Filtering

Filtering is where the renderer assembles the pixel samples to produce images for display. This step is what helps produce an anti-aliased image.

There are a number of choices of filters available and most of them take a size in pixels. The choice of the filter and size affects the amount of anti-aliasing and the image sharpness. Note that some sharpening filters may cause negative color values and this may look like darkening or halos around objects and highlights. The default is a 2x2 pixel Gaussian. This is a relatively soft filter that has good anti-aliasing with a light blurring. Typically this is good enough for most things as it is inexpensive and reasonably sharp in animation. Sharpening filters like Sinc may be more desirable for still images meant for print.

Although non-integer filter sizes are allowed, we recommend integer sizes since they tend to produce less image noise in some situations.

2x2 Gaussian filter
4x4 Mitchell filter
4x4 sinc filter

Remapping or clamping is an option that can help in dealing with very bright specular and glossy highlights as well as directly visible light sources. Depending on how bright these are, they can sometimes dominate the average of the samples in neighboring pixels leading to these highlights appearing aliased. They can also contribute to noisy glossy reflections and caustic speckles on diffuse surfaces that can take a long time to converge.

Remapping solves this by performing the pixel filtering in a non-linear space. It compresses the samples down to a limited, finite range before applying filtering and then undoes the compression on the pixels before display. Where there is no variation in the samples this has no effect (even if they are still quite bright). Where there is significant variation, the dimmer samples will have more weight.

No remapping
Remapping [1 10 1]
Remapping [0 1 1]