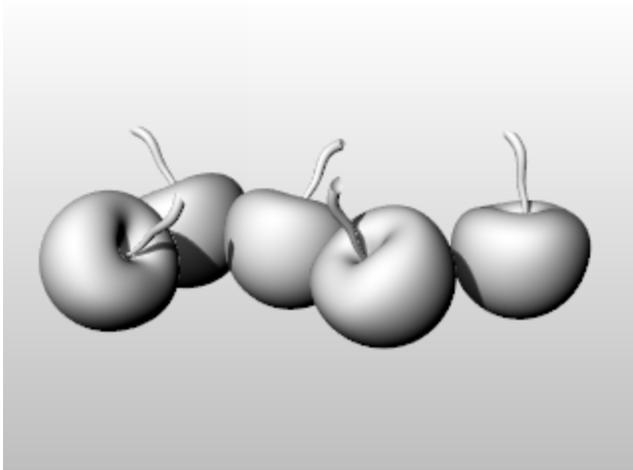


Chapter 11: Render

In addition to shaded previews, Rhino provides full-color rendering with lights, transparency, shadows, textures, and bump mapping.

Objects will render white until you add render color, highlight, texture, transparency, and bumps. These attributes are controlled through the **Properties** panel, **Material** page.



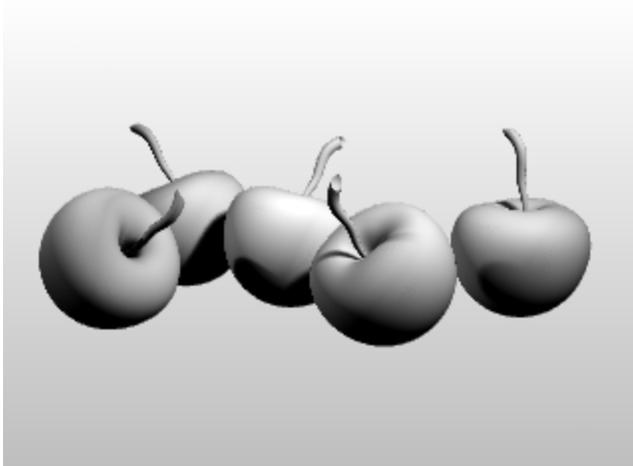
The process needed to render scenes consists of four basic steps:

- Add lighting
- Assign materials
- Set up the environment and ground plane
- Render

Although the steps do not have to be done in this order, using this method seems to make setting up a scene more efficient. To improve quality, repeat these steps until the image looks right to you.

Lights

In every Rhino rendering there are light sources that Rhino uses to calculate how the objects are to be illuminated. If you do not add any light sources to your scene, the default light is used. The default light is a directional light with parallel rays that acts as though you have a lamp shining over your left shoulder.



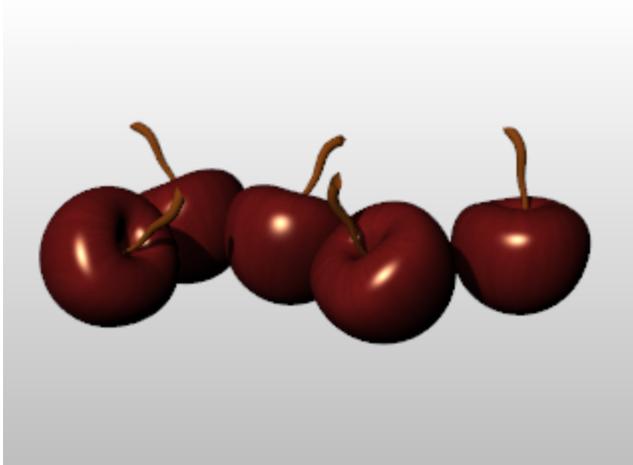


Add indoor lights or sun

- ▶ Insert **Spotlights**, **Directional Lights**, **Linear Lights**, **Point Lights**, or **Rectangular Lights**.
- ▶ Or turn on the **Sun**.

Materials

Materials specify the color, finish, transparency, texture, and bump for use by the renderer.



Assign materials to layers

1. In the **Layers** panel, select one or more layer names, and click in the **Material** column.
2. In the **Layer Material** dialog box, set up material properties.



Assign materials to objects

1. Select an object.
2. On the **Edit** menu, click **Object Properties**.
3. In the **Properties** panel, **Material** page, set up material properties.

Environment

Environments describe the space around the model. This space is reflected in objects and can provide overall lighting.



Set up the rendering environment

The rendering properties include environment settings like background color and image.

1. Open the **Environment Editor** panel.
2. Set up environment properties.

Ground Plane

The ground plane provides an infinite horizontal platform for the image that stretches to the horizon in all directions positioned at a defined elevation. A ground plane renders much faster than using a surface as a background. Any material can be assigned to the ground plane.



Turn on a ground plane

1. Open the **Ground Plane** panel.
2. Set up ground plane properties.

Render

Render and save an image.



Render and save the image

1. On the **Render** menu, click **Render**.
2. In the **Render Window**, on the **File** menu, click **Save As**.