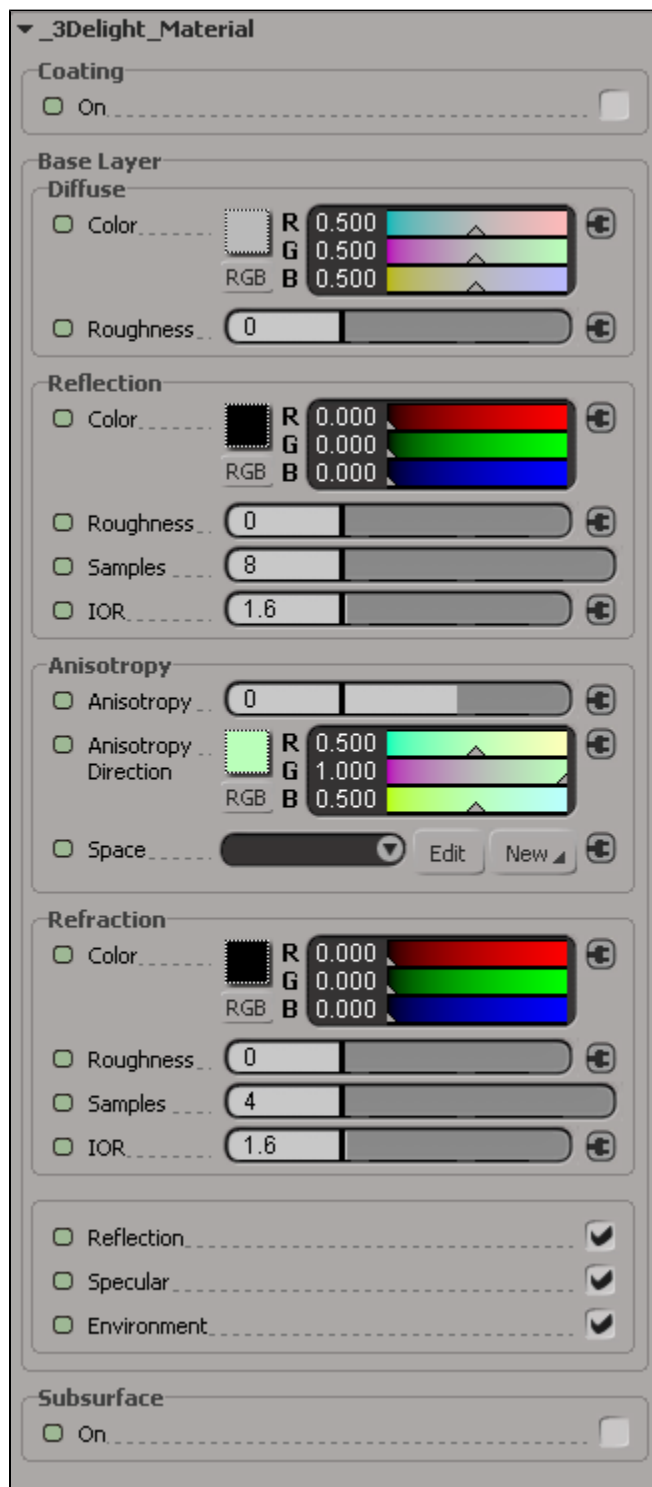


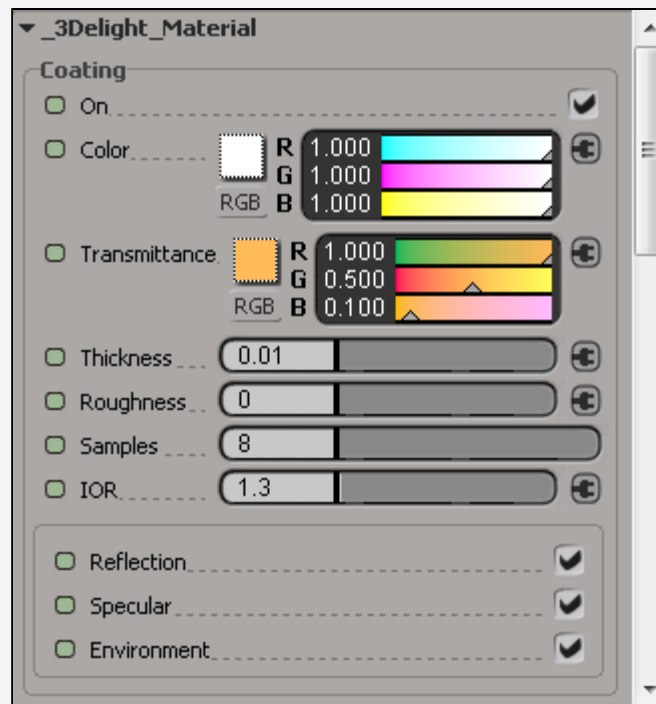
3Delight Material

The 3Delight Material is a general purpose, *physically plausible*, material that can be used to render a large variety of surfaces. Its main interesting feature is its ability to simulate surfaces that have a *coating*. Coated materials include common real world objects such as furniture, cars, toys and many plastics. The coating layer adds interesting effects on gazing angles and adds an additional specular highlight (from the coating itself) that can be observed on most coated materials (it is especially noticeable on car paint and many legacy shaders simulate this effect by having a secondary highlight control, which is not physically plausible).



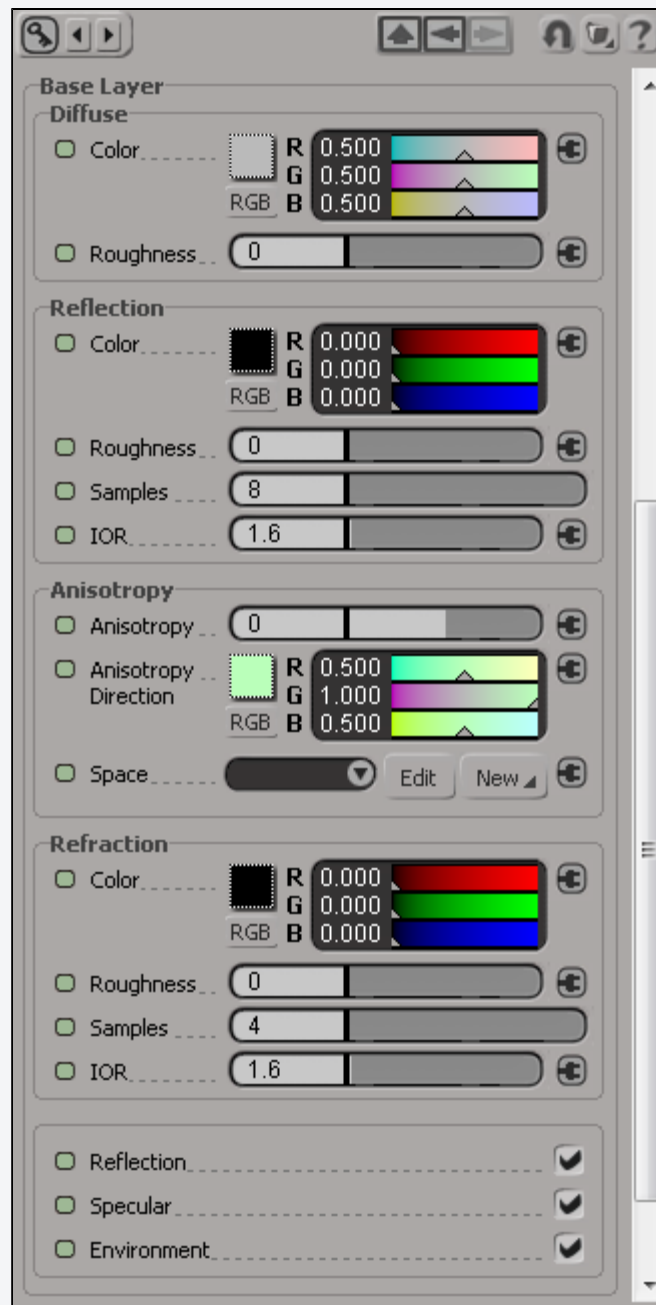
The 3Delight Material with three group of parameters: Coating, Base Layer and Subsurface

Coating

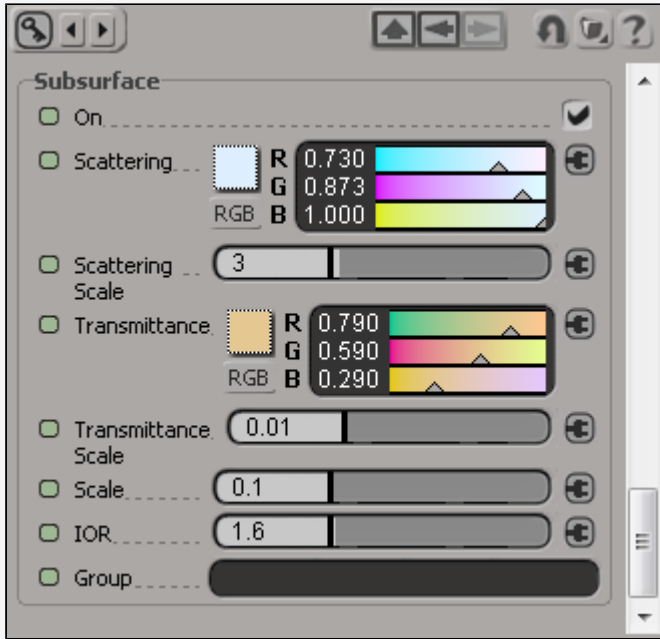


On	<p>Specifies whether or not there is a coating on top of the <i>Base</i> layer. Visually, the presence of coating adds the following two phenomena to the look of the layer:</p> <ol style="list-style-type: none"> 1. Adds a specular highlight because light can bounce off the smooth surface of the coating. 2. Adds a light absorption effect. This is especially visible on gazing angles where light travels a longer distance before reaching the viewer.
Color	Color of the coating. This is basically the color of the specular highlight that is seen on the coated surface.
Transmittance	The color of the interior of coating. Light that travels through the coating will be colored according to transmittance.
Thickness	Thickness of the coating in scene units (world units). For example, when rendering a coated table of 1 meter, a value of 0.001 means a thickness of 1 millimeter.
Roughness	This controls the specular roughness of the coating material. The smaller the value, the smoother is the surface.
Samples	This is the total number of samples to trace in order to sample the scene in the specular direction. The rougher is the material the more samples are needed to avoid undue noise.
IOR	The index of refraction of the coating layer. A value of 1.3 is usual.
Reflect Geometry Reflect Lights Reflect Environment	Specifies if the coating reflects the <i>Geometries</i> , <i>Lights</i> and <i>Environment</i> respectively. Disabling the reflection of geometries can speedup rendering because no ray-objects intersections are performed. "Reflect Lights" enables or disables specular highlight from point lights.

Base



Diffuse Color	This diffuse color of the base material.
Diffuse Roughness	This controls how diffuse is the material. A value closer to one simulate very rough materials such as chalk. A value of 0 renders a standard "lambertian" diffuse. On a more technical note, this parameter controls the roughness of the Oren-Nayer diffuse model.
Reflection Color	Specifies the color of the specular highlight.
Reflection Roughness	This controls the specular roughness of the base layer. The smaller the value, the smoother is the surface.
Reflection Samples	Specifies the total number of samples to trace in order to sample the scene in the specular direction. The rougher is the material the more samples are needed to avoid noise.
IOR	Sets the index of refraction that will be used for reflection.
Anisotropy	Specifies anisotropy "directionality". 0 means no anisotropy. Positive values will increase anisotropy along the anisotropy direction and negative value will increase it along the perpendicular direction.
Anisotropy Direction	Specifies the anisotropy direction in local tangents space.
Refraction Color	The color of the refraction. Setting this color to 0 disables refraction.

Refraction Roughness	Specifies the roughness of the refraction. The smaller the value, the smoother is the surface. Higher values can be used to emulate "ground glass" for example.
Refraction Samples	Total number of refraction samples to trace. The rougher is the refractive material the more samples are needed to avoid noise.
Refraction IOR	Sets the index of refraction in case the base layer is refractive.
Reflect Geometry Reflect Lights Reflect Environment	Specifies if the base coating reflects <i>Geometries</i> , <i>Lights</i> and the <i>Environment</i> respectively. Disabling the reflection of geometries can speedup rendering because no ray-objects intersections are performed. "Reflect Lights" enables or disables specular highlight from point lights.
Subsurface	 <p>The screenshot shows the 'Subsurface' material properties panel. It contains the following settings:</p> <ul style="list-style-type: none"> On: Checked (checkbox). Scattering: Color picker set to a light blue color. RGB values: R 0.730, G 0.873, B 1.000. Scattering Scale: Slider set to 3. Transmittance: Color picker set to a light orange color. RGB values: R 0.790, G 0.590, B 0.290. Transmittance Scale: Slider set to 0.01. Scale: Slider set to 0.1. IOR: Slider set to 1.6. Group: Empty text field.
On	Specifies whether or not the material has subsurface light penetration.
Scattering	The tint of the light that is scattered inside the material. Visually, this means that the light which penetrates the object far away from its exist point will be tinted by this color. For skin, this would be bluish.
Scattering Scale	Scattering isn't usually confined to the 0..1 range (physically, it is expressed in 1/mm). So to have a use friendly UI in which the scattering can still be expressed as a color, we added a separate scale to control the general amplitude.
Transmittance	Visually, this specifies the color of the light that is diffused nearby the entry point of a light beam. For skin, this would be reddish.
Transmittance Scale	Same as for <i>Scattering Scale</i> but applies for <i>Transmittance</i> .
IOR	The index of refraction of the based layer.
Scale	A global scale that applies to this material. Larger scales will make the object appear more translucent.
Group	This allows many objects, with different materials, share the same "subsurface simulation". For example, two intersecting cubes with different material properties but with the same group name will have correct subsurface intersecting along the intersecting lines.