

# Standard Material

This page provides information about the Standard Material in V-Ray for Blender.

## Overview

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The Standard Material provides inputs for controlling various material properties. They correspond to parameters in the sections below

## UI Path

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[[Node Editor]] > **Add** > **Material** > **Standard Material**

## Node

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### Material –

**BRDF** – Determines the type of BRDF (the shape of the highlight):

- Phong** – Phong highlight/reflections
- Blinn** – Blinn highlight/reflections
- Ward** – Ward highlight/reflections
- GGX** – GGX Microfacet highlight/reflections

**Diffuse** – The diffuse color of the material. **Note: the actual diffuse color of the surface also depends on the reflection and refraction colors.**

**Roughness** – Used to simulate rough surfaces or surfaces covered with dust (for example, skin, or the surface of the Moon).

**Self-Illumination** – The self-illumination color of the material. A texture map can be used.

**Reflect** – Reflection color. Note that the reflection color dims the diffuse surface color.

### Metalness –

**Reflect Glossiness** – Controls the sharpness of reflections. A value of 1.0 means perfect mirror-like reflection; lower values produce blurry or glossy reflections.

**Highlight Glossiness** – Determines the shape of the highlight on the material. Normally this parameter is locked to the Reflection glossiness value in order to produce physically accurate results.

**Fresnel IOR** – The IOR to use when calculating Fresnel reflections. Normally this is locked to the **Refraction IOR** parameter, but you can unlock it for finer control.

**Anisotropy** – Determines the shape of the highlight. A value of 0.0 means isotropic highlights. Negative and positive values simulate "brushed" surfaces.

**Anisotropy Rotation** – Determines the orientation of the anisotropic effect in a float value between 0 and 1 (where 0 is 0 degrees and 1 is 360 degrees).

### Anisotropy Uvwgen –

**Refract** – Refraction color. Note that the actual refraction color depends on the reflection color as well.

**Refract IOR** – Index of refraction for the material, which describes the way light bends when crossing the material surface. A value of 1.0 means the light will not change direction.

**Refract Glossiness** – Controls the sharpness of refractions. A value of 1.0 means perfect glass-like refraction; lower values produce blurry or glossy refractions. Use the Subdivs parameter below to control the quality of glossy refractions.

**Fog Color Tex** – The attenuation of light as it passes through the material. This option helps simulate the fact that thick objects look less transparent than thin objects. Note that the effect of the fog color depends on the absolute size of the objects and is therefore scene-dependent. This parameter can be mapped with a texture. It is recommended that you use a 3D texture for the purpose.

**Translucency Color** – Normally the color of the sub-surface scattering effect depends on the Fog color; this parameter allows you to additionally tint the SSS effect.

**Environment Override** –

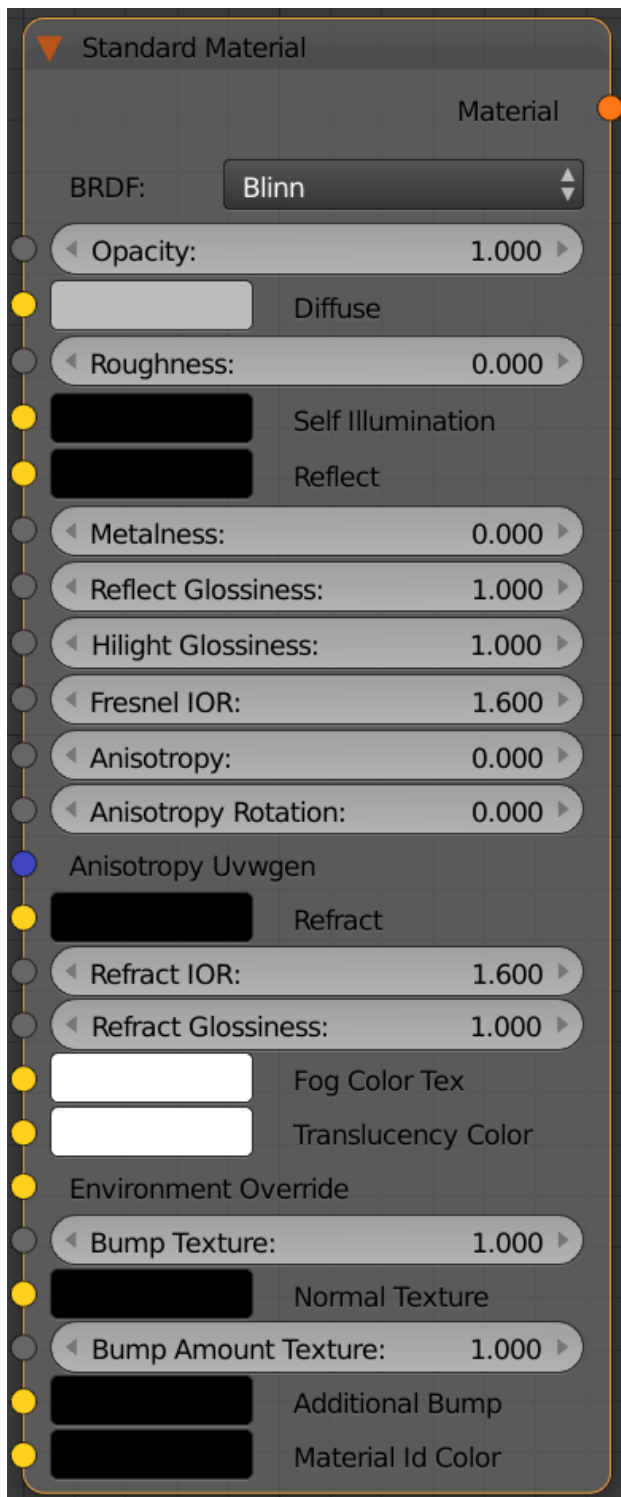
**Bump Texture** –

**Normal Texture** –

**Bump Amount Texture** –

**Additional Bump** –

**Material Id Color** –



## Parameters

### BRDF

#### Reflections

**Brdf Type** – Determines the type of BRDF (the shape of the highlight and glossy reflections). This parameter has an effect only if the **Reflection Color** is different from black and **Reflection Glossiness** is different from 1.0.

**Phong** – Phong highlight/reflections

**Blinn** – Blinn highlight/reflections

**Ward** – Ward highlight/reflections

**GGX** – GGX Microfacet highlight/reflections

GGX is the most modern and flexible BRDF (Bidirectional reflectance distribution function) type and is able to better represent a broad range of materials thanks to its ability to control the shape of the specular lobe.

There currently isn't any particular performance difference between models and there is little reason to choose any of the other types.

Historically, the Phong, Blinn, Ward and GGX are successive reflectance models developed over the years in computer graphics where each model aimed to improve on the limitations of the previous ones. For example, the specular highlights with the Phong model have a very narrow and bright center with no falloff, but it doesn't work well with anisotropic reflections. The Blinn model has broader highlight center with a tight falloff. The Ward model has an even broader center and falloff. The GGX model has a bright center and an even longer falloff (at default settings). In the past, each model's characteristics resembled more closely a certain type of material, for example Phong could be used for plastics, Ward for cloth and metals, and Blinn for other common surfaces. However with the introduction of the GGX model, all of these surfaces can be approximated well, thus reducing the need for using the other models.

It should be noted that no principled model is able to represent all possible materials entirely accurately, and where those models fail - for example when the material isn't viewed frontally - only approaches such as that of *VRs cans* are able to capture the correct material representation.

**Subdivs** – Controls the quality of glossy reflections. Lower values will render faster, but the result will be more noisy. Higher values take longer, but produce smoother results. Note that this parameter is available for changing only when **Use Local Subdivs** is enabled in the [DMC Sampler](#).

**Depth** – The number of times a ray can be reflected. Scenes with lots of reflective and refractive surfaces may require higher values to look correct.

**Highlight Gloss. Lock** – When disabled, the user can enter different values for the **Highlight Glossiness** and **Reflection Glossiness**. However this will not produce physically correct results.

**Opacity mode** – Controls how the opacity map works. *For more information, see the [Opacity mode parameter example](#) below.*

**Normal** – The opacity map is evaluated as normal: the surface lighting is computed and the ray is continued for the transparent effect. The opacity texture is filtered as normal.

**Clip** – The surface is shaded as either fully opaque or fully transparent depending on the value of the opacity map (i.e. without any randomness). This mode also disables the filtering of the opacity texture. This is the fastest mode, but it might increase flickering when rendering animations.

**Stochastic** – The surface is randomly shaded as either fully opaque or fully transparent so that on average it appears to be with the correct transparency. This mode reduces lighting calculations but might introduce some noise in areas where the opacity map has gray-scale values. The opacity texture is still filtered as normal

**Fresnel reflections** – When enabled, makes the reflection strength dependent on the viewing angle of the surface. Some materials in nature (glass etc) reflect light in this manner. Note that the Fresnel effect depends on the index of refraction (IOR) as well.

**Glossy Fresnel** – When enabled, uses glossy fresnel to interpolate glossy reflections and refractions. It takes the Fresnel equation into account for each "microfacet" of the glossy reflections, rather than just the angle between the viewing ray and the surface normal. The most apparent effect is less brightening of the grazing edges as the glossiness is decreased. With the regular Fresnel, objects with low glossiness may appear to be unnaturally bright and "glowing" at the edges. The Glossy Fresnel calculations make this effect more natural.

**Lock fresnel IOR** – Allows the user to unlock the Fresnel IOR parameter for finer control over the reflections. When this is enabled, the Fresnel IOR will be locked to the **Refraction IOR**.

**Affect Channels** – Allows the user to specify which channels are going to be affected by the reflectivity of the material.

**Color Only** – The reflectivity will affect only the RGB channel of the final render.

**Color+alpha** – Causes the material to transmit the alpha of the reflected objects, instead of displaying an opaque alpha.

**All channels** – All channels and render elements will be affected by the reflectivity of the material.

**UV Vectors Derivation** – Specifies the method for deriving anisotropy axes:

**Local Axis** – Uses a local axis for the anisotropy effect.

**UVW Generator** – Allows the user to assign a UVW Generator for the anisotropy effect.

**Anisotropy Axis** – Specifies a local object axis for the anisotropy effect when **Uv Vectors Derivation** is set to **Local Axis**.

## Refractions

**Subdivs** –

**Depth** –

**Enable dispersion** –

**Abberation** –

**Fog multiplier** –

**Fog bias** –

**Affect Channels** –

**Affect Shadows** –

**Translucency**

**Translucency type** –

**Thickness** –

**Scatter Coeff** –

**Fwd/Bck Coeff** –

**Light Multiplier** –

**Trace reflections** –

**Trace refractions** –

**Double-sided** –

**Reflect on back side** –

**Use irradiance map** --

**Dim Reflect Ray distance** –

**Distance** –

**Falloff** –

**Exit color** –

**Glossy Rays as GI** –

**Energy Mode** –

**Environment Priority** –

BRDF:

Reflections:

BRDF Type: Blinn

Subdivs: 8 Depth: 5

☒ Highlight Gloss, Lock ☒ Fresnel reflections  
Opacity .. Stochastic ☒ Glossy Fresnel  
☒ Lock fresnel IOR

Affect Channels: Color Only

UV Vectors Derivation: Local Axis

Anisotropy Axis: Z

Refractions:

Subdivs: 8 Depth: 5

☐ Enable dispersion Fog multiplier: 1.000  
Abberation: 50.000 Fog bias: 0.000

Affect Channels: Color Only

☒ Affect shadows

Translucency:

Translucency type: None

Thickness: 1000.000 Scatter Coeff: 0.000  
Fwd/Bck Coeff: 0.500  
Light Multiplier: 1.000

☒ Trace reflections ☒ Double-sided  
☒ Trace refractions ☐ Reflect on back side  
Cutoff: 0.001 ☒ Use irradiance map

☐ Dim Reflect Ray Distance

Distance: 100.000 Falloff: 0.000

Exit color: Exit color:

Glossy Rays As GI: GI Rays

Energy Mode: Color

Environment Priority: 0