



**indigo**  
renderer

Cinema 4D Exporter Manual



Image by David Gudellus

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# Overview

This manual covers the installation and usage of Cindigo, the Cinema 4D exporter for Indigo Renderer. The information in this manual will allow you to understand and use Cindigo proficiently.

## About exporters

Indigo is independent of a modelling package and uses its own file format, called an Indigo Scene File (.igs). Before Indigo can render your scene, it must be converted into an .igs file. The job of an exporter is to create an .igs file from your currently open scene. Cindigo is such an exporter.

## Acknowledgements

The Cinema4D exporter is called 'Cindigo' and is the result of the work of Yves Collé. Glare Technologies would like to thank Yves for his original work on the project, and the ongoing support he provides to Glare.

Also a thanks to Godzilla for the cover design and example renders.

# Installing Cindigo 2.2

## Step 1. Check your version of Cinema 4D

Cindigo is compatible with release 10 to 11.5 of Cinema 4D. There is a Mac version of Cindigo available for release 10.5 to 11.5. There are 64-bit versions of Cindigo available.

## Step 2. Download and install Indigo

Download Indigo for your system and install it to the default location. Instructions for doing this are in the Indigo Manual. You can download Indigo from:

<http://www.indigorenderer.com/download/>

## Step 3. Download and install Cindigo 2.2

Download the version of Cindigo for your system from:

<http://www.indigorenderer.com/cinema4d>

Cindigo comes with an installer for Windows and Mac. Both installers will look for a "plugins" directory in all known locations for Cinema 4D.

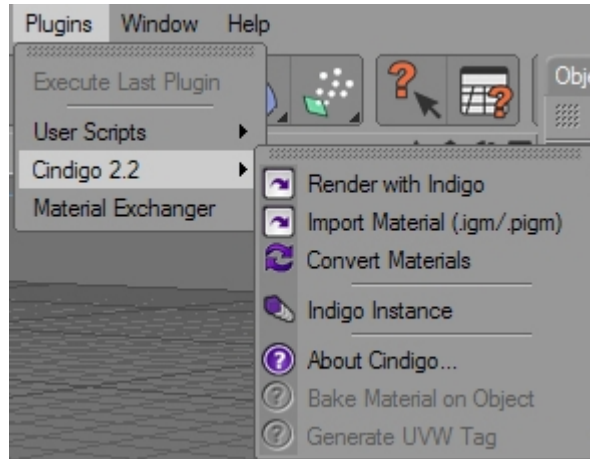
Cindigo expects to find Cinema 4D at these locations:

**Windows**     c:\Program Files (x86)\MAXON\Cinema 4D RXX  
                  or  
                  c:\Program Files\MAXON\Cinema 4D RXX

**Mac**            /Applications/MAXON/Cinema 4D

If you have any issues installing Cindigo, please email us at [support@indigorender.com](mailto:support@indigorender.com).

Restart Cinema 4D after installing Cindigo and you should see **Cindigo 2.2** become available under the **Plugins** menu.



*The Cindigo plugins menu*

You are now ready to use Cindigo.

## Things to know

There are several concepts you need to know to know to fully understand how Indigo works and how Blendigo treats these concepts. Refer to the **Indigo manual** and the **Techniques Manual** for more detailed information.

### Indigo is physically based

Indigo is a physically based renderer, that means that if is possible to construct a photo in the real world, it is possible to render it in Indigo. Blendigo has the job of converting the virtual world of Blender into the real world representation used by Indigo.

Users with experience of studio photography may find setting up a scene in Indigo a familiar experience.

### Units of measurement

Indigo works on units of metres. Blendigo by default converts on Blender unit of distance to one metre in real world space. Select an object and press n to see the position of the object in blender units to get an idea of the scale of your scene. Because Indigo is a physically-based renderer, it is important that the scale is correct.

### Light sources

Blender has some light-sources that do not exist in the real-world – for example point lights (lights that are infinitesimally small and exceptionally bright) and 'invisible spotlights'. To use Indigo correctly you will need to master 'emitting materials' to create realistic lights in your scenes.

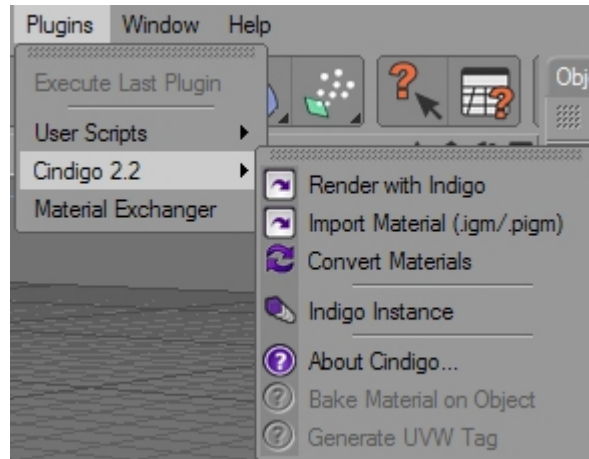
## **Realistic Materials**

Because Indigo is a photo-realistic renderer, the material properties of objects must be of a higher detail to accurately simulate them. This not only means higher resolution textures, but also correctly set material types that describe things about the material, such as transparency, roughness of the surface, and how light moves through the object.



# The Plugins Menu

The Plugins Menu is mainly used to create Indigo objects, convert materials and start rendering.



## Render with Indigo

This exports the current scene to be rendered with Indigo. This works identically to the Cinema 4D **Render > Render View** command, except it exports using Indigo materials and launches Indigo to render the scene.

## Import Material .igm/.pigm

This loads an .igm (Indigo Material) or .pigm (Packed Indigo Material) file from your computer and adds it to your scene so it can be applied to an object.

## Convert Materials

This will load all of the Cinema 4D materials and convert them automatically to Indigo materials. Cindigo will convert all C4D materials automatically on export to Indigo, however using this function will give you more control over the material settings.

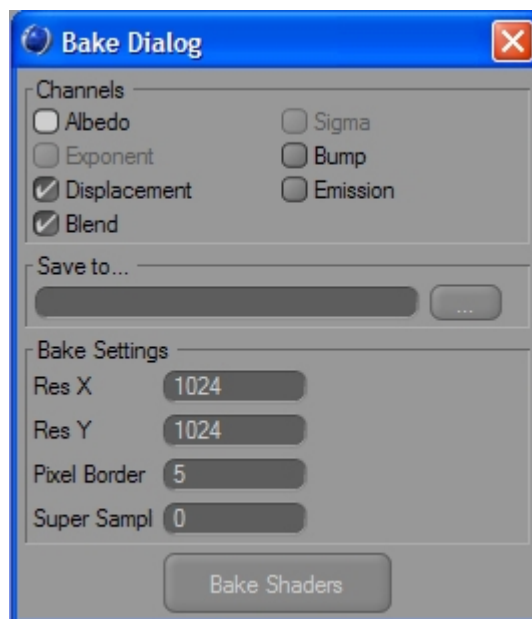
## Indigo Instance

Creates an instance that can be used to make multiple copies of an object in a memory-efficient and CPU-efficient way. Indigo instances are faster to render than Cinema 4D instances (which aren't real instances but are copies).

## Bake Material on Object

Cindigo bakes all C4D shaders to textures on export, but this feature allows you to bake unique 3D shaders to an object's UV map. It works similar to C4D's "bake on object" command. A decent UV map is required. To use this function follow these steps:

Select the **texture tag** of a **polygon object** that has an **Indigo material** applied. Click **Plugins > Cindigo 2.2 > Bake Material on Object**.



*Bake Material on Object dialog box*

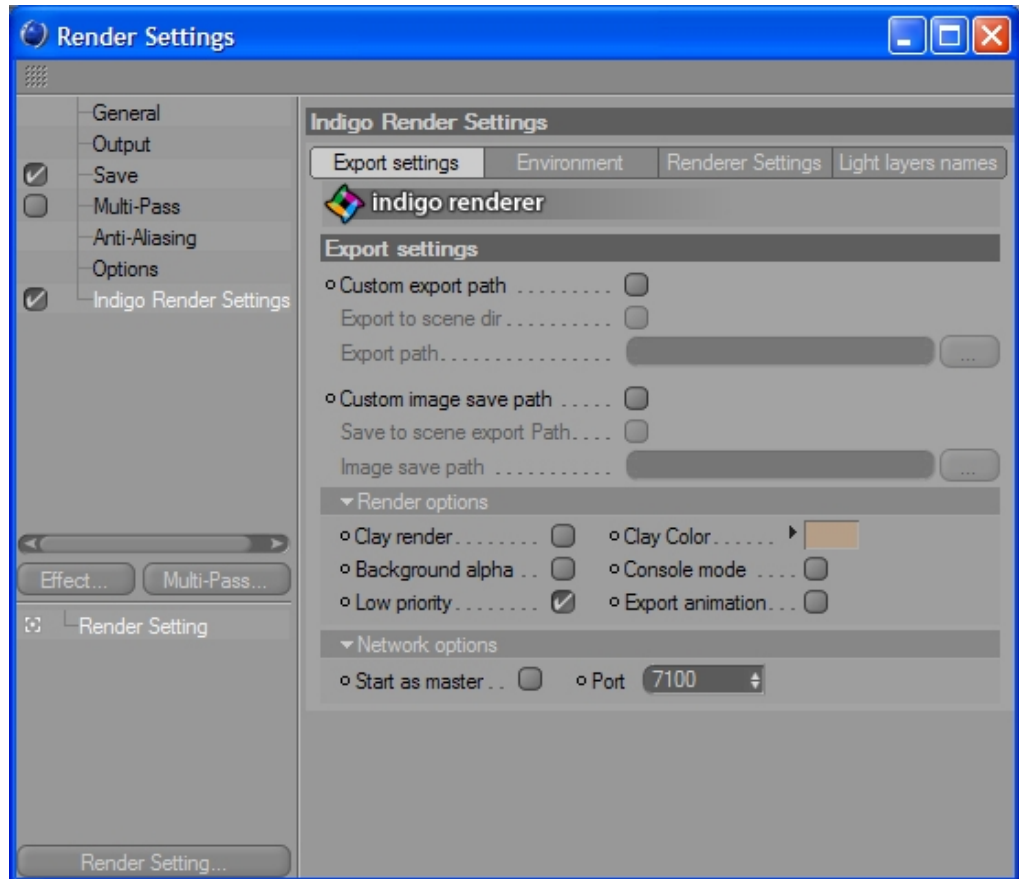
Select the channels you want to bake and specify an output path. Pixel Border adds a blank border to the output texture file. Super Sample is an anti-aliasing technique.

## Generate UVW Tag

C4D does not fully support UVW map generation for custom materials. This Cindigo function allows you to bypass this limitation. Just select a texture tag with an Indigo material applied and click **Plugins > Cindigo 2.2 > Generate UVW Tag**.

# Indigo Render Settings

The Indigo Render Settings let you control various aspects of how Indigo will render the scene.



*Cindigo Render settings*

Most of the settings used for your renders will be copied directly from the existing Cinema 4D render settings, e.g. width and height come from the Output section of the Render Settings dialogue. However, there are some Indigo specific render settings that can be accessed via:

**Render menu > Render settings > Effect... > Indigo Render Settings**

Note that you need to press the "Effect..." button on the Render Settings window to access the advanced Indigo Settings. You do not need any other render pass, Indigo does it all.

## Export settings

**Custom export path:** Sets a path for your scene to save at when exported to Indigo for render.

**Export to scene dir:** Exports to the set Cinema4D save path.

**Custom image save path:** Indigo automatically saves an image from the rendering scene at set intervals to this, or default, location.

**Save to scene export path:** Sets image save path to export path specified above.

## Render Options

**Clay render:** This exports the scene with all the materials replaced with a clay material with a color specified from the **Clay color** picker. This can be used to get a quick 'draft-view' of the scene.



*Clay render off*



*Clay render on*

**Low priority:** Sets the Indigo Renderer programs process priority. Set this to allow Indigo to render in the background without a system slow-down.

**Background alpha:** Renders an alpha layer based on visible objects and background.

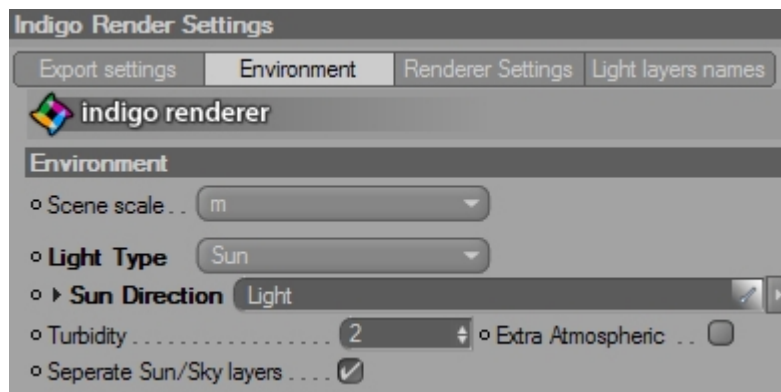
**Console mode:** Starts Indigo in a command line window.

**Export animation:** Exports all frames of an animation and spends a certain amount of time on each frame based on the halt settings in the render settings tab.

## Network Options

**Start as master:** Automatically starts Indigo in Network rendering mode through the **port** specified adjacent. See Indigo Manual for more information on network rendering.

## Environment



*Cindigo environment render settings with Sun light type selected*

**Scene scale:** The scale that Cindigo converts Cinema4D's units to real-world units. Because Indigo measures things in meters, you may want to change this if you have modelled your scene in a different scale. Default is meters.

**Light type:** These settings control the background of your scene. They all contribute a certain amount of light to the scene.

## Sun



Use Indigo's Sun & Sky model. Create a **directional object** to use for the Sun Direction, such as an **infinite light** and drag the object's tag into this dialog box. The direction of this object will now aim the sun, which changes the light direction and color depending on the angle for sunset/sunrise effects.

**Turbidity:** Controls the 'haziness' air. A lower value will make the sky bluer and clearer, and a high value will make it greyer.

**Extra Atmospheric:** Renders with only the sun, and not the sky. Good for renders of outer-space.

**Separate Sun/Sky layers:** Puts the sun and sky into separate light layers.

## Background



*Plain material*

Use a material as background. Supports HDR environment maps in EXR or FLOAT formats. Requires material to have emission enabled.



*HDR Environment map*

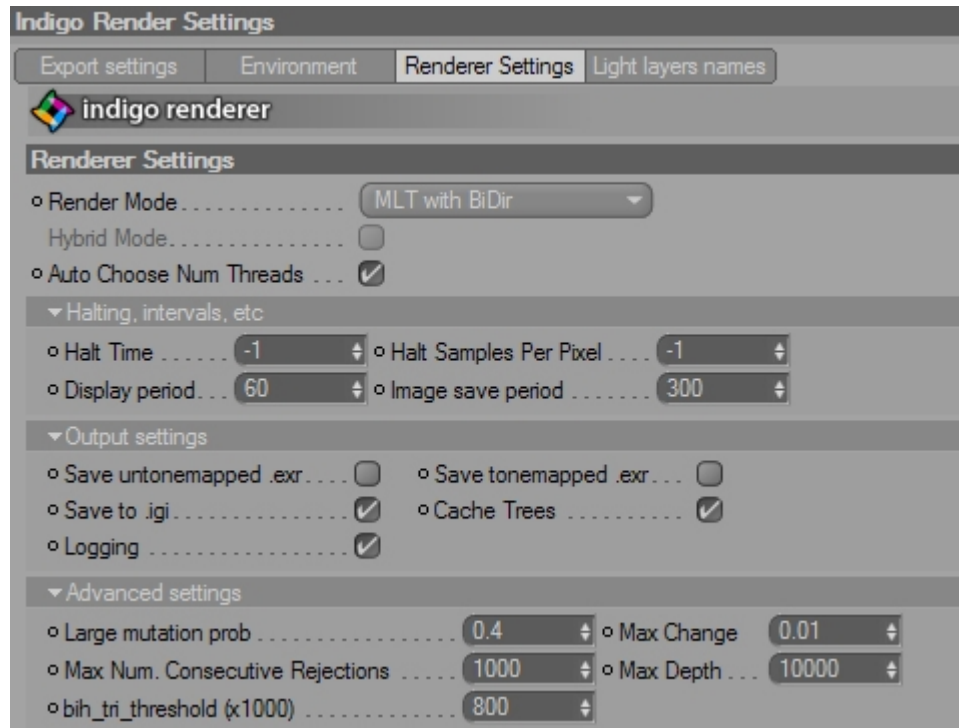
## None

A plain black background.



# Render Settings

General render settings.



**Render Mode:** If you are not sure which to use, PathTracing with BiDir is recommended.

**Hybrid Mode:** Not currently supported.

**Auto Choose Num Threads:** Automatically chooses all available CPU cores for rendering. Turn this off to specify number of threads to use for rendering.

## Halting, intervals, etc

**Halt-time:** Number of seconds to keep rendering for. Indigo will stop rendering and wait for the user to save the image after this amount of time.

**Halt samples per pixel:** Indigo will keep rendering until the specified number of samples per pixel is reached. The correct spp value differs for each image but a value of 200 spp is suitable for many simpler scenes.

**Image save period:** Time (in seconds) that Indigo will automatically save an image from the current rendering process. Used as a backup feature in case of a crash or system failure.

## Output Settings

**Save untonemapped .exr:** Save image as a raw HDR image without tonemapped adjustments.

**Save tonemapped .exr:** Save tonemap-adjusted HDR image.

**Save to .igi:** Saves an IGI file for each rendered scene. On by default.

**Cache trees:** Saves caches of the scene acceleration structure. Makes reloading scenes faster. On by default.

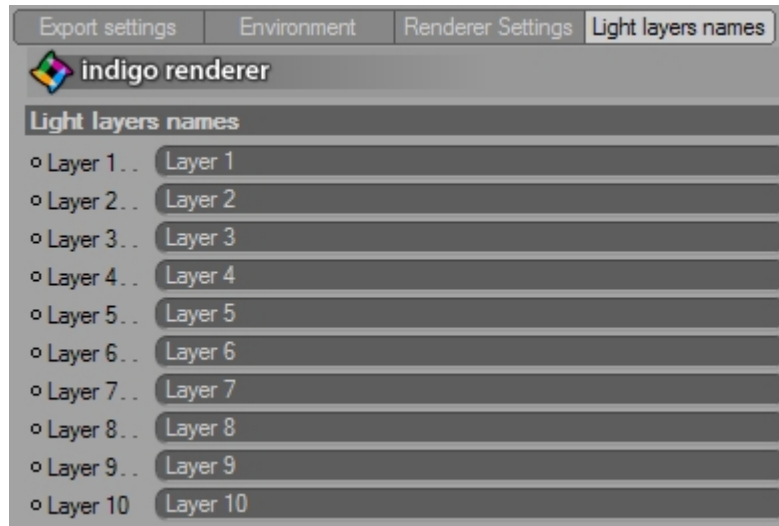
**Logging:** Keeps a log of rendering process. Used for debugging purposes.

## Advanced Settings

These settings should not usually be changed.

## Light Layer Names

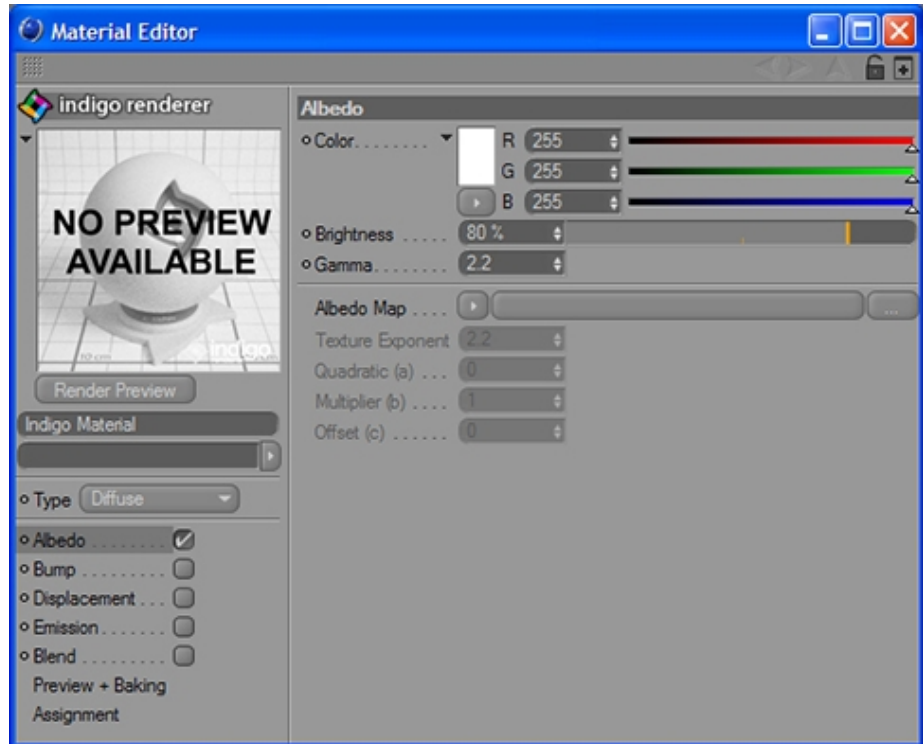
Name light layers for reference both in Cinema4D and the Indigo Renderer. You can set light layers in the Material Attributes and in the Indigo Light Tag.



*Light layer names tab of the render settings*

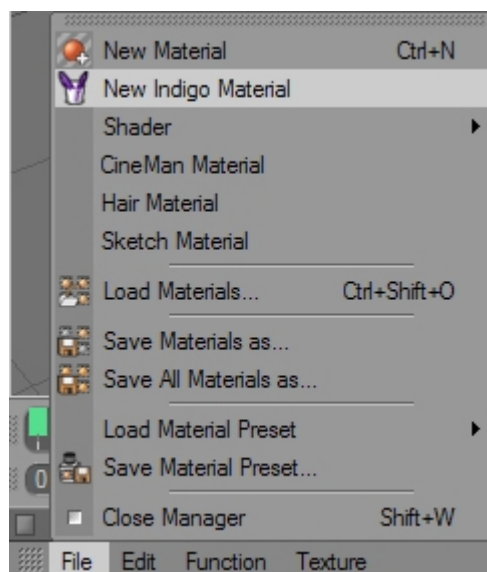
# Material Settings

Here you can edit the attributes of an Indigo material. It can be found by selecting an Indigo material and looking in the Attribute Manager, or double-clicking on the Indigo material.



*The Cindigo material editor*

To create a new Indigo material, navigate **Material Manager > File > New Indigo Material**.



*Create new Indigo material*

## Render Preview

This function will use Indigo to create a small preview of the current material settings. Note that currently you will have to close the **Indigo\_console.exe** program to stop rendering this preview.

Beneath the preview box you can give a name to the material, and add it to a Cinema4D layer.

## Material Types

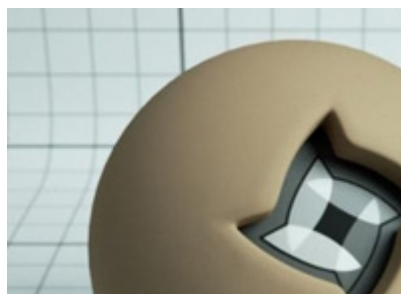
Here is a brief description of Indigo material types and attributes. Select the desired material type from this drop-down. See the Indigo manual for detailed descriptions of material functions and attributes.



*Material type drop-down*



**Diffuse:** Diffuse materials are flat, matte surfaces that don't have shiny edges. Flat wall paint, or a piece of paper are good examples of a diffuse material. There will be no particular reflection from a diffuse material.



**Oren Nayar:** Oren-Nayar materials are very rough materials that scatter light in every direction. They are rougher than diffuse materials. Oren-Nayar is useful for creating surfaces that are like clay, or generally rough. They aren't shiny at all.



**Phong:** Phong is a shiny material. Commonly used for shiny paints or any metals. In particular, phong will have a "specular highlight" where the light is completely reflected. Phong is useful for anything that has a lacquer applied to it - for example a shiny wood floor or a car paint.



**Transmitter:** A diffuse transmitter. Adds translucency to a material for allowing light to pass through. Used to simulate lamp shades or paper.



**Specular:** Specular materials are quite powerful and can be made to act as perfect reflectors (like a mirror) or as a fully transparent glass and anything in between.



**Glossy:** Glossy Transparent. Gives a rough surface to a transparent material. Can be used for frosted glass.

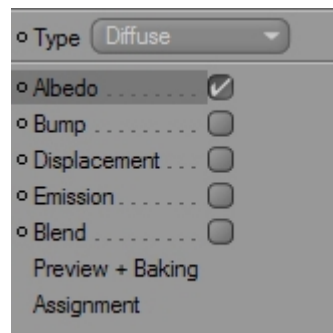


**Blend Material:** This is a material type that lets you create compound materials that are a combination of other materials. Blended materials have a 'blend map' that specifies how to blend the two sub-materials together. For example, you might have a shiny phong material combined with a rusty diffuse material. The blend map would show where the rust spots show through.

**Null Material:** The null material is only really useful for debugging your scenes, as it does not interact with light in any way. Can be used to change the opacity of a material.

## Material Channels and attributes

Check desired channels from list to be used for the material.



*Default settings for material type Diffuse*

Selecting different material types will change the list of options below, some material types share the same channels as others. Here is a list of all material channels for all material types.

**Transparent:** Allows light to pass through the material.

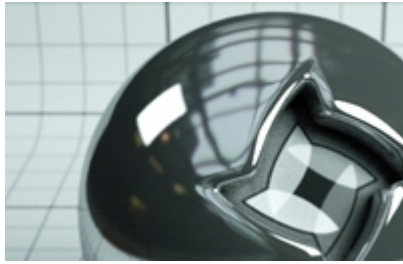
**Internal medium:** Controls how light moves through the interior of a mesh.



**Color:** The color of the surface including textures.



**Sigma:** Defines the roughness of the surface.



**Phong:** The amount of light reflected. **NK data** is data from lab-measured metals.

**Exponent:** Controls the 'roughness' of the surface. The smoother the surface (or higher the IOR) the sharper the reflection.



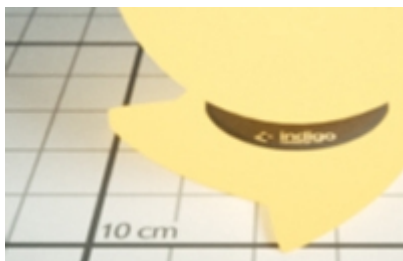
**Absorption layer:** Absorbs light other than the color specified.



**Bump:** Add a bump map. Does not displace the surface, just gives the illusion of a bumped surface.



**Displacement:** Add a displacement map. Displaces the surface of the object with the material applied.



**Emission:** Emits light from the mesh surface. Used for all types of lights. Adjust parameters to change light color brightness.





**Blend:** Add a material here to mix with the current material. If no material is defined, the default is mixed with a null material.

## Extra Options:

**Texture Preview Size:** This changes the quality of the texture in the Cinema4D view-port, it does not affect the rendered scene at all.

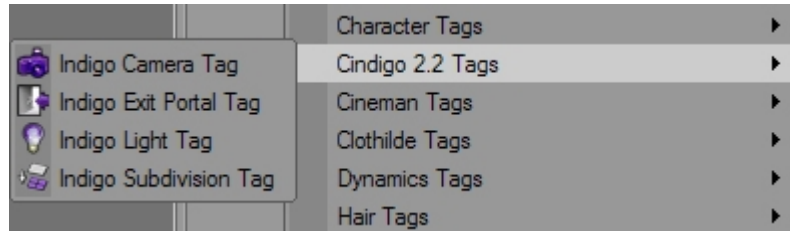
**Shader Baking resolution:** The resolution to bake a shader at on export.

**Export Material:** Export the material to be used externally.

**Assignment:** Any objects that have this material applied are listed here.

# Cindigo Tags

There are several special Cindigo tags you can add to your Cinema4D objects. These tags extend the functionality of certain Cinema4D objects to include Indigo-specific functions. See the Indigo manual for more information.



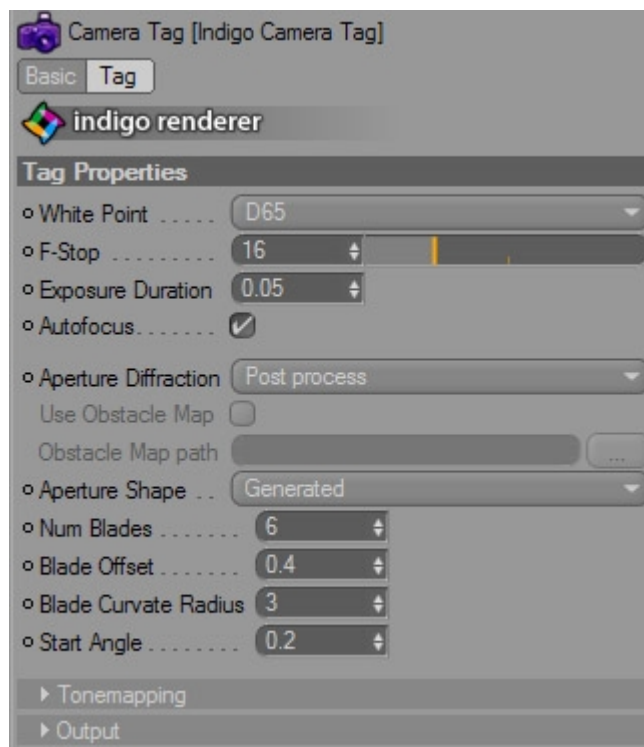
*Cindigo Tags*

You can access this menu via:

**Object Manager menu > Tags > Cindigo 2.2 Tags**

## Indigo Camera Tag

Add this to a Cinema4D camera object to set Indigo specific settings. Use in conjunction with the Cinema4D's camera settings such as focal length and aperture.



*The Camera Tag's attribute editor*

**White Point:** Adjust the White Point to get rid of colored tinges to an image. Can be changed during or after rendering in the Indigo Renderer.

**F-Stop:** Adjusts the size of the aperture of the Indigo Camera. Larger radius means more depth of field.



*Depth of field effect obtained by changing the f-stop*

**Exposure Duration:** How long the exposure will be. The longer the exposure duration, the greater the light energy registered by the sensor.

**Autofocus:** Sets the focal distance to the distance from the camera straight forward to the first object it sees.

**Aperture Diffraction:** Aperture diffraction allows the simulation of light diffraction through the camera aperture. Such diffraction creates a distinct 'glare' effect around bright light sources in the image.

**Use Obstacle Map:** An obstacle map texture is used when calculating the diffraction through the camera aperture. Use to change the way the aperture diffraction appears.

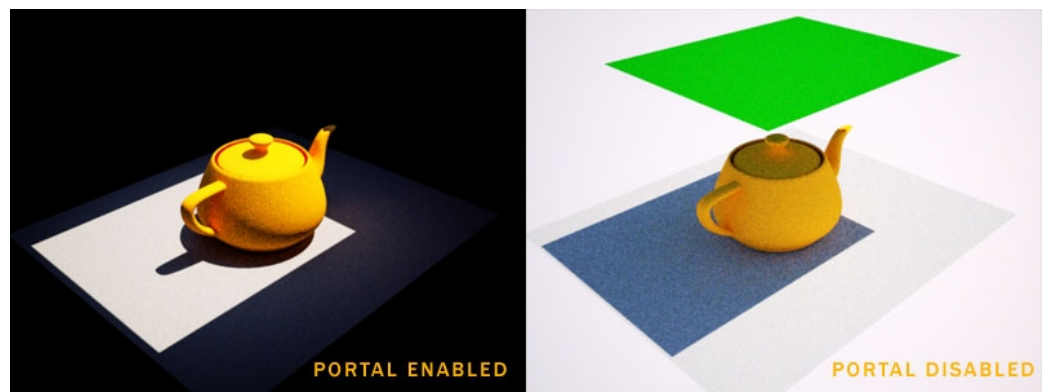
**Aperture Shape:** This allows a particular shape of camera aperture to be specified.

**Generated Aperture:** Use the following controls to change the shape of the aperture: **Num Blades, Blade Offset, Blade Curvate, Radius, Start Angle**

## Indigo Exit portal Tag

Turns an object into an exit portal. Exit portals are useful for speeding up interior renderings, when the interior is lit by an environmental light source, such as the sun/sky model.

1. If exit portals are present in the scene, then all openings must be covered by exit portals.
2. The portal normals must face inwards to the scene.



## Indigo Light Tag

Add this tag to the lights Omni lights, Area lights, or Spot lights to set Indigo specific light options. The options are the same as adding emissions to a material. Because there are no point lights in Indigo, on export these special Cinema4D entities are translated into a mesh and act exactly as if you made a light bulb mesh and applied an emitting material to it.

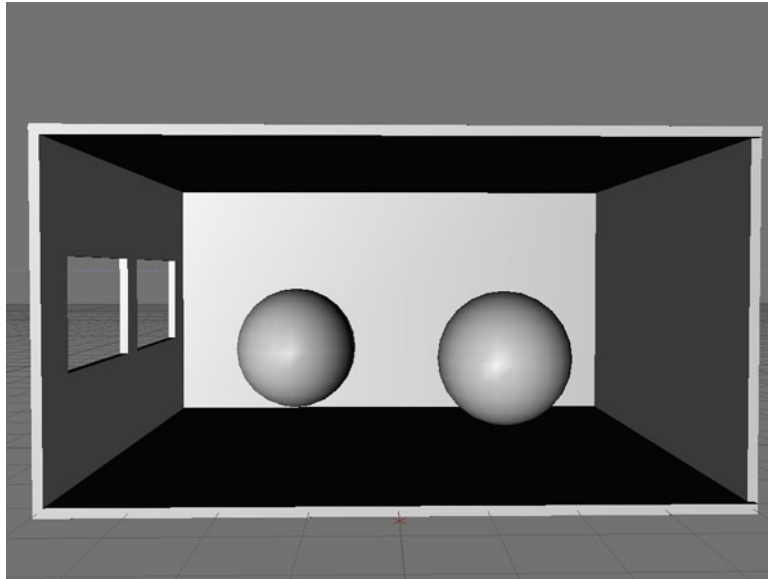
## Indigo Subdivision Tag

Divides each triangle in the mesh into 4, with each level increasing it exponentially. Therefore a large mesh mesh of, say, 1 million becomes 4 million subdivided only once. Twice it becomes 16 million, and three times become 64 million.

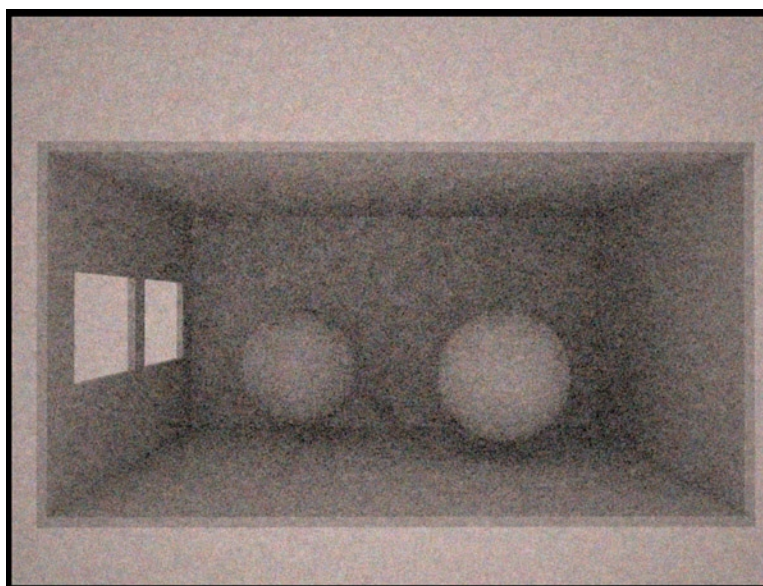
# Tutorial

This is a quick tutorial to get you familiar with Cindigo. A basic understanding of Cinema4D is required. The tutorial file is included with the download.

1. After installing Indigo and Cindigo, open up Cinema4D and construct a simple scene. This has a window for light to shine in, and two balls to test materials on.

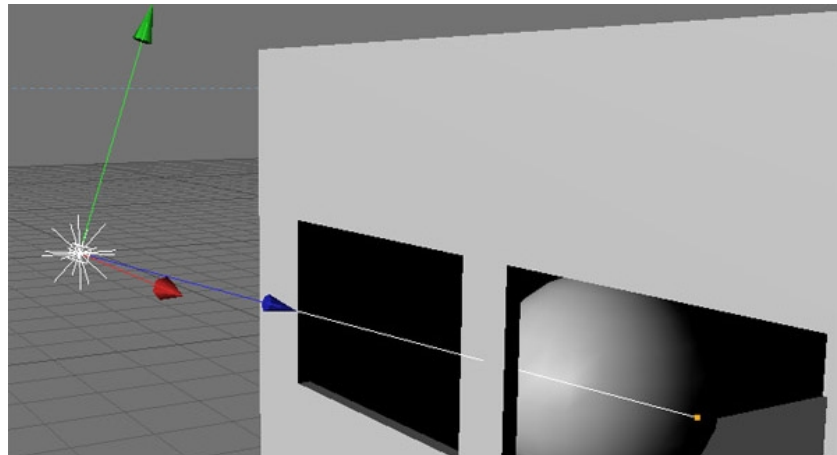


2. Render it with Indigo by **Plugins > Cindigo 2.2 > Render with Indigo**. Notice it is very plain and noisy, there is no need to render it for more than a few seconds as you can see right away that it needs work.



*Quick render with Indigo*

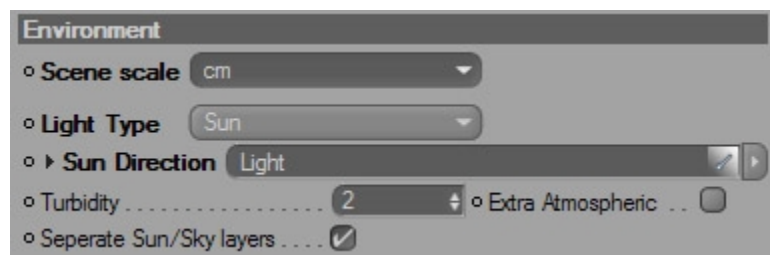
3. Firstly we will light it with the sun and sky model, which is the easiest and quickest way to add light. Add a C4D Infinite Light and point it in the direction that you want the sun to face.



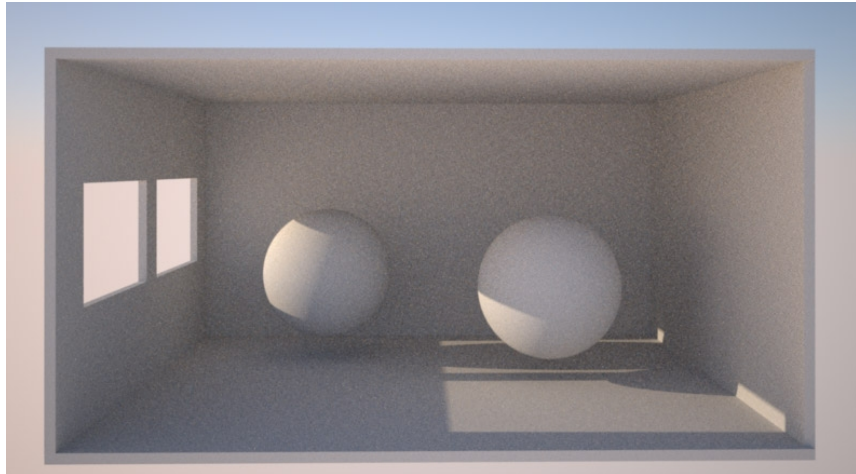
*The sun will come in through the window*

4. Open up the **Render Settings**, and add Indigo to the list by clicking **Effect > Indigo Render Settings**. Go to the Environment tab and click-and-drag your **Infinite Light** tag into the **Sun Direction**.

Depending on how large you have made your scene, you may want to change the scene scale to cm as well.



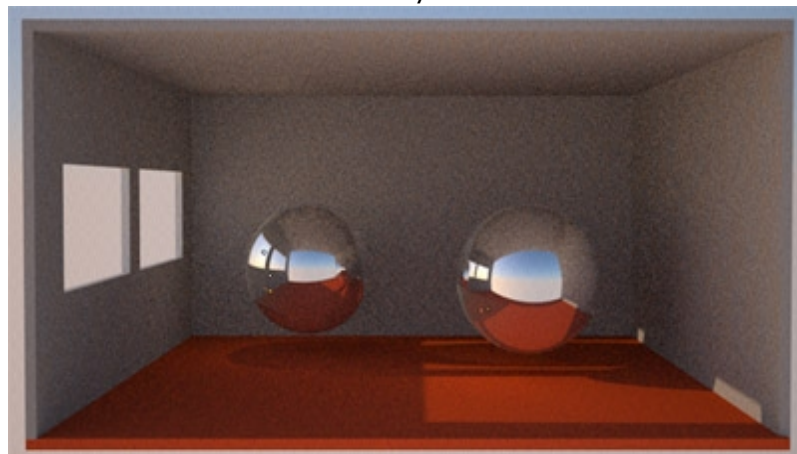
5. Render again to see the effect of real lighting on the scene.



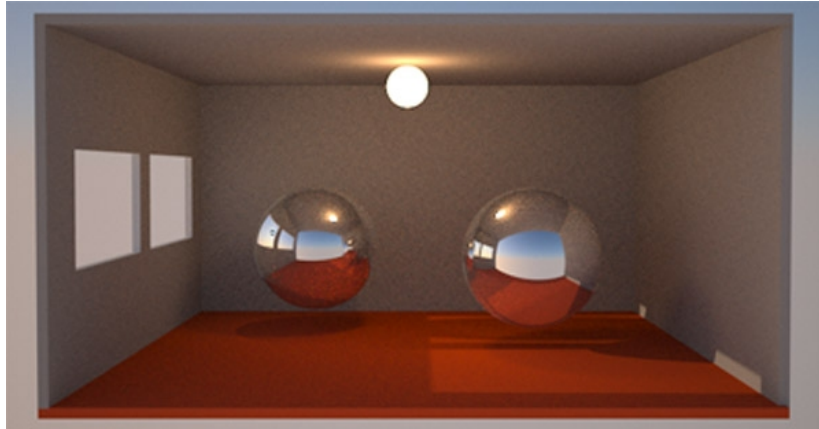
6. Now to add some materials to the scene. Add a new material by clicking: **Material Manager > File > New Indigo Material**. Make a Phong material with a huge Exponent around 100,000 and crank the IOR up to 100. Drag the new material on to the two balls. Also make a nice material for the walls and put it on them too.



7. Another render shows what they look like.



8. Lastly, we will add a light bulb for some interior lighting. Create another sphere, smaller and above the other two. Create a new Indigo Material and turn **Emissions** on. Make it **Blackbody** with a **temperature** of 3500, and put the **gain** down at 0.001. Drag this material onto the new sphere to create a light and render again. If the light is too bright, the Reinhard Tonemapping will compensate for it and make the sun & sky dark, which is why the gain has been put to 0.001.





## Going Further

You are now ready to start exploring Cinema 4D and Indigo. To learn more about using Indigo, see these resources.

The Indigo website:

<http://www.indigorenderer.com/>

The Indigo materials database:

<http://www.indigorenderer.com/materials/>

The Indigo forums are a lively place of debate - you should especially take a look at the Cinema 4D sub-forum.

<http://www.indigorenderer.com/forums/>

If you need support, please email:

[support@indigorenderer.com](mailto:support@indigorenderer.com)

We hope you enjoy using Indigo and look forward to seeing your renders!