10.3.12 Render - Cycles Render Engine - Render Baking

Render Baking

Refer to the Blender Render page for *general baking guidelines*

Cycles uses the render settings (samples, bounces, ...) for baking. This way the quality of the baked textures should match the result you get from the rendered scene.

The baking happens into the respective active textures of the object materials. The active texture is the last selected Image Texture node of the material nodetree. That means the active object (or the selected objects, when not baking 'Selected to Active') needs a material, and that material needs at least an Image Texture node, with the image to be used for the baking. Note, the node doesn't need to be connected to any other node. The active texture is what projection painting and the viewport use as a criteria to which image to use. This way after the baking is done you can automatically preview the baked result in the Texture mode.
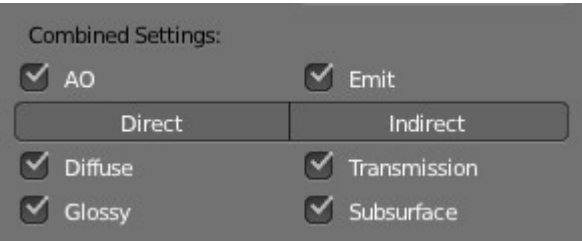
Options
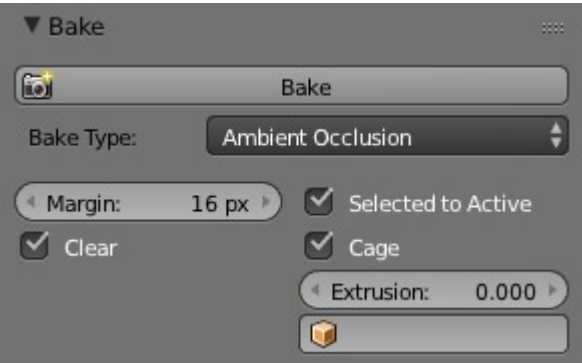
Ambient Occlusion Pass

Bake Mode

Combined
    Bakes all materials, textures, and lighting except specularity.

Combined Pass Options

The passes that contribute to the combined pass can be toggled individually to form the final map.

Ambient Occlusion
> Bakes ambient occlusion as specified in the World panels. Ignores all lights in the scene.

Shadow
> Bakes shadows and lighting.

Normals
> Bakes normals to an RGB image.

For materials the same spaces can be chosen in the image texture options next to the existing *Normal Map* setting. For correct results, the setting here should match the setting used for baking.

UV
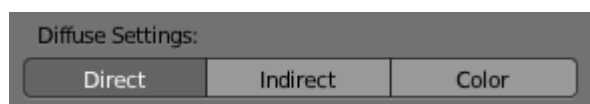> Bakes colors of materials and textures only, without shading.

Emit
> Bakes Emission, or the Glow color of a material.

Environment
> Bakes the environment as seen from the center of the object.

Diffuse / Glossy / Transmission / Subsurface
> Bakes the diffuse, glossiness, transmission of subsurface pass of a material.

Diffuse Pass Options

If only color is selected you get the pass color, which is a property of the surface and independent of sampling refinement.

If color is not selected, you get the direct and/or indirect contributions in grayscale.

If color and either direct or indirect is selected you get the direct and/or indirect contributions colored.

Additional Options

Margin
> Baked result is extended this many pixels beyond the border of each UV "island," to soften seams in the texture.

Clear
> If selected, clears the image before baking render.

Select to Active
> Bake shading on the surface of selected objects to the active object. The rays are cast from the lowpoly object inwards towards the highpoly object. If the highpoly object is not entirely involved by the lowpoly object, you can tweak the rays start point with *Ray Distance* or *Cage Extrusion* (depending on whether or not you are using cage). For even more control you can use a *Cage Object*.

Note
Memory Usage
There is a CPU fixed memory footprint for every object used to bake from. In order to avoid crashes due to lack of memory the highpoly objects can be joined before the baking process. The render tiles parameter also influence the memory usage, so the bigger the tile the less overhead you have, but the more memory it will

take during baking (either in GPU or CPU).

Cage

Cast rays to active object from a cage. A cage is a ballooned-out version of the lowpoly mesh created either automatically (by adjusting the ray distance) or manually (by specifying an object to use). When not using a cage the rays will conform to the mesh normals. This produces glitches on the edges, but it's a preferable method when baking into planes to avoid the need of adding extra loops around the edges.

Ray Distance

Distance to use for the inward ray cast when using selected to active. Ray distance is only available when not using *Cage*.

Cage Extrusion

Distance to use for the inward ray cast when using *Selected to Active* and *Cage*. The inward rays are casted from a version of the active object with disabled Edge Split modifiers. Hard splits (e.g., when the Edge Split modifier is applied) should be avoided because they will lead to non-smooth normals around the edges.

Cage

Object to use as cage instead of calculating the cage from the active object with the *Cage Extrusion*.

Note
When the base mesh extruded doesn't give good results, you can create a copy of the base mesh and modify it to use as a *Cage*. Both meshes need to have the same topology (number of faces and face order).