

# V-Ray Mesh Light

This page provides information on V-Ray Mesh Lights.

## Overview

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The V-Ray Light Mesh can create light sources that have volume and shape without the need to use self-illuminated objects and global illumination.

If the V-Ray Light Mesh is close to other surfaces in the scene, it is best to use it with GI enabled so V-Ray can use combined direct and GI sampling of the mesh light. Without GI, the light might produce noisy results for surfaces that are very close to it.

## Emission

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**Enabled** – Enables the mesh light.

**Invisible** – Controls whether the shape of the Mesh Light source is visible in the resulting render. When disabled, the source light is rendered in the current light color, otherwise the light source itself is not visible in the scene. *For illustration, see the [Invisibility](#) example below.*

**Note:** This parameter only affects the visibility of the light when seen directly by the camera or through refractions. The visibility of the light with respect to reflections is controlled by the **Affect Specular** and **Affect Reflections** options.

**No Decay** – When enabled, the intensity of the light has no fall off with distance. Normally the light intensity is inversely proportional to the square of the distance from the light (surfaces that are farther from the light are darker than surfaces which are closer to the light). *For more information, see the [No Decay](#) example below.*

**Doublesided** – Controls whether light is emitted from both sides of each face. *For more information, see the [Single-Sided vs. Double-Sided Lights](#) example below.*

**Geometry** – Specifies the geometry that will be turned into the Mesh Light.

**Use SOP Geometry** – When enabled, the geometry inside the Mesh Light is used. This affects the position of the mesh light itself if there are transformation in the SOP network of the specified geometry.

**Use Texture** – Allows the light to use a texture for its surface. If there are surfaces which are close to a texture-mapped light, it is best to have GI enabled. This allows V-Ray to use combined direct and indirect sampling for the light, reducing the noise for surfaces close to the light.

**Texture** – Specifies a light texture.

**Cache Texture** – When enabled, V-Ray samples the texture and produce a lower resolution one to be used for the lighting. This greatly speeds up the rendering of mesh lights with textures.

**Cache Resolution** – Specifies the resolution at which the texture is cached.

**Intensity** – Multiplier for the light strength; this is also the light intensity in the units set by the **Units** parameter.

**Units** – Specifies the light units. Using correct units is essential when using the [V-Ray Physical Camera](#). The light automatically takes the scene's unit scale into consideration to produce the correct result for the scale you are working with. The possible values are:

**Default** – The color and multiplier directly determine the visible color of the light without any conversion. The light surface appears with the given color in the final image when seen directly by the camera (assuming there is no color mapping involved).

**Lumens** – Total emitted visible light power measured in lumens. When this setting is used, the intensity of the light does not depend on its size. A typical 100W electric bulb emits about 1500 lumens of light.

**Lm/m/m/sr** – Visible light surface power measured in lumens per square meter per steradian. When this setting is used, the intensity of the light depends on its size.

**Watts** – Total emitted visible light power measured in watts. With this setting, the intensity of the light does not depend on its size. Keep in mind that this is not the same as the electric power consumed by a light bulb for example. A typical 100W light bulb only emits between 2 and 3 watts as visible light.

**W/m/m/sr** – Visible light surface power measured in watts per square meter per steradian. When this setting is used, the intensity of the light depends on its size.

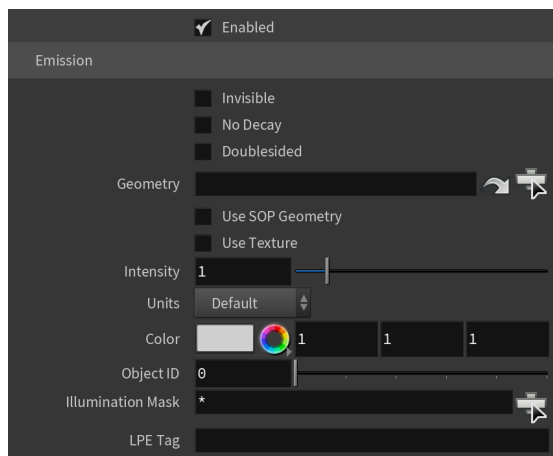
**Use Color Texture** – When enabled, replaces the **Color** attributes with a texture slot.

**Color** – Specifies the color of the Mesh Light.

**Object ID** – Specifies an integer object ID for the Mesh Light.

**Illumination Mask** – Specifies additional illumination mask used to force object illumination.

**LPE Tag** – Allows you to specify a string tag that can be used in a Light Path Expression to isolate the contribution from this light. See the [Advanced Light Path Expressions](#) page for more information.



## Example: Invisibility

The example below shows the difference between an invisible mesh light and visible mesh light.

on  
off





## Shadows

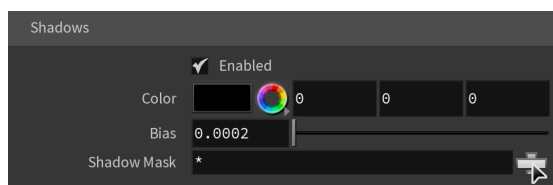
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**Enabled** – When enabled, the light casts shadows. Disable this option to turn off shadows for the light.

**Color** – Controls the color of shadows for this light. Note that anything different from black is not physically correct.

**Bias** – Moves the shadow toward or away from the shadow-casting object (or objects). Higher values move the shadow toward the object(s) while lower values move it away. If this value is too extreme, shadows can "leak" through places they shouldn't or "detach" from an object. Other effects from extreme values include moire patterns, out-of-place dark areas on surfaces, and shadows not appearing at all in the rendering.

**Shadow Mask** – Specifies objects that cast shadows when light is directed at them.



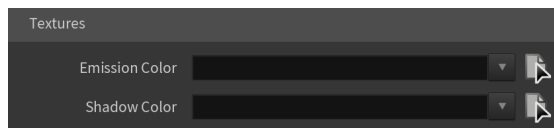
## Textures

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**Emission Color** – Specifies the color of the light rays and of the light source itself when visible in renderings.

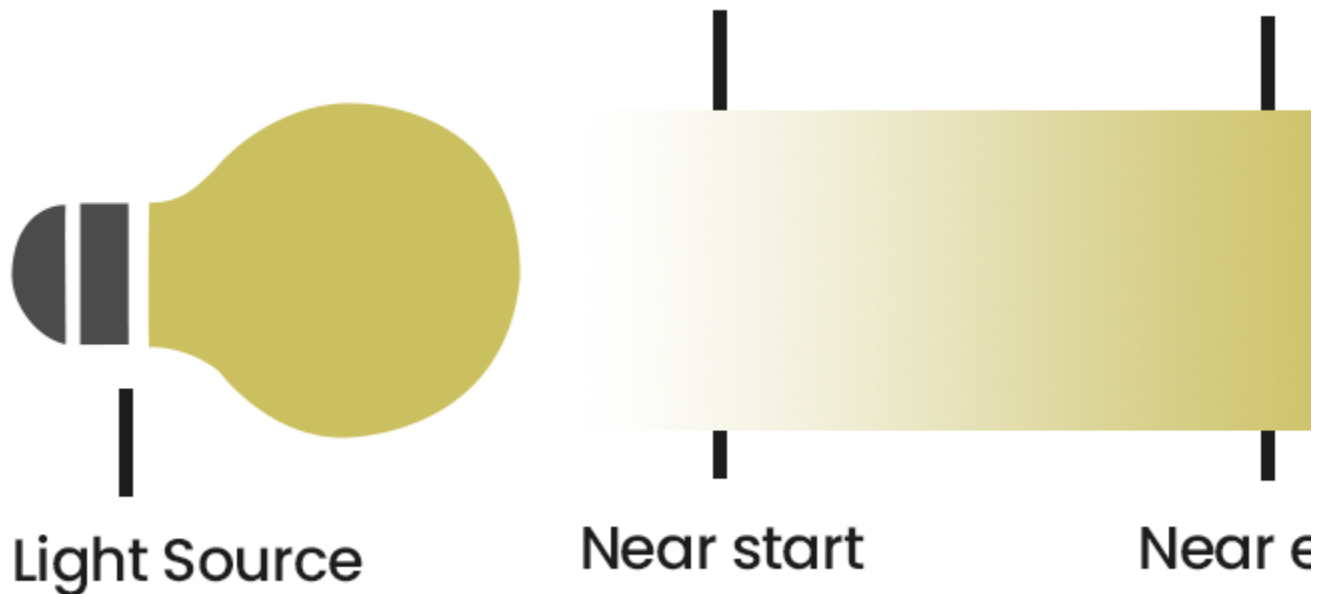
**Shadow Color** – Specifies the color of the shadows produced by the light.



## Decay

The Decay parameters determine how the light fades in and out. The Near Decay determines how light fades in. The light isn't at its maximum value at its source, but instead gradually increases until it reaches the Near End. The Far Decay determines how light fades out. The light isn't at its maximum value at its end, but instead gradually decreases after the Far Start.

Decay option is useful for creating hotspots or controlling the length of a "God Rays" effect created with Environment Fog.



**Near Decay** – Toggles near decay on and off. See the [examples below](#) for more information.

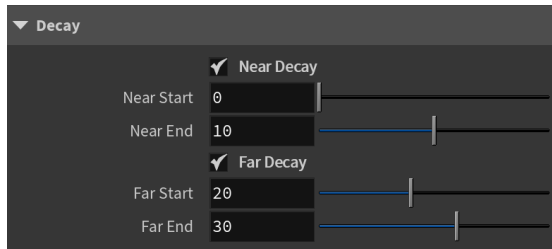
**Near Start** – Determines where the fade in starts. Anything before this point is rendered dark.

**Near End** – Determines where the fade in ends. After this threshold, the light is at its full value.

**Far Decay** – Toggles far decay on and off. See the [examples below](#) for more information.

**Far Start** – Determines where the fade off starts.

**Far End** – Determines where the light reaches a value of 0, i.e. completely fades off.



## Advanced

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**Affect Diffuse** – Determines whether the light affects the diffuse properties of the materials.

**Affect Specular** – Determines whether the light affects the specular of the materials. This means glossy reflections.

**Affect Reflections** – Determines whether the light appears in reflections of materials, for both perfect and glossy reflections.

**Affect Atmospheric** – Determines whether the light influences the atmospheric effects in the scene.

**Diffuse Contribution** – When **Affect Diffuse** is enabled, specifies a multiplier for the effect of the light on the diffuse component.

**Specular Contribution** – When **Affect Specular** is enabled, specifies a multiplier for the effect of the light on the specular component.

**Atmospheric Contribution** – When **Affect Atmospheric** is enabled, this value determines the amount of involvement.

**Motion Blur Samples** – Specifies the number of samples used to sample the light for motion blur.

**Caustics Multiplier** – A multiplier for the generated caustics by the selected object. Note that this multiplier is cumulative - it does not override the multiplier in the [Caustics Tab](#) of the [V-Ray Render Settings](#).

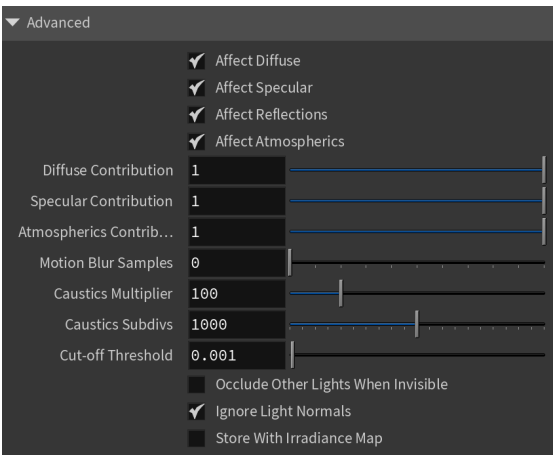
**Caustics Subdivs** – Only used when calculating [Caustics](#). Lower values mean more noisy results, but render faster. Higher values produce smoother results but take more time.

**Cut-off Threshold** – Specifies a threshold for the light intensity, below which the light is not computed. This can be useful in scenes with many lights, where you want to limit the effect of the lights to some distance around them. Larger values cut away more of the light; lower values make the light range larger. When this value is *0.0*, the light is calculated for all surfaces.

**Occlude Other Lights When Invisible** – Controls the behavior of invisible lights in relation to other light sources. When enabled, the light blocks the lighting from other lights as if it's visible. Also in reflections the light behaves as it's visible and occludes other lights. When disabled, the light is transparent for other lights and does not occlude them. This option doesn't affect visible lights (as they always occlude other lights) and dome lights (which are always additive).

**Ignore Light Normals** – Usually, the surface of the source emits light equally in all directions. When this option is disabled, more light is emitted in the direction of the source surface normal.

**Store With Irradiance Map** – When enabled and GI calculation is set to Irradiance map, V-Ray calculates the effects of the V-Ray Mesh Light and stores them in the irradiance map. The result is that the irradiance map is computed more slowly but the rendering takes less time. The irradiance map can also be saved for later use.



### Example: No Decay

The example below shows the difference when **No Decay** option is enabled or disabled.

Off  
On





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### Example: Single-Sided vs. Double-Sided Lights

This example demonstrates the difference between a single-sided and a double-sided planar area light.

off  
on





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### **Example: Decay Near Start**

This example shows the variances achieved by changing the Near Start parameters only.



Near Start 10, Near End 60



Near Start 30, Near End 60





Near Start 50, Near End 60

### Example: Decay Near End

This example shows the variances achieved by changing the Near End parameters only.



Near Start 0, Near End 10



Near Start 0, Near End 30



Near Start 0, Near End 50

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**Example: Decay Far Start**

This example shows the variances achieved by changing the Far Start parameters only.



Far Start 10, Far End 60



Far Start 30, Far End 60



Far Start 50, Far End 60

### **Example: Decay Far End**

This example shows the variances achieved by changing the Far End parameters only.



Far Start 60, Far End 60



Far Start 60, Far End 100



Far Start 60, Far End 120

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### **Example: Near and Far Decay**

This example shows some artistic lighting results achieved by using both Near and Far decay options.



Near Start 0, Near End 15, Far Start 30, Far End 60



Near Start 20, Near End 35, Far Start 40, Far End 55





Near Start 30, Near End 60, Far Start 90, Far End  
120