proper subsurface scatter shading for human skin in daz iray

hi, i have been working on finding a proper sss setting in daz for over 10 month and did over 1000 of test renders (literally, i still have them in my render library) these are my findings and ive tested them on every character and skin texture that i had and every lighting possible, they work and look natural in all situations, i might change these settings in the future because the software changes and i learn new things every day so keep that in mind (but its unlikely), also keep in mind that this is my first time using wordpad or writing a guid) some of the renders might be a little noisy, i dont have time to render every single one of them until they are perfect and clean sorry about that also remember non of the renders in this guide have any post work done on htem

- **spectral rendering on**

- **spectral rendering off**

- **photo examples of my sss setting and tips**

- **bonus tip**

- **contact**

before we start make sure to download this free hdri map

https://hdrihaven.com/hdri/?h=flower_road (recommand the 4k version for faster workflow)

it has a very strong and bright sun which makes it great for setting up subsurface scattering(its only for first setup you can change the light to whatever you like later) then go to render settings and tone mapping and make sure burn highlights and crush blacks are set to zero (because they mess with brightness and saturation, you can change them later) then go to render settings, general and make sure atuo headlamp is set to never

spectral rendering on and off common ground

(these values stay the same between the two option)

- base color doesnt need explaining just put your base map here but i highly recommand using a color map that looks natural and has lots of detail and no im not talking about resolution, im talking about color details skin details and all the natural and realistic stuff which most of daz

- translucency weight should be a high value for skin (dont put any map here), it determines the fleshiness of the skin so keep it between **85** and **95**, **dont** lower the value if your skin looks dark, instead increass the gamma of the texture or brighten up your textures in photo editting apps or you can brighten up the skin just by clicking on the gear next to translucency color, go to parameter settings and turn the limits off then youll be able to set values more than 1 by right clicking on the numbers, remember doing that slightley saturates your map colors as well. (i recommand brightening your map with other apps for best resulsts)


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  - base color effect should **always** be set to either scatter & transmit or scatter & transmit intensity it also give us more control

- translusency color should be set by diffuse map (again make sure to use a good detailed map if you want natural and realistic rsults, the more realistic your map the more natural your model) , **dont** put sss or translucency map here (sss maps are usually washed out so they dont have much detail on them but you still can use them, not all of them are bad) and its better to set it to white but you can set it to very pale colors to change the skin tone. also i dont recommand puting maps that have makeup or dirt or mud on them in here (because the makeup or dirt part wont look natural) but maps with tattoos are okey.

  - sss reflectance tint also can be changed in order to change the skin tone (use this one last if needed)

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  - sss mode should be set to chromatic otherwise our sss will be colorless

- the values of transmitted measurement distance and scattering measurement distance in the picture are **only** for characters with 180cm~5cm height. for 160cm~5cm height put them to 0.016 and 0.011 (for normal humans you can put their height value in transmitted measurement distance and their scattering measurement distance is 5 value less, just like the examples)

  - transmitted color should **always** be set to **254** or **0.99** even one digit lower or higher will ruin the entire sss, **this is very important** make sure its **not** set to **255** otherwise your character will golw and will look transparent, setting should look like image below
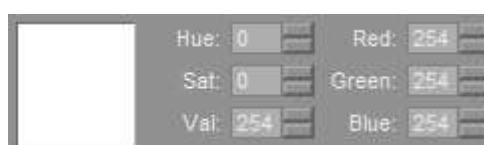
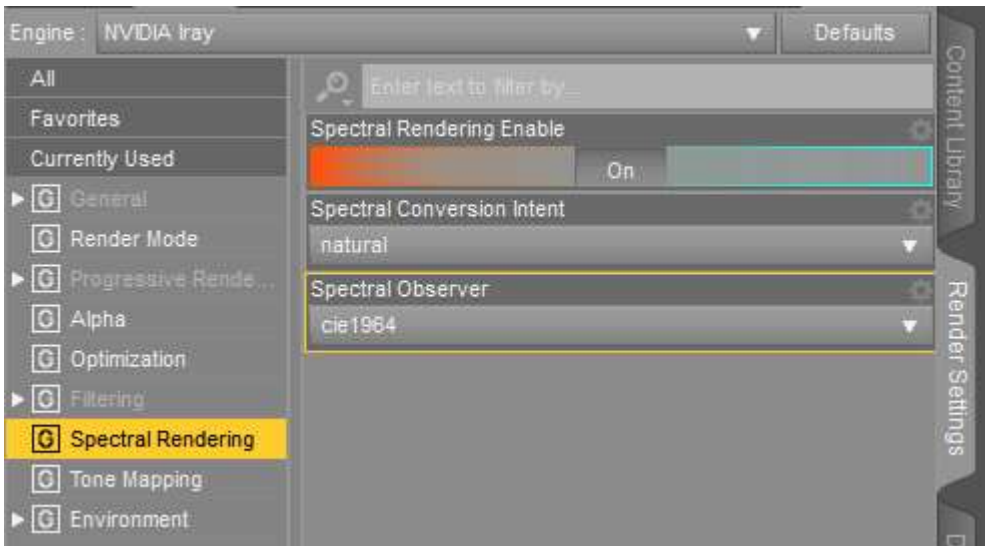example of glowing figure (character is underbelly8)

and dont give it any color or map (unless its a thickness map which changes the sss settings), giving it color will put blue lines where two surfacess join when rendering with spectral rendering ON, like below

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spectral rendering on

- spectral rendering defies how iray processes colors.

- turning it on will render colors more realistic and natural, for this sss settings **must** be set to natural and cie 1964

- turning it on also decreases the intensity of lights (point lights and mesh lights luminance are decreased by 85% so make sure to change them accordingly) and density of sss but my sss

settings are calculated for it so dont worry about it.

values for spectral rendering <u>ON</u> <u>ONLY</u>

- we control the sss radius or density by stauration,less saturation lowers the density and increasses the sss and vise versa, depending on the skin color or creature you can put any number between 85 and 110

- hue can be changed to other colors depending on the skin color, more redish hue gives a greenish tint to the skin. if sss effect looks to yellow change sss color hue to 30 for pinkish change it to 338 (expriment with hue to see what looks best for your character)

- value number also effects the density or radius of our sss so dont change it (**<u>always</u>** put it to 254 and not 255). **for spectral rendering <u>OFF</u>** set the value number to **<u>244</u>**, if skin looks green like image below, lower the value alittle more.

- you can also control the density or radius of sss by sss direction, negetive value lowers sss and positive incresses sss but i would recommand keeping it at 0 because in rare situations it causes fireflies.
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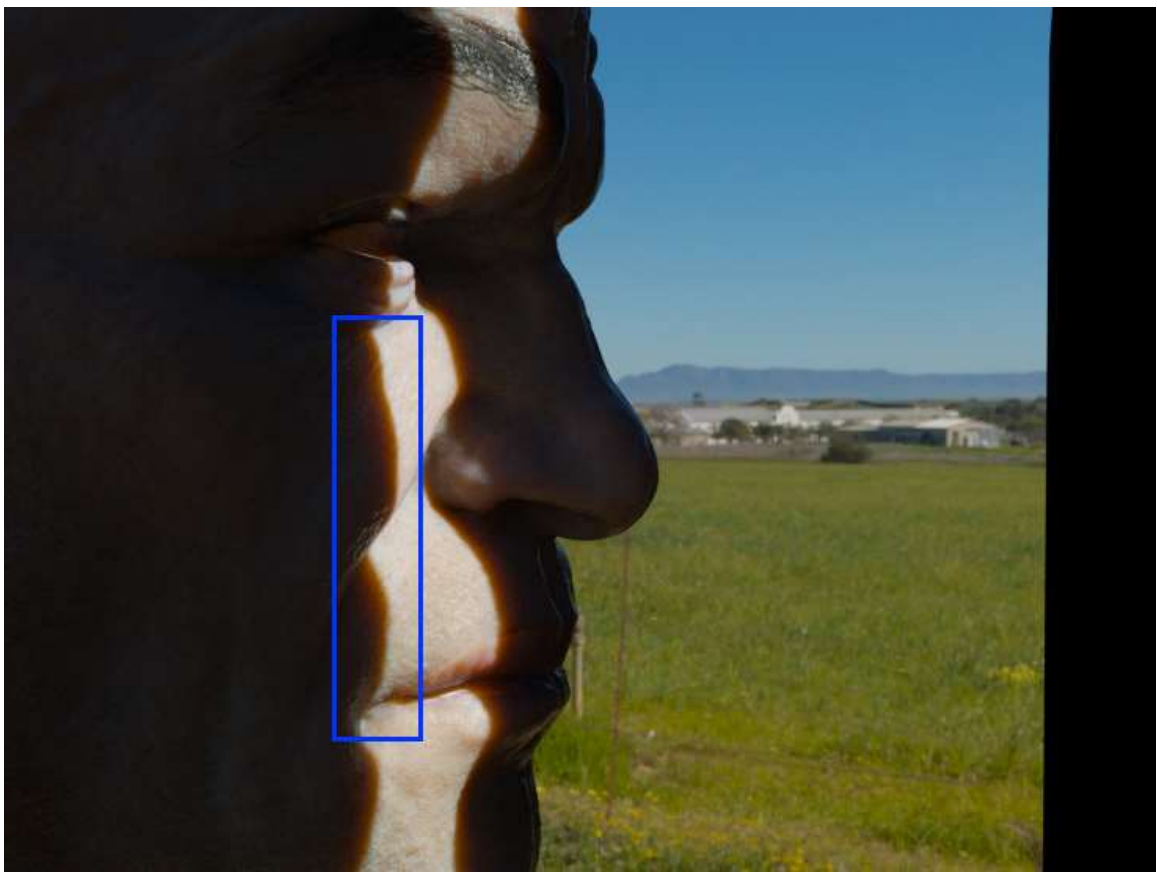
propper sss shading and amount

sss shouldnt be larger nor smaller than that amount in the blue box(around 3 to 5 milimeter). also that amount **should only** be visible under very bright light like under high noon sun or the hdri map i mentioned in the beginning , if you get more or less sss it means your values are incorrect

genesis 8 male comparison

.left default sss settings   .right my sss settings
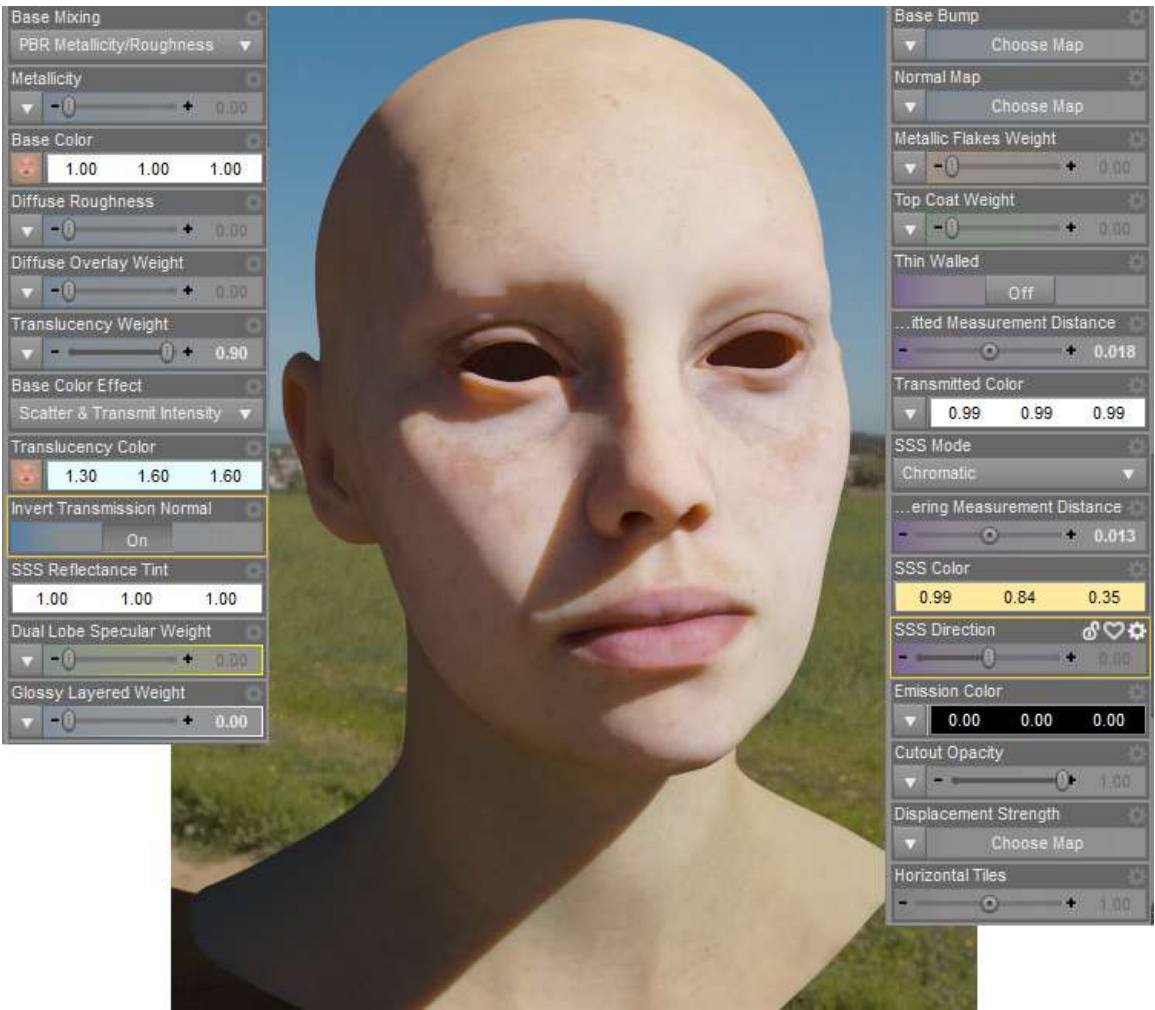
kingston genesis 8

kingston genesis 8

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and here is the famous digital emily2

as you can see i only did the sss settings on her and nothing else

here are some examples of emily under different lights

notice the difference between her face and neck, thats because she doesnt have a uniform texture, its not daz or iray or my fault its just how the texture is and it needs correction

emily under default sunsky only

and here is another head scan with my setting and brightened base texture in photoshop (this one has way better textures)

i always put a ball with nvidia pbr material next to my model for brightness and scale comparison

here is with sss off, notice how the face looks jagged and not jagged when sss is on, so if you have normal map on your character make sure to increase its value

some people had issues with glowing mouth, its because you have to apply the same settings to the mouth as well. this is how it should look under sunlight

you should apply these settings to eyesocket aswell otherwise they will glow too

backlit with a spot light with 50 billion luminance, as you can see no glowing in the mouth or eyesockets
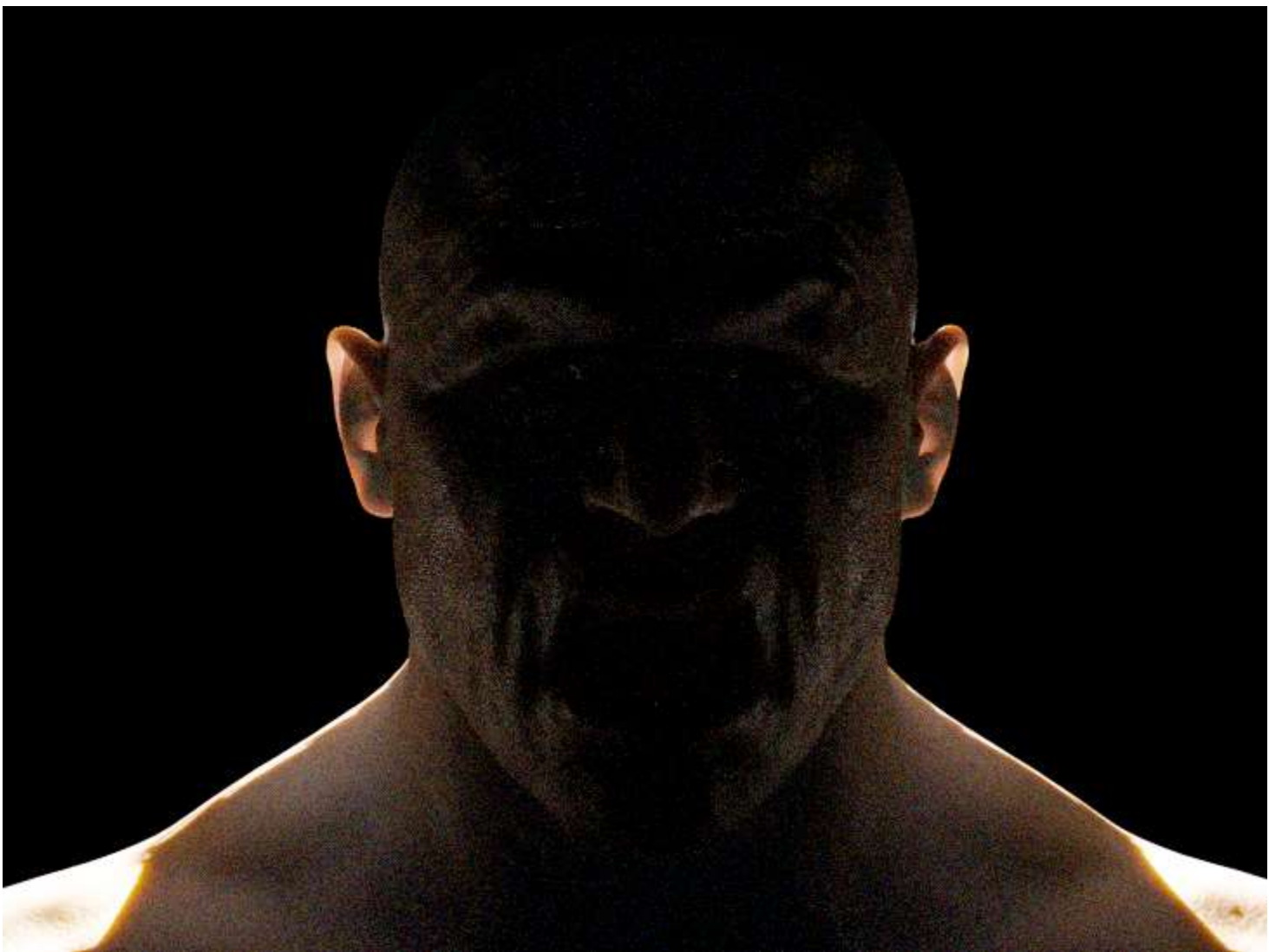
and here is ogre hd for genesis 8 using my sss setting

and the laughing dude (character is leland genesis 8)

just set him up to show how tattoos look which i think they look very good and natural

also he looked weird without facial hair

- **bonus tip**

if you want to setup glossines easily and fast, go to render settings, optimization and set the max
path lenght to 2, iray will only render basic functions so you can easily see the gloss effect and how
your bump or normal map effects the gloss like the image below

after putting max path lenght to defualt -1

thats all, sorry if it was too long or had grammatical issues im a first time writer

if you got confused and have questions or your renders dont look like image examples make sure to read the guide again. if you still have question or want to report technical issues you can find me here www.deviantart.com/dfggcxbbb or here https://www.daz3d.com/forums/discussion/313401/iray-photorealism

and if you ever rendered something using this guide and posted it on deviantart add this tag psssfid short for proper sss for iray daz so i could easily find your work

(fun fact max path lenght -1 is equal to 21 not infinity and iray can process up to 255 max path lenghts, example below rendered in daz with max path lenght set to 255)