

Caustics

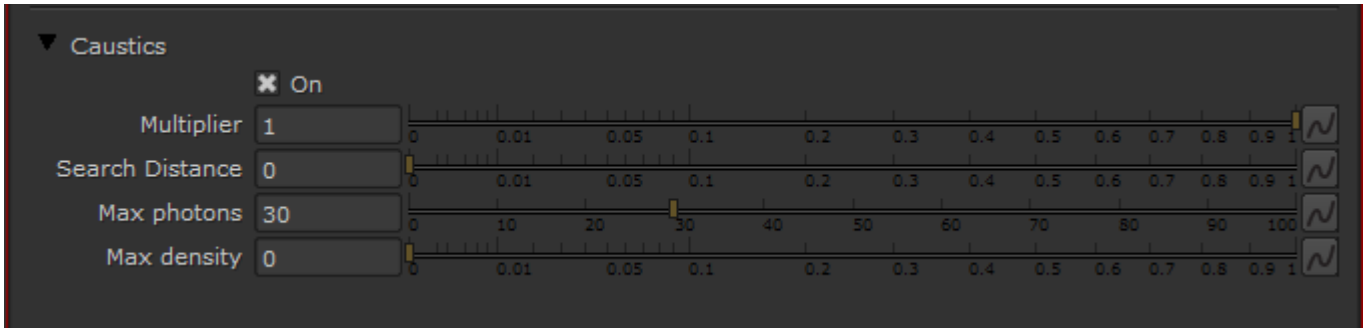
This page provides information on the Caustic rollout in the Common Tab of the VRayRenderer node.

Overview

V-Ray supports the rendering of caustics effects. In order to produce this effect you must have proper caustics generators and caustics receivers in the scene via an [VRayObjProp](#) node, and proper caustics settings for the light source itself. In order to calculate the caustics effects, V-Ray uses a technique known as photon mapping. It is a two-pass technique. The first pass consists of shooting particles (photons) from the light sources in the scene, tracing them as they bounce around the scene, and recording the places where the photons hit the object surfaces. The second pass is the final rendering, when the caustics are calculated by using density estimation techniques on the photon hits stored during the first pass.

UI Path: `||Select VRayRenderer|| > Properties Panel > Common tab > Caustics rollout`

Parameters



On – Turns rendering of caustics on and off. For accurate caustic calculations, disable the [VRayMtl Affect Shadows](#) parameter when using caustics. Simultaneous usage of both caustics here and **Affect Shadows** in the VRayMtl can be used for artistic purposes, but will not produce a physically correct result.

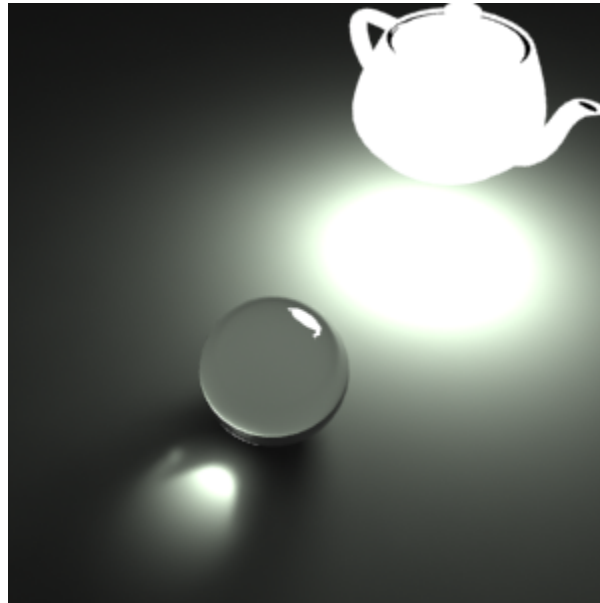
Multiplier – This multiplier controls the strength of the caustics. It is global and applies to all light sources that generate caustics. If you want different multipliers for the different light sources then you should use the local light settings. Note: this multiplier is cumulative with the multipliers in the local light settings.

Search Distance – When V-Ray needs to render the caustics effect at a given surface point, it searches for a number photons on that surface in the area surrounding the shaded point (search area). The search area in fact is a circle with center the original photon and its radius is equal to the Search distance value. Smaller values produce sharper, but perhaps more noisy caustics; larger values produce smoother, but blurrier caustics.

Max photons – This is the maximum number of photons that will be considered when rendering the caustics effect on a surface. Smaller values cause less photons to be used and the caustics will be sharper, but perhaps noisier. Larger values produce smoother, but blurrier caustics. The special value of 0 means that V-Ray will use all the photons that it can find inside the search area.

Max density – This parameter allows you to limit the resolution (and thus the memory) of the caustics photon map. Whenever V-Ray needs to store a new photon in the caustics photon map, it will first look if there are any other photons within a distance specified by Max density. If there is already a suitable photon in the map, V-Ray will just add the energy of the new photon to the one in the map. Otherwise, V-Ray will store the new photon in the photon map. Using this options allows you to shoot many photons (and thus get smoother results) while keeping the size of the caustics photon map manageable.

Example: GI Caustics



GI caustics generated by a self-illuminated object

Notes

- For accurate caustic calculations, *disable* the [VRayMtl's Affect Shadows](#) parameter when using caustics. Simultaneous usage of both **Caustics** and **Affects Shadows** can be used for artistic purposes but will not produce a physically correct result.