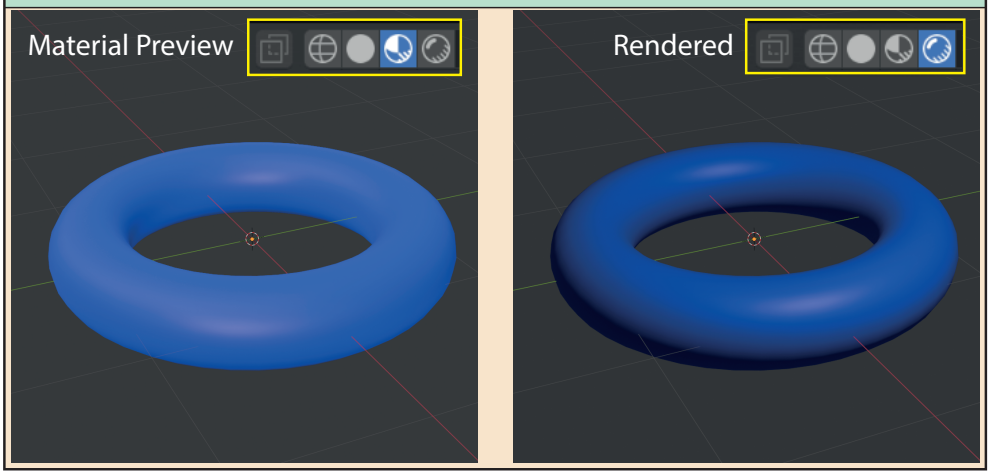
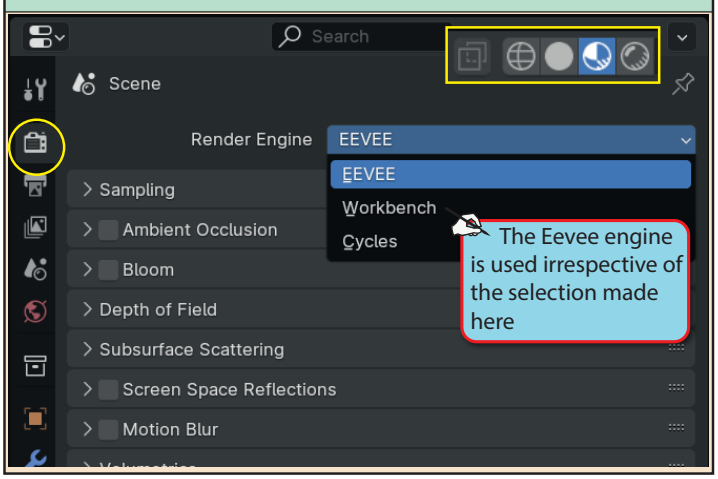
Basic Materials

Although we've already seen various ways of adding colour to shine to our objects, those results do not appear in the final render.
If we want objects in our scene to display a colour in the final render, then we must add a material to each of those objects.
Although we will cover this in much more detail later pages, we'll look at the very basics now.

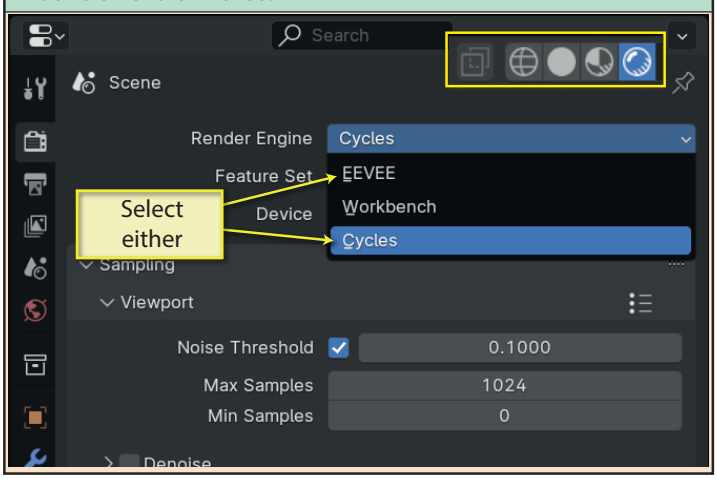
To see an object's material, the ***3D Viewport*** must be in either **Material Preview mode** or **Rendered mode**.



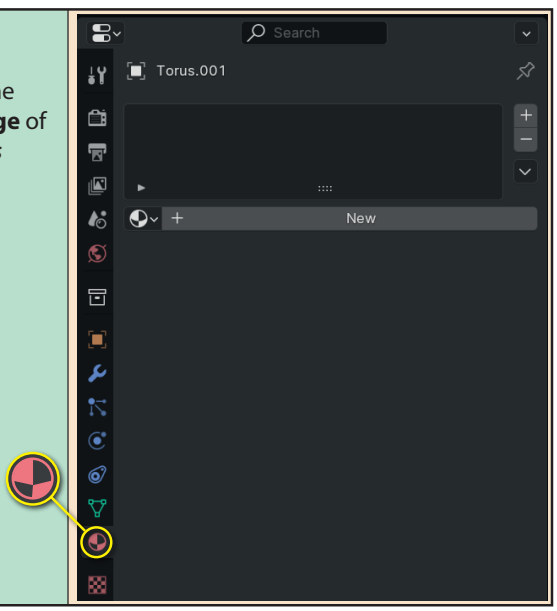
In **Material Mode**, Blender uses the ***Eevee render engine*** to create an image in the *3D Viewport*.



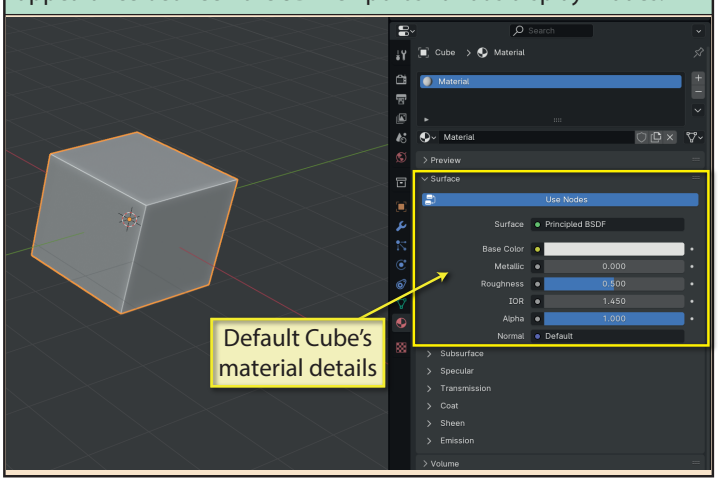
When we are in **Rendered mode**, we can select between the ***Eevee*** engine or the ***Cycles*** engine. Although the ***Cycles*** render engine gives a more accurate display and final render, it is also much slower than ***Eevee***.



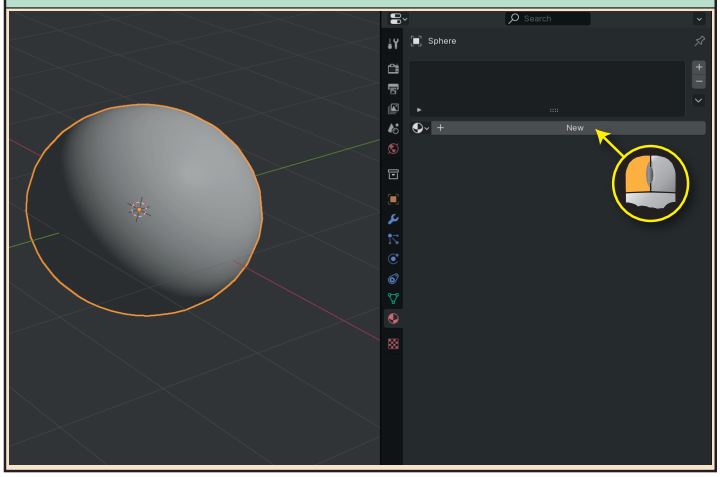
Materials are created and modified in the **Materials page** of the ***Properties Editor***.



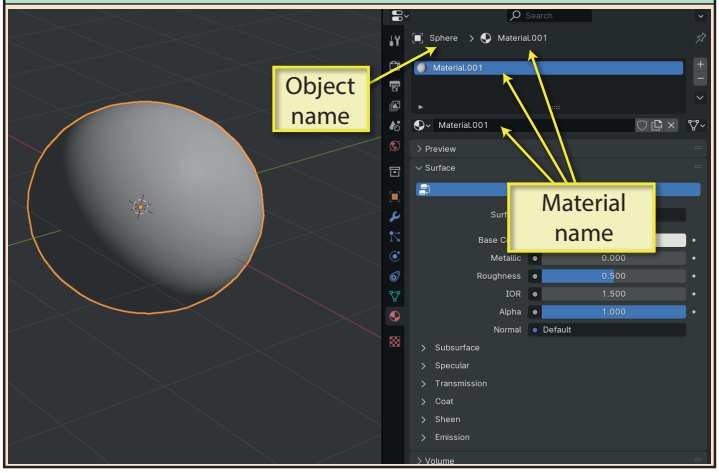
The default Cube is created with a material already assigned. This material is assigned the imaginative name of "Material". Since this material is a light grey colour, there's no great difference in its appearance between the 3D Viewport's various display modes.



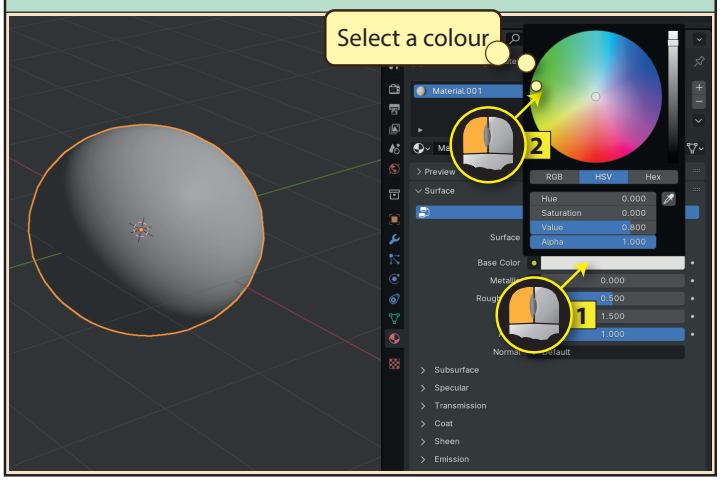
All other additional objects are not assigned a material.
To assign a material to the selected object, we need to click on "New" button.



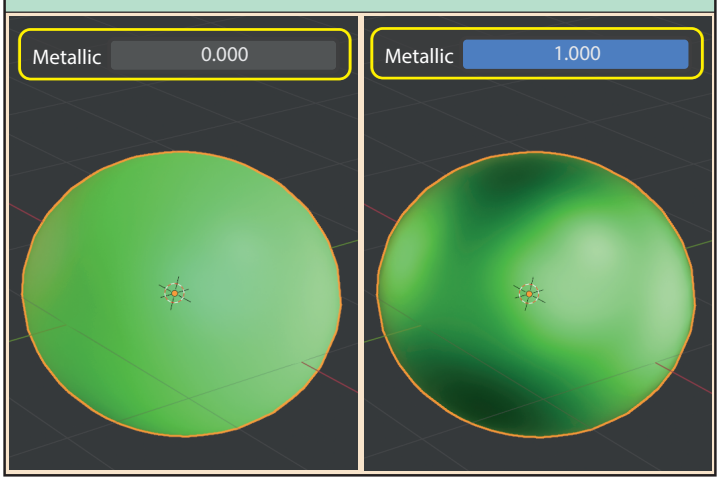
This creates a large selection of new entries on the page.
At the very top is the name of the selected item and the name of the material (*Material.001*)being assigned to it. The material's name is also shown in the list of materials assigned to this object.



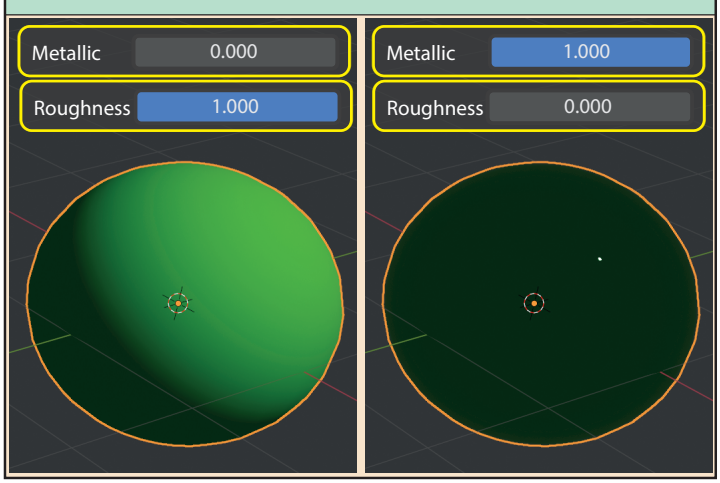
Under the heading ***Surface***, are the basic parameters that control the material's "look". The first of these, **Base Color**, allows us to select the material's colour. We'll choose a red colour to match our material's new name.



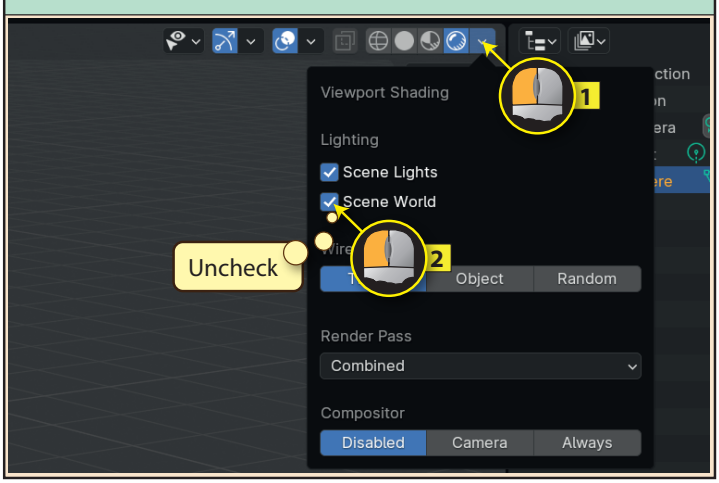
Next we come to **Metallic**. And although it has a slider value which can be set between 0 and 1, it really makes more sense to just use those two values and nothing in-between. Use 0.0 for non-metals and 1.0 for metals.



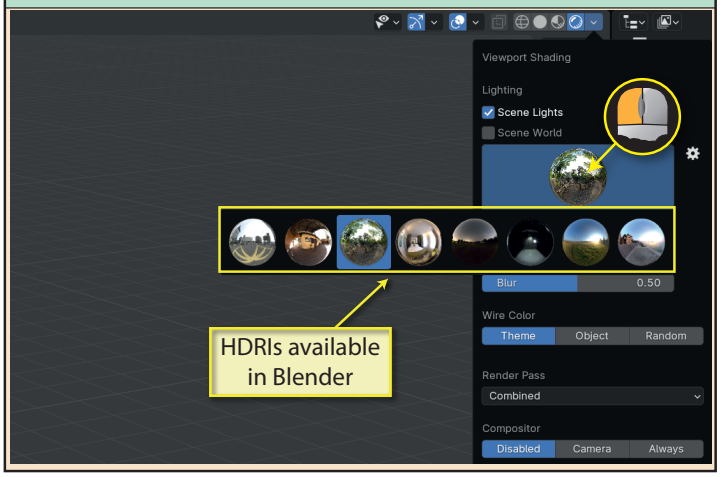
Roughness is an indication of the reflectiveness of the surface. Use zero for a mirror-like finish on metals and 1 for the roughest of surfaces and any value between to get the look you are after.



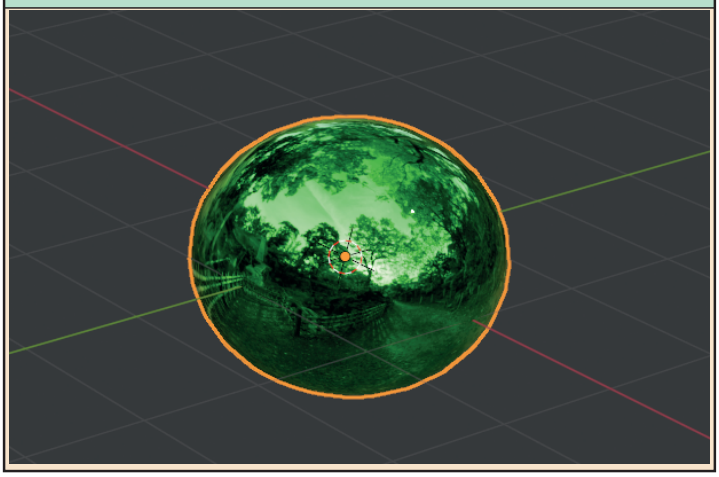
The smooth metallic material looks rather dull. The problem here is that our shiny surface has nothing to reflect. In the **Viewport Shadings** options, we need to deselect the Scene World checkbox.



When the checkbox is selected Blender expects to supplied with an image of the environment surrounding our scene – the High Dynamic Range Image or HDRI. But if we uncheck the box, Blender will offer us a few default ones.

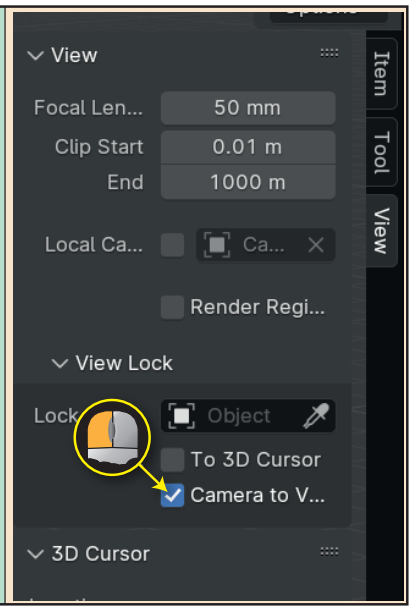


With an HDRI selected, the sphere takes on a mirror-like finish.



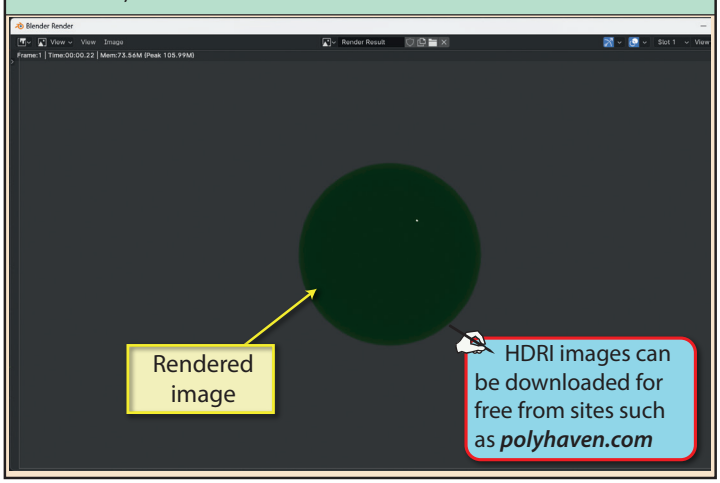
Once we have assigned a material to all the objects in our scene. we may want to render the result. The first stage in doing this is to make sure the render camera shows the view we want in the final image.

The simplest way to do this is to display the Sidebar (press **N**) and, in the **View page**, select the ***Camera to View*** checkbox.

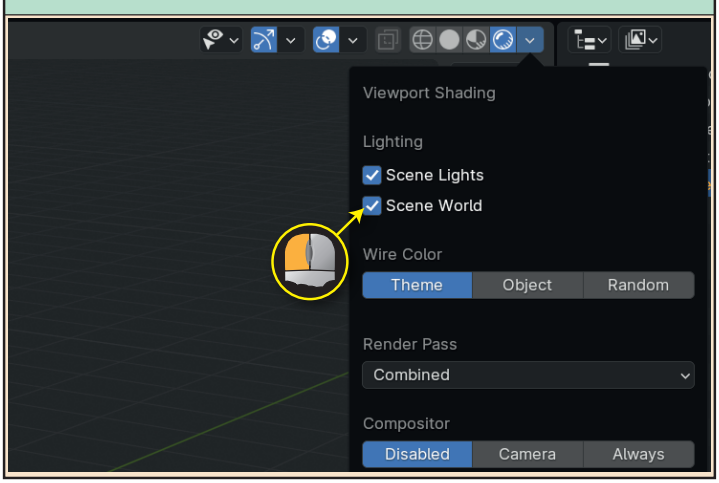


Now, when we press 0 on the numpad to see the aspect from the render camera, we can adjust the view using the same mouse options that we use to make adjustments in the 3D Viewport.

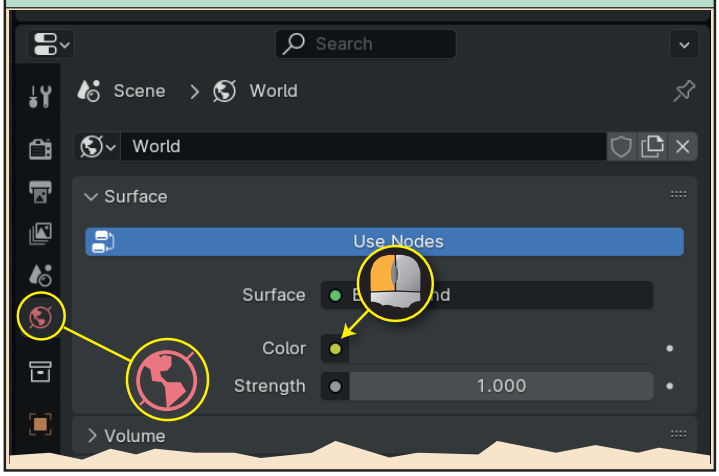
If we are expecting to see reflections in the sphere, we are going to be disappointed. The HDRI images available in the Blender package will not appear in the final render. If we want to see reflections, we need to use our own HDRI.



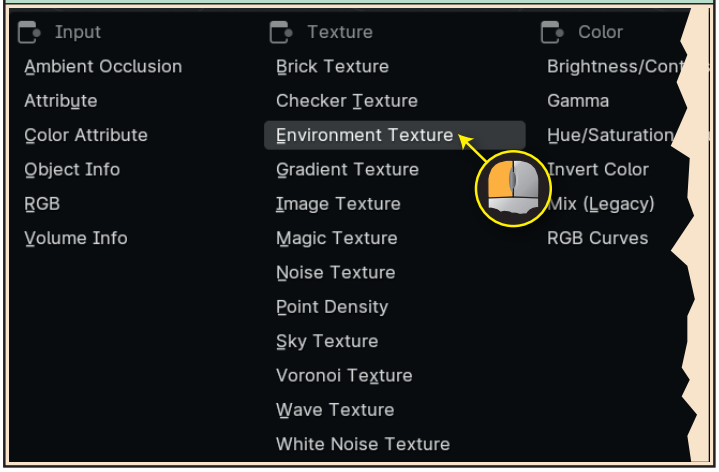
Once we have our own HDRI image, we need to go back to the **Viewport Shading panel**, and select the ***Scene World*** checkbox.



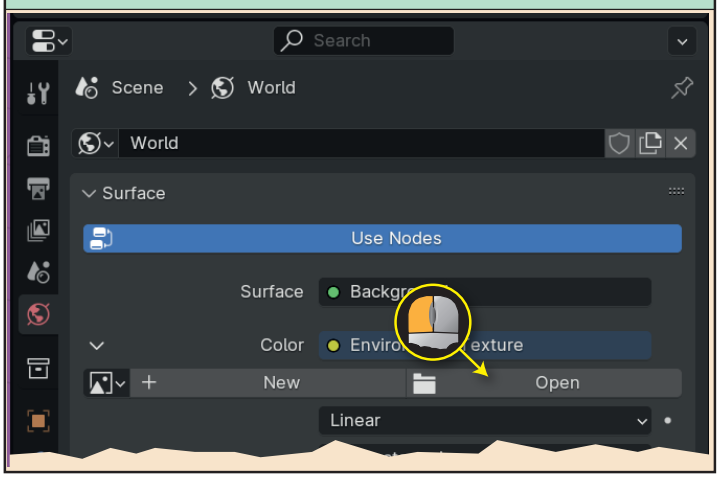
Next we go to the **World page** in the ***Properties Editor***, click on the yellow circle beside ***Color***...



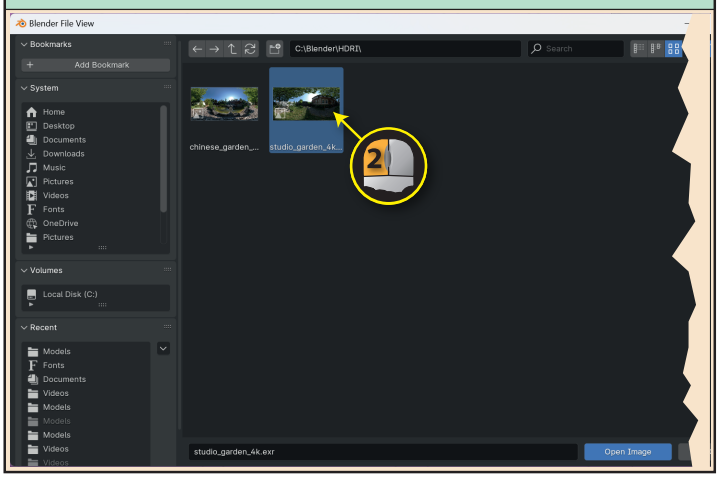
and choose **Environment Texture** in the panel that appears.



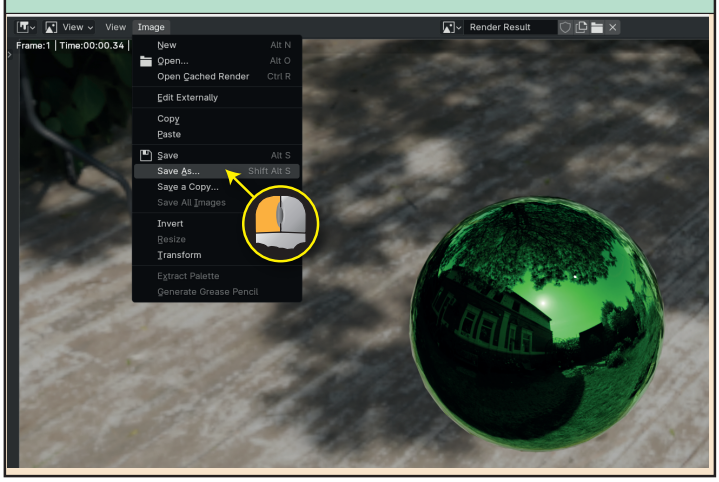
Back in the **World page**, we must select ***Open***...



...and specify the background HDRI image we want to use.



Now the rendered image will include the background and its reflection in the sphere. Use the ***Render window's Image>Save As*** menu option to save the rendered image to a file.



To omit the image from the render and have a transparent background, we need to choose the Properties Editor's **Render page**, and, after expanding the **Film** heading check ***Transparent***.