

# Subsurface Workshop

The purpose of Subsurface Workshop for Iray is to provide you with a suite of options for adding subsurface scattering effects to a wide variety of things. When most people think of subsurface scattering the first thing that comes to mind is skin, but in reality there is some degree of subsurface in most of what you see. Cloth brings in light to scatter between it's folds, a candle's wax lets it's flame shine through and a canopy of leaves tints the sun to color the forest floor. Within this set you will find options for cloth, flowers, fruit, grass, hair, various liquids, leaves, three types of plastic, vegetables and two types of wax.

## Full Shaders VS SSS Only

There are two sets of presets you will find in your content directory, one is for Full Shaders and the other consists of SSS Only materials. They were split into two categories to insure their usability in all types of situations.

Full Shaders will also apply other surface settings like Glossiness values and Diffuse Color. They can be considered self contained materials that don't need much existing information, some presets like hair should be applied of existing textures but others like plastic don't require textures at all (more on individual material types will follow). These presets work well on older content that doesn't include Iray materials since they will load with everything they need to render nicely in the new engine. Since they do modify the entire material though they may overwrite settings you are already happy with, such as specular settings on hair or colorization in clothing.

SSS Only presets will only add the subsurface scattering settings from the Full Shaders to your material. These can be considered injectors meant to augment surfaces that you are already happy with. They will not alter your Diffuse Color or Glossiness values so the original look of the material will carry through, just with added SSS effects. Since they don't modify the overall look of the surface they will rely more on the surface matching the overall look of the preset you're loading (when loading SSS Only options for blue cloth your Diffuse Texture and other settings should be setup for blue cloth).

Load the materials for your content which most closely resembles the SSS preset you wish to use before loading the SSS Only options.

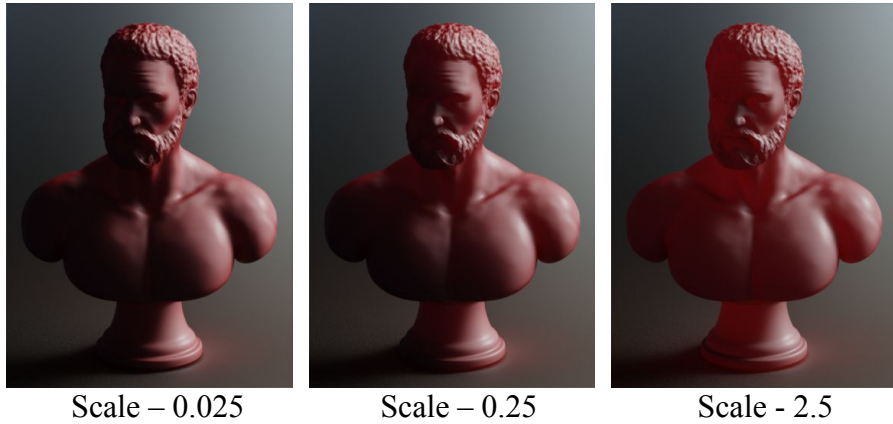
## Utility MATs

Also included are a set of utility materials intended to help you better customize materials to suit your needs. These should be applied after you've loaded either a Full Shader or SSS Only material to your surface, as they require existing values to be loaded before they can be modified.

**Set Diffuse To White** – This preset simply sets the color of your diffuse to pure white without altering textures. Intended to be used with the Full Shader presets, it will remove any colorization applied and allow the material to rely on the color provided by your Diffuse Texture. Useful for the times you want to use the Full Shader's Glossiness values etc without actually editing it's Diffuse Color.

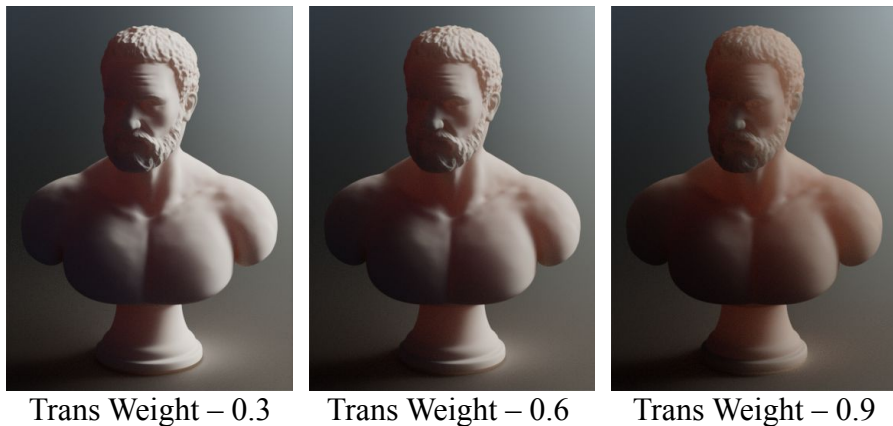
**Set SSS Reflectance Tint To White** – DAZ Studio 4.9 made some material changes effecting SSS Reflectance which some of these presets use. Their reliance on this value is very minimal and likely unnoticeable, but this preset will set the value to white and remove any variance it adds.

**Subsurface Scale** – These presets adjust Transmitted Measurement Distance (the distance light must pass through an object before getting the transmitted color) and Scattering Measurement Distance (the distance light must pass through an object before getting the SSS Amount). Mostly you will find that help you alter the scattering effects to better fit the scale of objects in your scene. All of the material presets in this pack have been designed with the object's scale set as close as possible to real life, but your scene may call for those object to be larger or smaller. When the scale of those objects has been altered experiment with these presets to find the look you desire (using smaller values if you've scaled down and larger if you've scaled up). Feel free to also use these presets just to have fun with your surfaces and produce a unique or surreal look, there are no restrictions when it comes to making art.



**TMD and SMD** – Transmitted Measurement Distance and Scattering Measurement Distance presets will allow you to set these values separately of one another. Subsurface Scale will alter both of these values in tandem but there may be cases where you would like them to be different from one another.

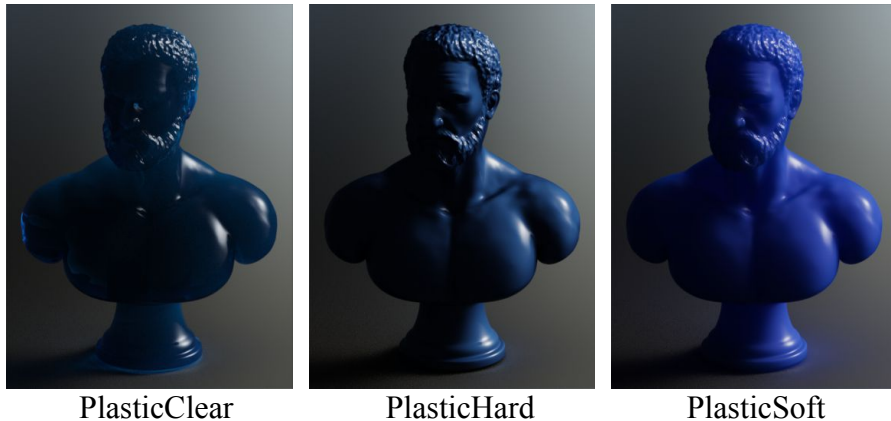
**Translucency Weight** – These presets will modify the SSS effect relative to diffuse amount. The higher this value the more light will pass through the surface. High values of Translucency Weight will usually result in dark surfaces because diffuse gets completely ignored. If you feel the SSS effect is too strong lower this value, if it isn't strong enough raise it. Just don't push it too far if you don't want unnatural results or the material doesn't call for it.



## Plastic Presets

The three types of plastic included with this set are clear plastic, hard plastic and soft plastic. Clear plastic uses refraction values with SSS to produce scatter effects that can also be seen through. These work great for containers or buttons. Hard plastic has less SSS and higher reflective values to give them shine. Electronics and toys are great to use these on. Soft plastics have more SSS and rougher specularities than hard plastics. Great uses for these would be lamp shades or sculpting materials.

Plastic presets don't require any existing maps but work well with bump/displacement/normals. These presets affect Diffuse Color, so if you would like Diffuse Color to only come from texture maps use the "Set Diffuse To White" utility preset after applying these.



## Wax Presets

There are two types of wax included with this set which are hard and soft. Hard wax is smoothly coated with a glossier finish for a look you often find in decorative candles. These presets will be more reflective and have less SSS due to their hardened outside. Soft wax is more porous to better carry fragrance and has a roughened surface. That means these presets will have more SSS and have softer reflective effects.

Wax presets don't require any existing maps but work well with bump/displacement/normals. These presets affect Diffuse Color, so if you would like Diffuse Color to only come from texture maps use the "Set Diffuse To White" utility preset after applying these.



## Cloth Presets

The cloth presets included come in a wide variety of colors to make sure there are options for any outfit that you'd like to use them on. They don't require any existing maps but work well with bump/displacement/normals. Each color comes in 3 different saturations and all presets will affect your Diffuse Color values, so if you would like Diffuse Color to only come from texture maps use the "Set Diffuse To White" utility preset after applying these. Alternatively you can use any white materials the outfit you're using may come with before applying these cloth presets. With white textures loaded for detail you can use the colorization from these presets. This will let you maintain features like stitching etc while perfectly matching color with the applied SSS.



Blue(Pale)

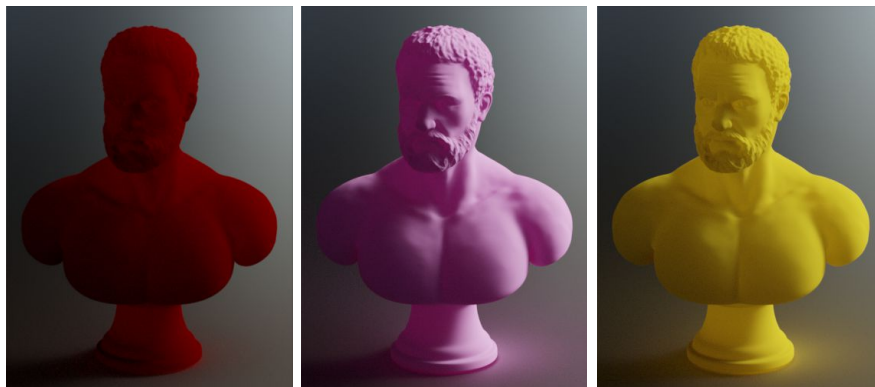
Tan

White

## Flower Presets

A selection of presets for flower petals is also included in this set, letting you scatter their vibrant colors in amongst the blossoms. Back lit roses with their velvety specular and SSS effects can make for some powerful images, and a field of daisies can make for some instantly beautiful scenery. While scattering is best viewed up close it can help make those flowers pop at any distance. Applying these presets to their corresponding colored flowers makes it easy but keep their material zones in mind. You may want to use a different preset for the petals themselves than the rest of the flower. Grass and leaf presets are great to use on it's other parts.

Flower presets expect a Diffuse Texture matching in color with the preset being loaded. Any existing bump/normal/displacement maps will be retained along with opacity.



Red

Pink

Yellow

## Fruit Presets

Various types of fruit have SSS to different degrees in different ways. Some fruit like apples and cherries have harder skins which don't let much light through. Others like oranges and lemons have semi-transparent skins with refraction and SSS from light shining through inside fluids. The presets included will address these different surfaces and help make these fruits look their best, while also serving as a basis for other similar fruits.

All fruit presets aside from grapes expect at least a Diffuse Texture to be loaded, both grape presets do not need textures at all. Oranges, lemons and limes should use a bump/normal maps to look their best but it's not required.



Cherry

Lemon

Grape(Red)

## Grass Presets

Similar to leaves, grass looks its best when light is allowed to pass through the surface and scatter amongst the numerous blades. Unlike leaves, grass does not normally come with such variance in color, so presets here only come in shades of green. Keep in mind that you can also use these presets on leaves for alternative looks and wide variety of green hues.

These presets expect at least a Diffuse Texture to be loaded. While presets B-D are colorized, this only serves to modify the existing texture, so each preset should be used with your grass' default "green" material in order to achieve the look shown in the thumbnails. Though you are more than welcome to use other Diffuse Textures for variety, it can't be guaranteed to look as intended.



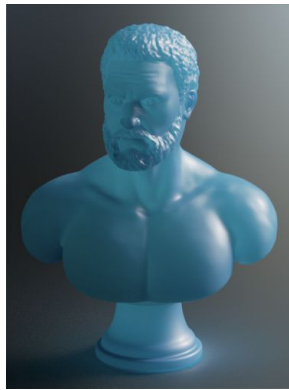
GrassA

GrassC

## Hair Presets

The hair presets included in the package are meant to create a softer look on any hair model that you use them with. You'll find natural hair colors along with a selection of “dyed” options. Since hair has so many choices when it comes to materials, it's difficult to make Full Presets apply perfectly over existing MATs because of how texture maps are used. As a result Full Presets in this set will overwrite any applied translucency and glossiness maps etc. If there is a material for your hair that you just want to add SSS effects to while maintaining the overall look and settings, please use the SSS Only presets.

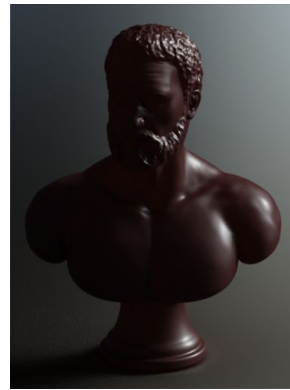
These presets expect at least a Diffuse Texture and Opacity Map to be loaded. As with other materials, bump/normal/displacement maps will only serve to make the surfaces look better.



Blue



Blonde

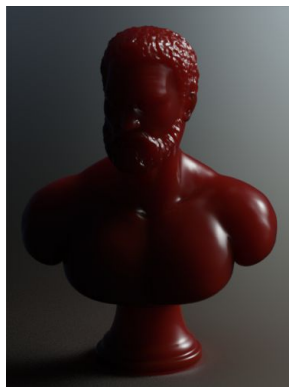


Brown(Dark)

## Liquid Presets

Liquid presets from this set do a good job of showing how visually stunning SSS effects can make materials look in your renders. Their wide variety and different setups will hopefully spark some imagination when it comes to what SSS can be used for. Many of these use refraction along with SSS to achieve a semi-transparent look, and as such these can be slow to render. Each liquid has been modeled after it's real world counterpart but keep in mind that they can be repurposed in creative ways. The Aloe Vera Gel could be used for some sort of goop monster or radioactive sludge for example.

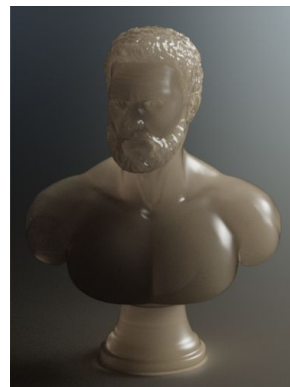
Liquid presets work best when there are no textures being used, unless your specific case calls for it. Since they are not really intended they will be removed upon loading the presets.



Ketchup



OrangeJuice



Shampoo

## Leaves

Due to their large numbers, leaves on trees can quickly add a lot of detail to your renders. Adding realistic SSS to these details can really help bring those renders to life. Through the seasons leaves will change color and this set has options to cover that. Since some trees have leaves which rely on opacity maps you may find that SSS makes them render slower due to numerous layers of transparency.

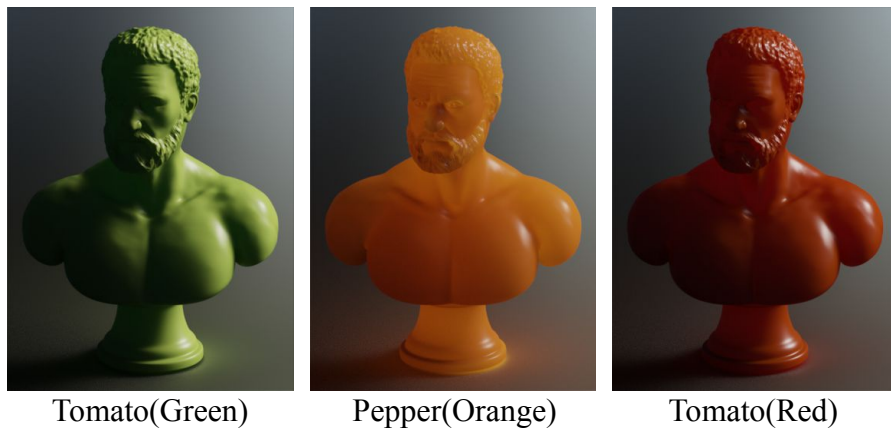
Presets for leaves expect at least a diffuse map (and opacity map if the model calls for it)



## Veggies

Like fruit, the anatomy of different vegetables requires some different SSS effects to make them look their best. When it comes to tomatoes, even the age will affect scattering effects. Green tomatoes let less light through because they are harder and not fully ripened, ripe red tomatoes have subtle undertones of orange. Peppers are somewhat like citrus fruit with a semi-refractive surface from inner fluids. Presets here will make intended veggies look great and provide a useful basis for other types.

Presets for veggies expect at least a diffuse map to be loaded. Remember that grass or leaf presets can also be good for applying to stems and other parts of the plants these grow on.



## General Tips

Subsurface scattering like most other effects in rendering relies heavily on the type of lighting you're using in your scene to look it's best. You may not get the best results with default lighting so it is suggested you use some more artistic angles or setups. Lighting surfaces from the side or rear is a great way to make SSS stand out and hard lighting will produce the most obvious results. These materials will blend in well with the rest of your scene regardless though so make sure to have fun with them.

Since the concept behind subsurface scattering is light bouncing around inside of a surface it is most realistic for your surfaces to have thickness. All surfaces in the real world have thickness but adding thickness to 3D models requires extra polygons, because of this things like clothing and hair are likely not going to have thickness at all. These shaders were made with this in mind and will function well without surface thickness. There are however times where thickness may make things look better, in which case using a geometry shell can handle that nicely. When adding geometry shells keep in mind the real world measurements of thickness for the type of surface you're adding them to, and if needed feel free to use some of the utility presets here to modify the scale or scattering effects.

These presets are intended as a fast and easy option to adding subsurface effects to your scene, but it was also created in the hopes of sparking creativity. Don't feel restricted to using these presets on the objects in their thumbnails, experiment and create looks that interest you. Some of these may be close enough to other materials to serve the purpose well enough for whatever you are working on. Others can serve as a starting point to make materials you need which aren't readily provided. Whole milk can be tweaked to look like mayonnaise, orange juice can make a convincing potion, red tomato could be used for a bloody mary and clear plastics may make some tasty flavored toppings.

Don't be afraid to try applied these presets over other shader presets, including other presets included in this set. Hair and clothing in particular can look very nice with different tones applied to the same surface. Red clothing with blue scattering produces a unique look, blonde scattering over brown textures can create some pretty highlights in hair. Mixing and matching is a fun and fast way to create completely different looking surfaces which make catch your eye and the eyes of others.

**Note** – None of the example illustrations in this document were rendered using textures or with scaling meant to match the subjects covered in each section. They are only intended to be a unified example of the differences in subsurface scattering color and intensity, as well as provide an idea of what the specularities from the Full Shaders will look like. Diffuse colors used are an approximation of the expected textures and the final look in your renders will vary.