Visibility

You can selectively disable an object's visibility for the various types of rays in the renderer. By default, objects are visible to all types of rays. Camera - *Camera (AA)* rays (i.e., primary or view rays). Shadow - shadow rays fired in the direct lighting calculations. Specular - *specular_reflection* rays. Transmission - *transmission* rays. Diffuse - *indirect_diffuse* rays (i.e. global illumination or GI rays). Specular - *indirect_specular* rays (i.e. specular reflection rays).

To set the visibility, add up the values of the rays you want to "see" the object.

For example, if an object is visible to the camera (primary visibility), and to transmission (both diffuse and specular), then that’s **visibility 13** (1 + 4 + 8).

<table>
<thead>
<tr>
<th>Ray type</th>
<th>Decimal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera (Primary Visibility)</td>
<td>1</td>
</tr>
<tr>
<td>Shadow (Casts Shadows)</td>
<td>2</td>
</tr>
<tr>
<td>Diffuse transmission</td>
<td>4</td>
</tr>
<tr>
<td>Specular transmission</td>
<td>8</td>
</tr>
<tr>
<td>Volume</td>
<td>16</td>
</tr>
<tr>
<td>Diffuse reflection</td>
<td>32</td>
</tr>
<tr>
<td>Specular reflection</td>
<td>64</td>
</tr>
<tr>
<td>SSS (subsurface)</td>
<td>128</td>
</tr>
</tbody>
</table>

The following settings are provided via the Attribute Editor for geometry objects.

**Primary Visibility**

Determines whether the object is visible to camera rays.
The tank in this example is invisible to camera rays but visible to all other types of rays, including shadow rays.

**Casts Shadows**

Determines whether the object casts shadows.

**Diffuse Reflection**

Affects indirect diffuse rays (i.e., global illumination, hemi, or GI rays).

**Specular Reflection**
You can selectively disable an object's visibility for the various types of rays in the renderer. By default, objects are visible to all types of rays. *Specular Reflection* visibility affects indirect specular rays (i.e., specular reflection rays).

**Diffuse Transmission**

Object is visible in diffuse transmission and subsurface scattering.

**Specular Transmission**

Object is visible in sharp and glossy specular transmission (refraction).

**Volume**

Object is visible in indirect volume rays.

**Self Shadows**

Determines whether or not the object casts shadows on itself.
**Trace Sets**

This string label defines the set of objects to be traced or avoided. Objects are labeled using the Arnold shape attributes.

- When a trace set is *exclusive*, rays are traced against all geometry except the tagged nodes.
- When a trace set is *inclusive*, rays are traced against tagged nodes, but also against nodes that are not tagged at all.
- An empty trace set name means that the shape belongs to all sets. So to remove objects from, say reflections, one must assign a dummy set name.
- The trace set name must be set *before* the ray is fired. For example, for "direct" reflections, the trace_set node must be connected to the "camera" rays in addition to the "reflection" one.

ℹ️ This option works in conjunction with shaders supporting trace sets, like `trace_set`. 

![Disabled vs Enabled](image-url)