When at its best, lighting is something you don't even consciously see, it's something you feel and when it's right on, it just blends right into your render adding drama and emotion at an almost subconscious, subliminal level. When your lighting is off it leaves you with that feeling that something isn't quite right, something is off or out of balance. I think this set of lights can give you the tools to take your renders to that next level. Is it a huge difference? No, it's a soft subtle difference that can help your renders achieve a stronger emotional attachment. If you have questions, please feel free to contact me through PM at the Daz forums.