



indigo
renderer

3DS Max Exporter Manual



Image by Michal Timko

Contents

Overview	4
About exporters	4
Acknowledgements	4
Installing Maxigo	5
Step 1. Ensure 3ds Max is installed correctly	5
Step 2. Download and install Indigo	5
Step 3. Download and install Maxigo	5
Things to know	6
Indigo is physically based	6
Units of measurement	6
Light sources	6
Realistic Materials	7
Export and render settings	8
Environment settings	9
Background	10
Skylight	10
HDR Environment	11
Camera Parameters	12
Aperture diffraction	13
Tonemapping settings	14
Image Output	15
Export Scene	16
Time Output	16
Renderer Control	16
Output Size	17
Exporter Options	17
Render Parameters	18
Render Parameters	18
Misc	18
Overlays	18
Region Rendering	19
Network Rendering	19
Advanced	20
System	20

Indigo Materials	21
1. Indigo: Preview	22
2. Quick Set Material	22
3. Indigo: Shader Type	22
3. Material Channels	24
Indigo: SSS Parameters	25
4. Indigo: Maps	26
Indigo Blend Material	26
Indigo: Emission	27
Indigo: Export	27
Indigo Emitter Material	28
IES lights	29
Maxigo Modifiers	31
Maxigo-Displacement & Subdivision	31
Maxigo-ExitPortal	32
Maxigo-IES layer	32
Maxigo Scatter	33
Going Further	35

Overview

This manual covers the installation and usage of the 3ds Max exporter for Indigo Renderer. By following the tutorials in this manual you should be able to export your scene in a high-quality way ready for Indigo to render.

Note that the 3ds Max exporter is a very complex piece of software and not all the features are covered in depth by this manual. If a feature of 3ds Max is not described to your satisfaction, visit our forum and post a question and we will be happy to help you out. Our forum is available at:

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

About exporters

Indigo is independent of modelling package and uses it's 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.

Acknowledgements

The 3ds Max exporter is called 'Maxigo' and is the result of the work of Jyrgen Aleksejev. Glare Technologies would like to thank Jyrgen for his work on the project, and the ongoing support he provides to Glare.

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

Installing Maxigo

Step 1. Ensure 3ds Max is installed correctly

Maxigo is compatible with version 9 upwards of 3ds Max in both 32bit and 64bit.

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

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

Step 3. Download and install Maxigo

Download the version of Maxigo for your system from:

<http://www.indigorenderer.com/documentation/3dsmax>

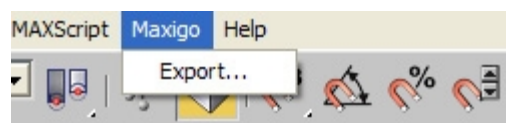
Maxigo comes with an installer for Windows.

Windows: The installer will ask you which version of 3ds Max you would like to install Maxigo on.

If you are having problems with installing Maxigo, please email us at

support@indigorender.com.

Restart 3ds Max after installing Maxigo and you should see a **Maxigo** tab appear in the top menu.



You are now ready to use Maxigo.

Things to know

There are several concepts you need to know to know to fully understand how Indigo works and how Maxigo 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. Maxigo has the job of converting the virtual world of 3ds Max 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. Maxigo by default converts on 3ds Max unit of distance to one metre in real world space. Select an object and press n to see the position of the object in 3ds Max 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

3ds Max 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.

Export and render settings

This section will familiarise you with the Maxigo Export settings.

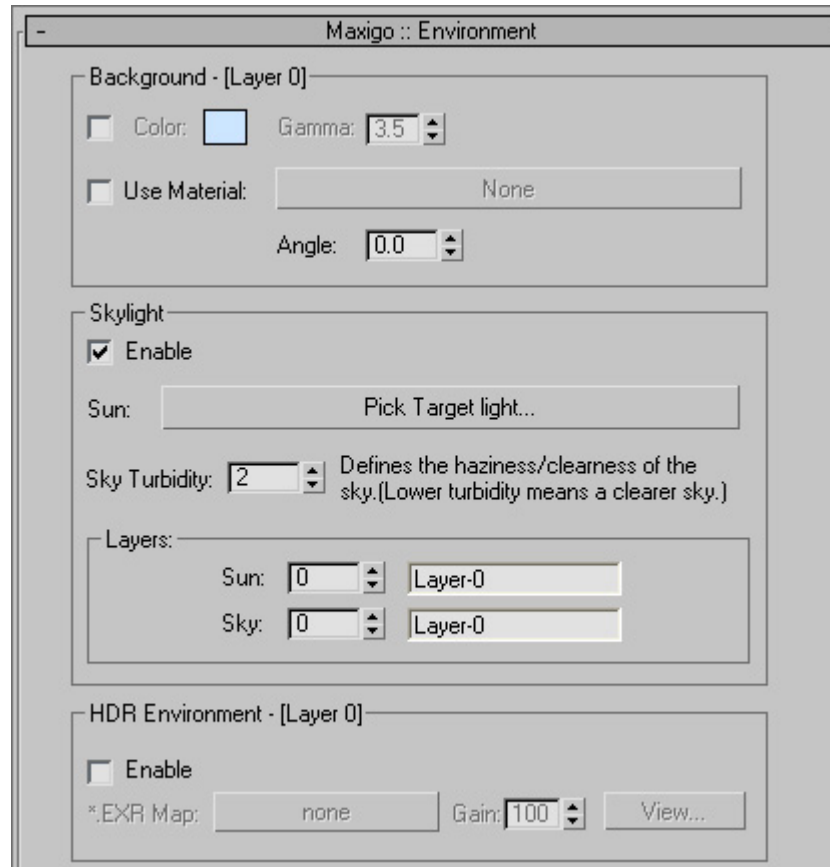
You can find this by navigating the top menu tab **Maxigo > Export...**

The screenshot shows the 'Maxigo :: Export Scene' dialog box. It is organized into several sections: 'Time Output' with radio buttons for 'Single' (selected), 'Active Time Segment: 0 to 100', and 'Range' (0 to 100), and a 'Every Nth Frame' spinner set to 1; 'Renderer Control' with 'Number of samples to reach' (0 spp) and 'Rendering time per frame' (0 min 0 sec); 'Output Size' with 'Width' (640), 'Height' (480), 'Image aspect' (1.333), and a grid of preset resolutions (640x480, 800x600, 1024x768, 490x270, 1280x720, 1920x1080); 'Exporter Options' with checkboxes for 'Export Geometry', 'Export Scene', 'Export Materials', 'Export Camera', 'Scatter', 'Instances', and 'Motion Blur', a 'Scene scale' dropdown set to 'Inches', a 'Get From Max' checkbox, and a 'Num Of Threads' spinner set to 0; a 'Currently Exporting' status bar showing 'Idle...'; and a bottom section with 'Start Indigo' (checked), 'Alpha mode' (unchecked), a 'View' dropdown, and an 'Export' button. The dialog is part of a larger window with a sidebar containing other settings tabs like 'Maxigo :: Environment', 'Maxigo :: Camera Parameters', 'Maxigo :: Tone Mapping', 'Maxigo :: Image Output', 'Maxigo :: Renderer parameters', 'Maxigo :: Region rendering', 'Maxigo :: Network rendering', 'Maxigo :: Randomize', 'Maxigo :: Advanced', 'Maxigo :: System', and 'Maxigo :: About'.

Maxigo interface

Environment settings

The Environment screen controls the world lighting and background colour of the scene. If you do not have any lights (emitters) or environment lights set, then it will ask you to enable **sun/sky** or **Background colour**. If you choose to continue anyway Indigo will give an error.



Maxigo Environment settings



Maxigo no lights error

Background



This environment setting is seldom useful. It is better to model a real studio setup (see the Indigo Techniques manual) – but as a quick alternative it is possible to change the background image of the scene using this setting.

Skylight



With this setting, Indigo will render a blue sky as the background of the scene and use a realistic sun to light the scene. The sky is modelled on a northern hemisphere sky. Pick a **Target Light** to use to set the direction of the sun.

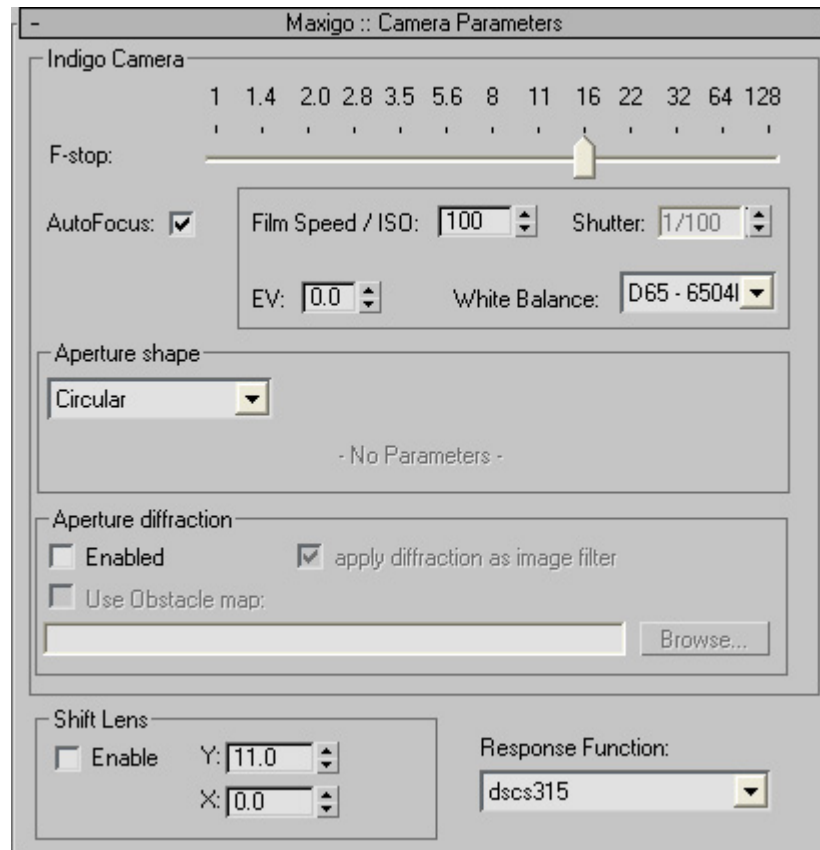
HDR Environment



This setting requires you have an .exr file to use as an environment. Indigo uses the exr file as the background image and also as a light source.

Camera Parameters

The camera settings page controls the configuration of the virtual camera in the scene. The camera in Indigo is modelled on a real camera so the settings on this page will be familiar to users with a background in photography.



F-Stop: This controls the focal length of the camera. Small f-stop numbers will make things that are out of focus more blurry (similar to shooting a photo in macro mode). Higher f-stop numbers will make everything in the scene equally in focus (this is similar to the effect of shooting a photo with a telephoto lens).

Autofocus: Sets the focal distance to the distance from the camera straight forward to the first object it sees. If this is turned off, then the focus distance will be taken from the **Target Camera's target distance**.

Film ISO: The ISO number represents the speed of film that is used. The higher the ISO number, the more light will be collected in the HDR Image. In low light situations, a fast film should be used, such as ISO 1600, and in bright lighting situations, a slow film can be used, such as ISO 100.



Depth of field effect

Shutter: This setting is used primarily to control motion blur. The other effect of exposure time (image brightness) is controlled instead by the tonemapping process.

EV: Select the exposure compensation (eV). Higher means brighter, lower means darker.

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

Aperture diffraction

Enabling aperture diffraction causes Indigo to render the 'star' effect around bright objects in the scene. This star effect is commonly seen in photos of spotlights.

To make aperture diffraction visible – you need to set a high f-stop (which causes a smaller camera aperture), have a small and extremely bright lightsource visible and then enable aperture diffraction.

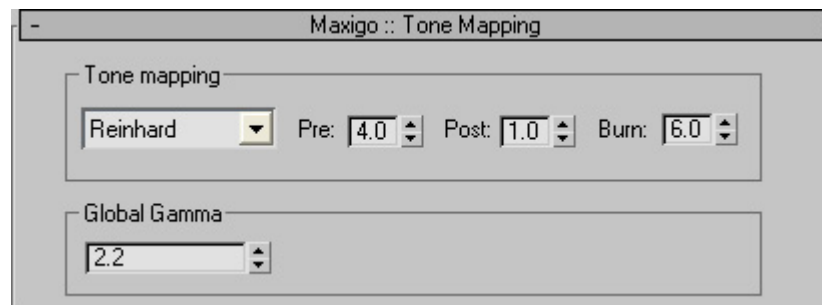
Obstacle map: The obstacle map is for loading an image that will be mapped over the camera lens – this can be used to simulate dust, finger smudges and scratches on the lens.

Lens Shift: Shifts the lens to compensate for perspective.

Response function: Emulates the type of effect given from camera selected.

Tonemapping settings

For most users – we recommend you leave these settings to the default and modify your tonemapping settings interactively in the Indigo GUI.



Tonemapping is a post-process that can be changed after, or during rendering in the Indigo GUI. Change settings here to save having to change them later.

Linear: Every pixel in the HDR image will be multiplied by this number. It is easy to understand but does not give the best results.

Reinhard: Like the auto-exposure on a digital camera

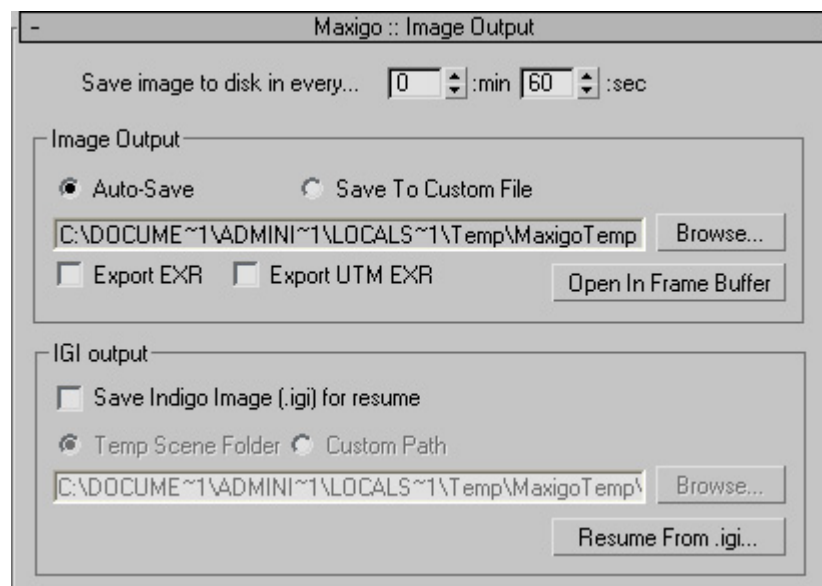
Pre-Scale: Scale the mid-gray point of the rendered pixels.

Post-Scale: Scale the white point of the rendered pixels.

Burn: Burn determines the luminance that clipping occurs. A smaller value means more severe burn.

Camera: Use the response function and EV from the camera parameters.

Image Output



Save Image to disk every..: Saves an image of the current render at this interval.

Auto-Save: Sets auto-save path to default

Save to Custom File: Choose where the auto-save to save to.

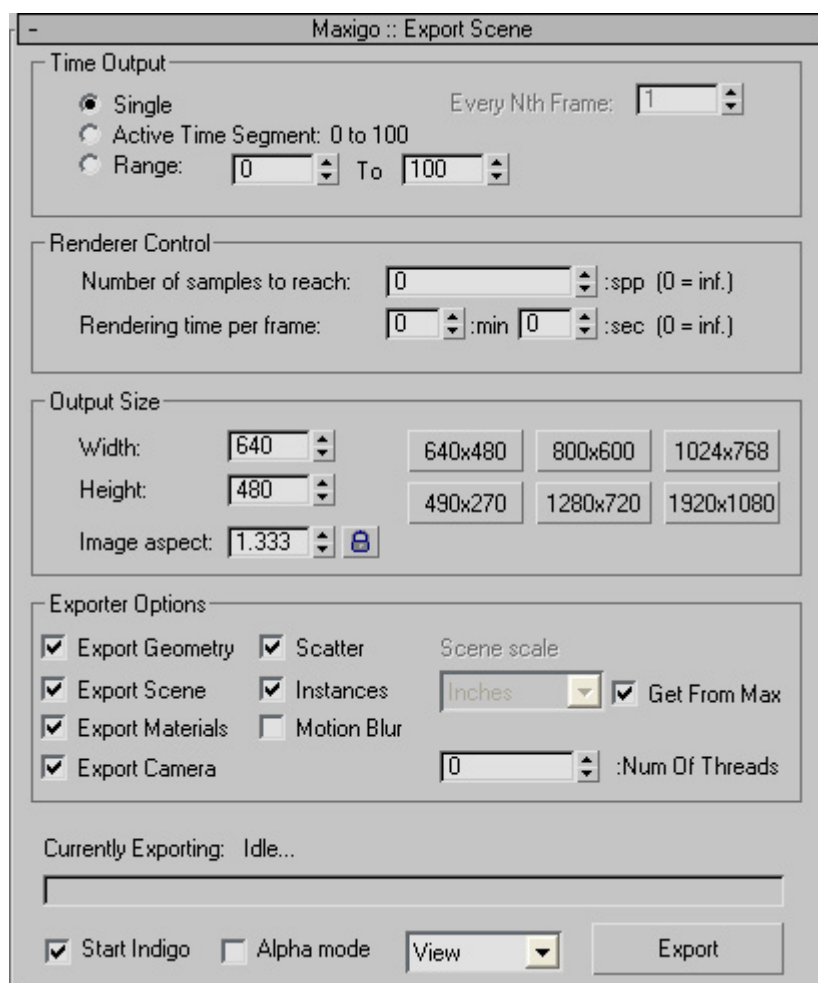
Export EXR: Save as HDR image.

Export UTM EXT: Save as untonemapped HDR.

Write IGI: Saves the render as an Indigo Image. Used to resume renders.

Resume From .igi: Choose an Indigo image to resume rendering using the current scene.

Export Scene



Time Output

This allows you to choose how many frames you want to render. Typically Indigo is used to render just one frame (**Single**), but it is possible to render several sequential frames with these settings.

Renderer Control

Number of samples to reach: Indigo will stop rendering and wait for the user to save when it reaches this many SSP (samples per pixel)

Rendering time per frame: Indigo will stop rendering and wait for the user to save when it reaches this time.

Output Size

Choose the resolution to render at. Larger resolution will take longer and require more memory.

Exporter Options

Export Geometry, Scene, Materials, Camera, Scatter, Instances,

Motion Blur: By default Maxigo will export all parts of the scene. If you however have a complex scene that takes a long time to export and are only changing the materials for example, then you can deselect the other options to use the previous exported components.

Scene scale: It is important to have the correct scene scale so the scene is accurately calculated. By default Maxigo uses the 3ds Max unit scale, which is generic, by default. In 3ds Max, goto **Customize > Units setup** to set the units to a real-world unit.

Num of Threads: Choose the number of CPU threads for Indigo to use. A value of 0 automatically sets all available threads.

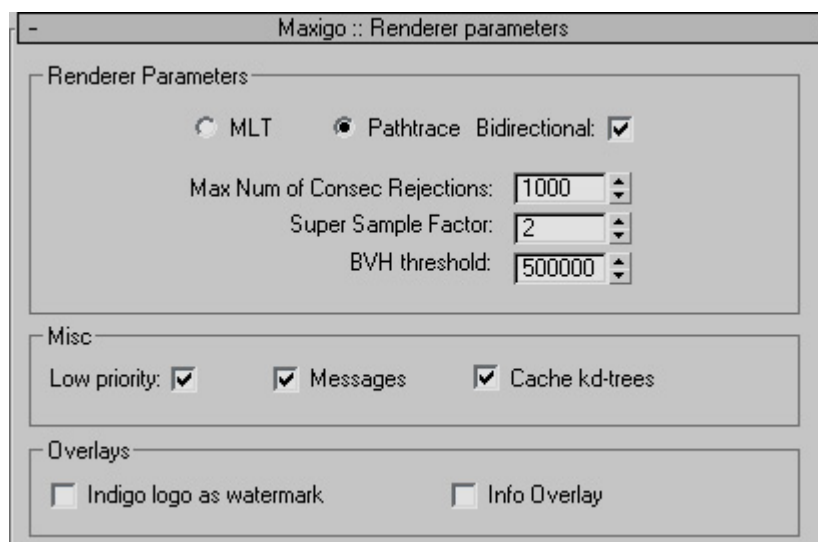
Start Indigo: Open Indigo to render after export.

Alpha Mode: Renders a black and white image to be used as an alpha map for compositing images.



View/Region: Render with the entire current view, or a region specified in the Region Rendering section below.

Render Parameters



Render Parameters

These control how the raytracing works in Indigo. If you are not sure which to use, **PathTrace** with **BiDir** is recommended. Use MLT to get clearer results with glass and caustics. You should not have to change the other settings.

Super Sample Factor: Used to for anti-aliasing purposes. This can greatly increase the amount of memory used, so turn it down if you are having out of memory errors.

Misc

Low Priority: Starts Indigo in Low Priority mode to avoid system slow-downs.

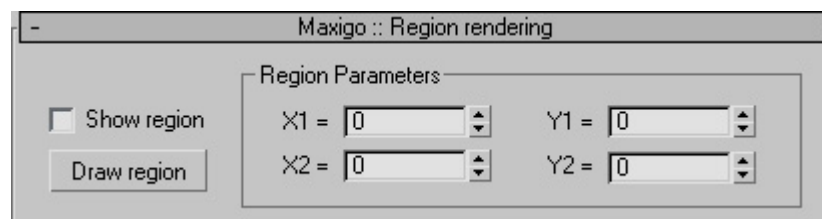
It is not recommended to change Cache kd-trees.

Overlays

Indigo Logo as Watermark: Places the Indigo logo as a watermark in your render.

Info Overlay: Creates and overlay on your render containing the render information shown in the status bar of the Indigo Renderer.

Region Rendering

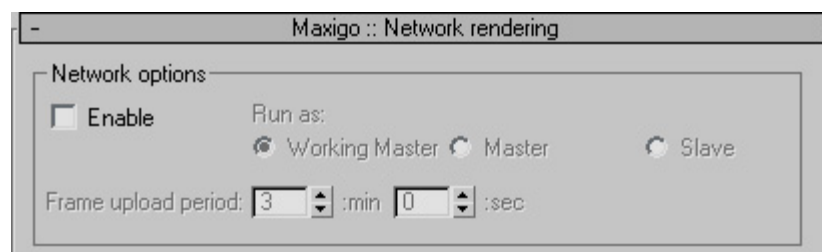


This will allow you to render only a region of the current camera view.

Press **Draw region** and click-drag a region of your current view to automatically set the co-ordinates of the region.

You will have to set the view to **Region** in the **Export Scene** section to use the selected region for rendering.

Network Rendering

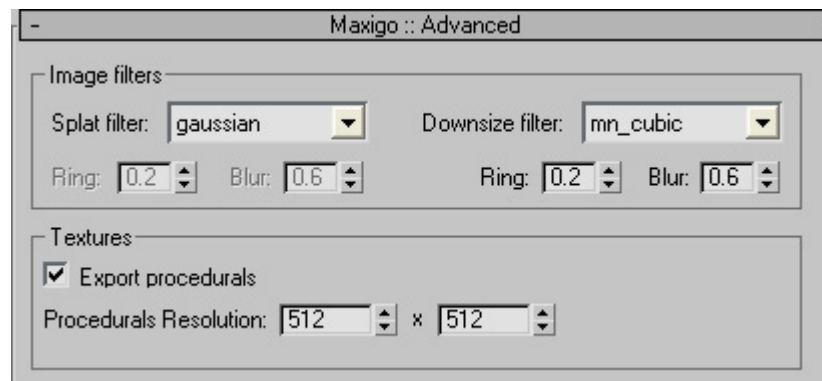


This feature allows you to have other computers on the network help your rendering process. A **Master** is the computer that coordinates the rendering, and the **slave** is a remote computer that is only the helper. A **Working Master** contributes to the render while also coordinating it, while a **Master** only co-ordinates and does not render itself.

Network rendering must be enabled before starting a render, it cannot be enabled during the rendering process.

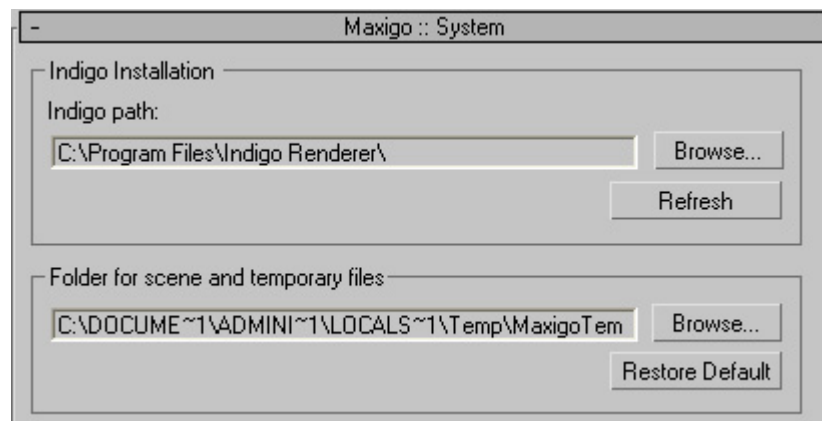
Frame upload period: Slave contributions are uploaded to the master at this interval.

Advanced



It is advised to not change these settings.

System



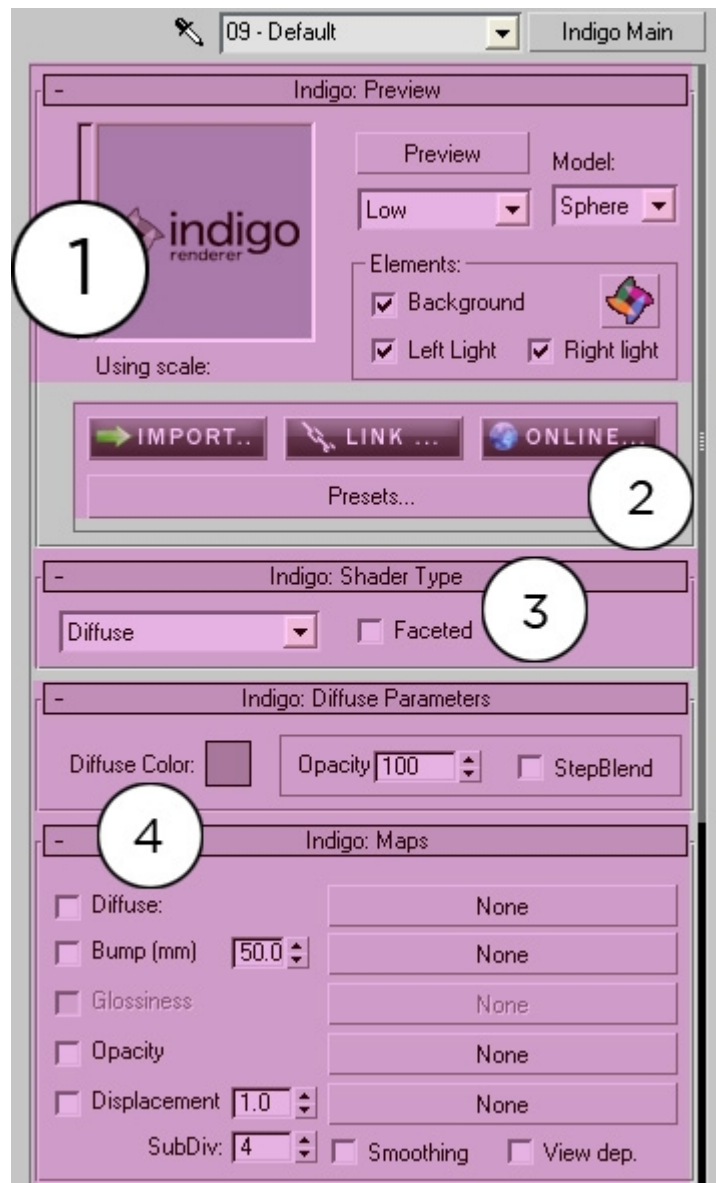
If Maxigo is having trouble finding Indigo, you can set the path here.

Indigo Materials

The materials setting page is used to configure the materials in the scene.



To select an Indigo material, open the **Material/Map Browser** from either the **Rendering** menu or the 3ds Max **Material Editor**. Select **Indigo Main** to start with.



3ds Max Material Editor with an Indigo material selected

1. Indigo: Preview

Preview: This will create a small render using Indigo and displaying it to the left. **Cancel** will stop the preview rendering.

Low: This is the priority setting. Keep it low to avoid system slowdowns.

Model: Choose the model for the preview to render the material on.

Elements: These edit the scene that the preview renders in. Press the Indigo Icon to send the preview to the external Indigo renderer for a larger preview.

2. Quick Set Material

Import: Use an external Indigo Material (.IGM) to replace the currently set material.

Link: Create a link to an external .IGM without changing the currently set material settings. This will override the current settings, however.

Online: Use the online material database to select a material. This will download it and either replace the current material, link to it, or just download it depending on what option you choose.

Presets...: Choose a preset that comes with Maxigo.

3. Indigo: Shader Type

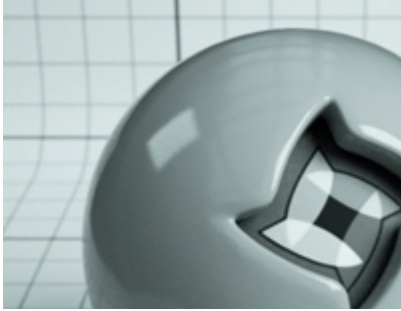
Specifies the type of Indigo material to create. Selecting different material types will change the list of options below, some material types share the same channels as others.

See the Indigo manual for a list of the different material types.

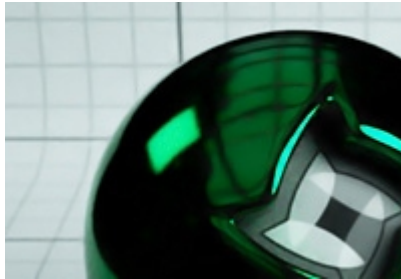
Faceted: Turns off normal smoothing.



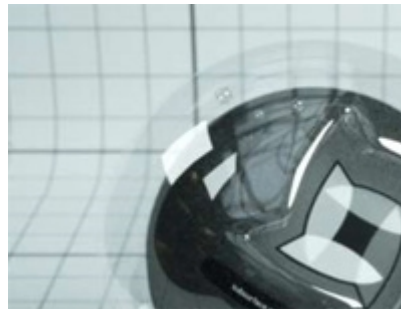
DIFFUSE: Diffuse materials are flat, matte surfaces that don't have shiny edges. Flat wall paint, or a piece of paper are good examples of a diffuse material. There will be no particular reflection from a diffuse material.



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.



Metal: Changes the colour of the reflection rather than the surface colour.

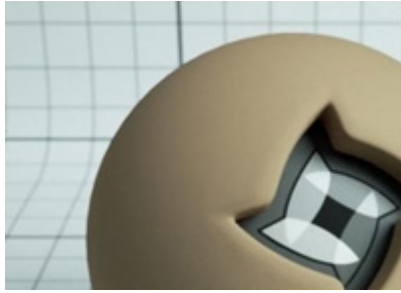


Archi. Glass: This not real Indigo glass, it is light version that renders faster but doesn't look as realistic. This material does not require the glass to be modelled as a volume.



Glass/SSS: (SSS - Subsurface scattering) The real Indigo glass. They have a medium which controls how light moves through the interior space of the object. This is quite powerful and can be made to act as a perfect reflector (like a mirror) or as a fully transparent glass and anything in between.

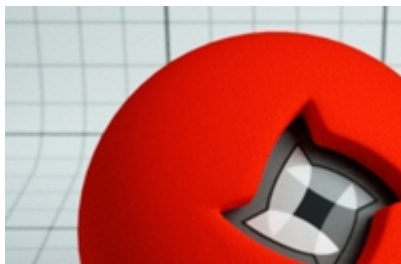
Fast SSS: This is also not a real Indigo material type. It is a blend between Phong and a diffuse transmitter, and a null.



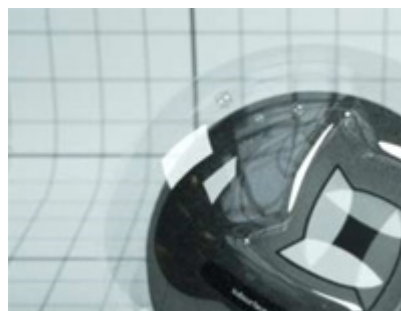
OREN-NAYAR: Oren-Nayar materials are very rough materials that scatter light in every direction. They are rougher than diffuse materials. Oren-Nayar is useful for creating surfaces that are like clay, or generally rough. They aren't shiny at all.

3. Material Channels

This list will change based on the selected material type. Here is a list of all available material channels.



Diffuse Color: The plain color of the surface.



Opacity: Automatically blends the material with a null material to create an opaque effect.

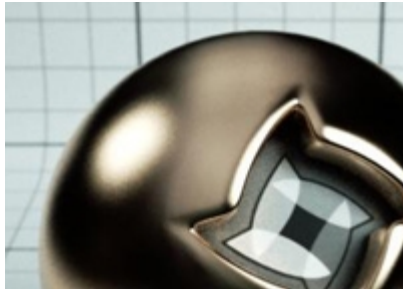


Sigma: Defines the roughness of the surface.

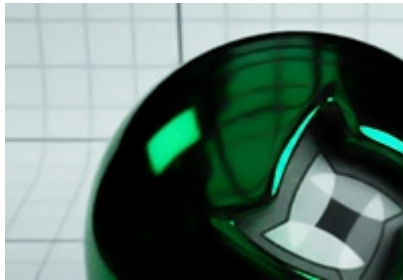


Glossiness: Controls the smoothness of the surface. The more glossy the surface the sharper the reflection.

IOR (Refl): The amount of light reflected. Lower values are a dimmer reflection, higher values are brighter.



NK Data: These are lab-measured metals.



Spectral Str: Scales the colour of the reflection to make it brighter or darker.

Indigo: SSS Parameters



SSS stands for Subsurface scattering. The effect of SSS is that light travels around the inside of the object lighting it in a different way. See the Indigo Manual for more information on these settings.

4. Indigo: Maps

These allow you to control how certain aspects of the material channels cover a surface. The values scale the image map.



Diffuse: Your typical texture map.



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.

Glossiness: Have only areas of a surface glossy.

Indigo Blend Material

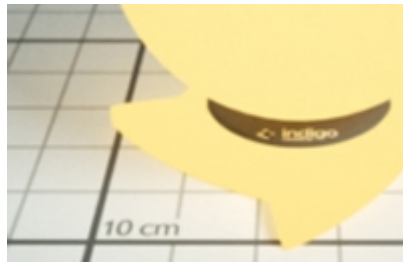
This is available from the **Material/Map Browser**.



Use this material to blend other Indigo materials together. The **Mix Amount** controls how much one material blends with the other. The **mask** can be used like an alpha channel.

Indigo: Emission

Indigo Emitter materials are also available from the **Material/Map browser**. It is often easier to use the **Indigo Emitter** material than this section of the **Indigo Main** material



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

Indigo: Export

Here you can export your material for use in other scenes, or in the Indigo Material Editor.

Indigo Emitter Material

The screenshot shows the 'Indigo Emitter Material' settings window, which is organized into three main sections: 'Emitter Type', 'Blackbody Parameters', and 'Emitter Texture'.

- Emitter Type:** This section contains a dropdown menu for 'Emitter Type' set to 'Blackbody', a 'Layer' field set to '0' (with a 'Layer-0' label next to it), and a section for 'Emitter efficiency (power)'. The 'Preset' dropdown is set to '100 W Tungsten Incandescent'. Below this, 'Power' is set to '100 W' and 'Lumens per Watt' is set to '17.5 lm/W'.
- Blackbody Parameters:** This section features a 'Color Temperature' slider with a color gradient bar ranging from 1700°K (orange) to 10,000°K (blue), with 5000°K in the middle. The slider is currently positioned at 2800°K. Below the slider, the 'Color Temperature' is displayed as '2800 Kelvin'. The 'Illuminant Type' dropdown is set to 'Tungsten lamp (ordinary household bulb)'.
- Emitter Texture:** This section has a checkbox that is currently unchecked, followed by a text field containing 'None'.

Use this to create light sources.

Emitter Type

RGB: Light based on color and brightness.

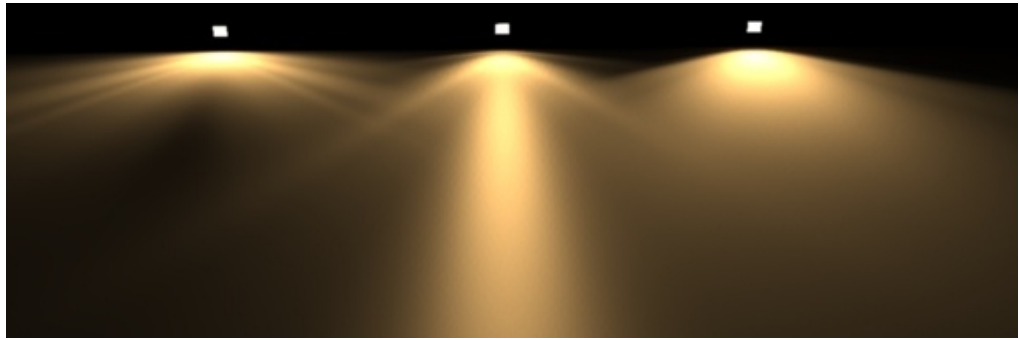
Blackbody: Light is based on the temperature. Measured in Kelvin.

Layer: Which layer to catch the emitted light on.

Preset: Choose a light bulb type from the preset list. This changes the power and Lumens settings automatically.

Color Temperature: The color temperature changes the colour of the light.

IES lights

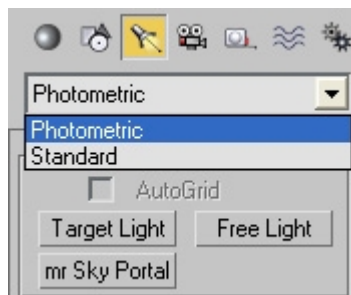


IES lights are photometric (usually measured) data that describe how bright a light source is at different angles. Indigo does not handle IES profiles that have more than 90° angles in them.

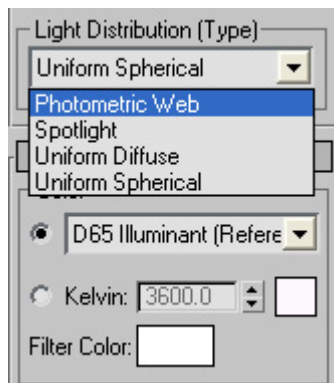
There is some hosted IES profiles available from:

<http://www.indigorenderer.com/dist/ies-profiles.zip>

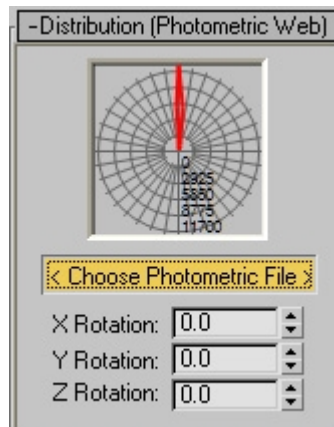
Maxigo handles IES data the same way 3ds Max does, with the same workflow.



1. Select a **Photometric light**, and choose a Target light.



2. Select **Photometric Web** from the **Light Distribution (Type)**



3. Choose a **Photometric File** (.IES profile) under **Distribution**. An image will appear showing the selected IES profile.

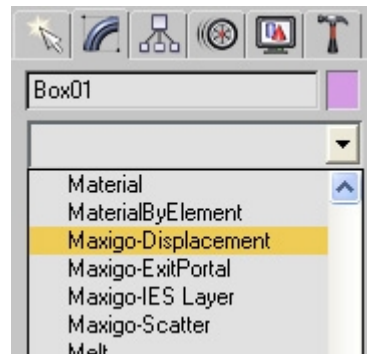
Because the Target Light does not have a material assigned, and therefore you cannot change the emission controls, there are controls in the Target Light that you can change.

Intensity/Color/Attenuation: The presets do not work in Blendigo, but the Kelvin settings and filter colors do – change these to change the colour of the light.

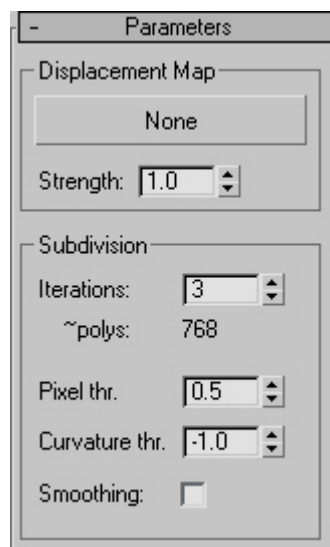
Light Layers: To put this particular Target Light with the IES profile onto a light layer, add the **Maxigo-IES Layer** modifier.

Maxigo Modifiers

There are several unique modifiers that Maxigo offer. You can find them in the **Modify tab > Modifier List** drop-down. **Displacement**, **ExitPortal**, **IES Layer** are typical Indigo features, and **Scatter** is unique to Maxigo.



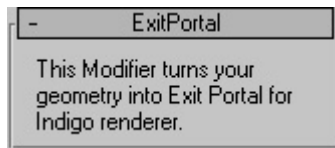
Maxigo-Displacement & Subdivision



Use to set a displacement map and/or set Indigo Subdivision.

Subdivision: These options allow you to set the mesh to subdivide when rendered with Indigo. This keeps the polycount of your scene light, while having smooth renders in Indigo.

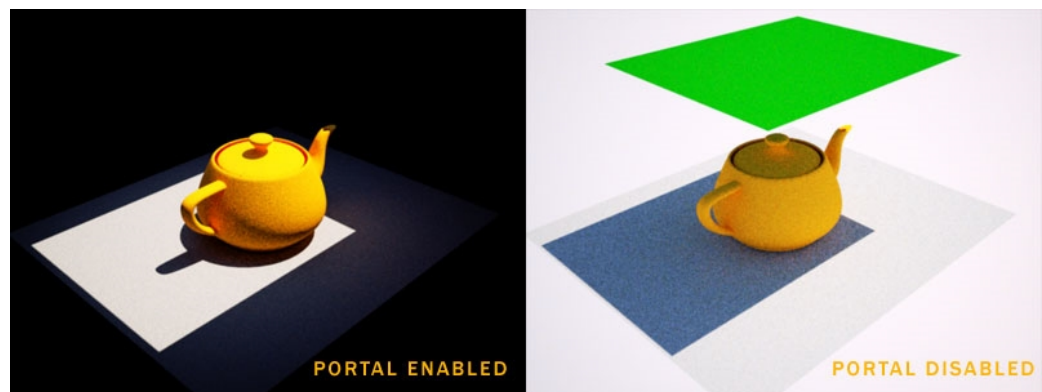
Maxigo-ExitPortal



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.

Exit portals are placed over the openings between the interior and the exterior environment. These openings are the 'portals' in the scene.

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.

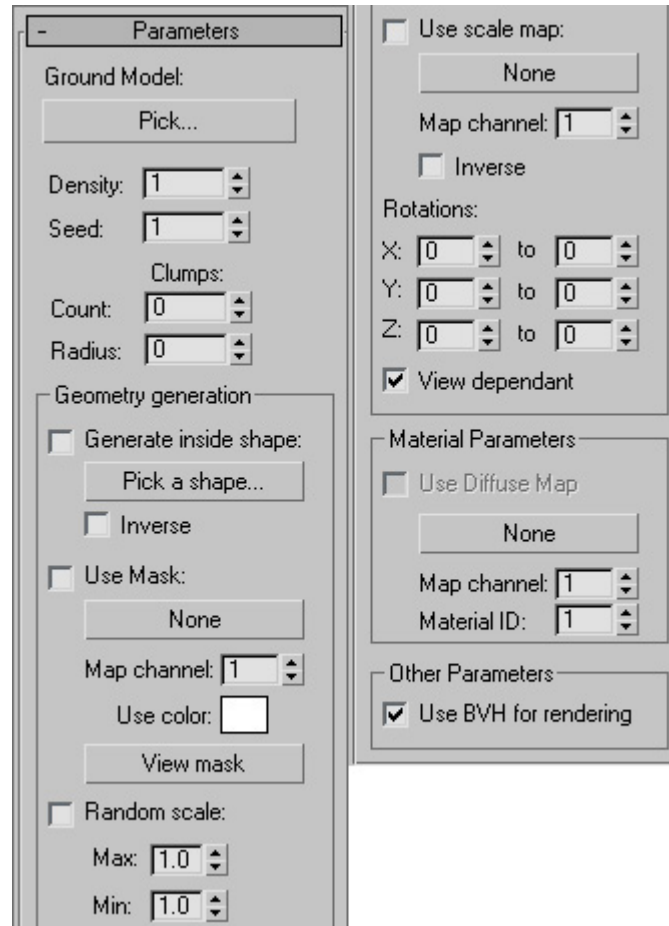


Maxigo-IES layer

Setting an IES profile (see above) does not allow you to set the light to a light-layer, use this modifier to do that.

Maxigo Scatter

Maxigo comes with a unique scatter feature that takes an object and scatters it over the surface of another. It uses Indigo Instances so it uses a lot less memory than simply duplicating objects.



The Maxigo Scatter interface

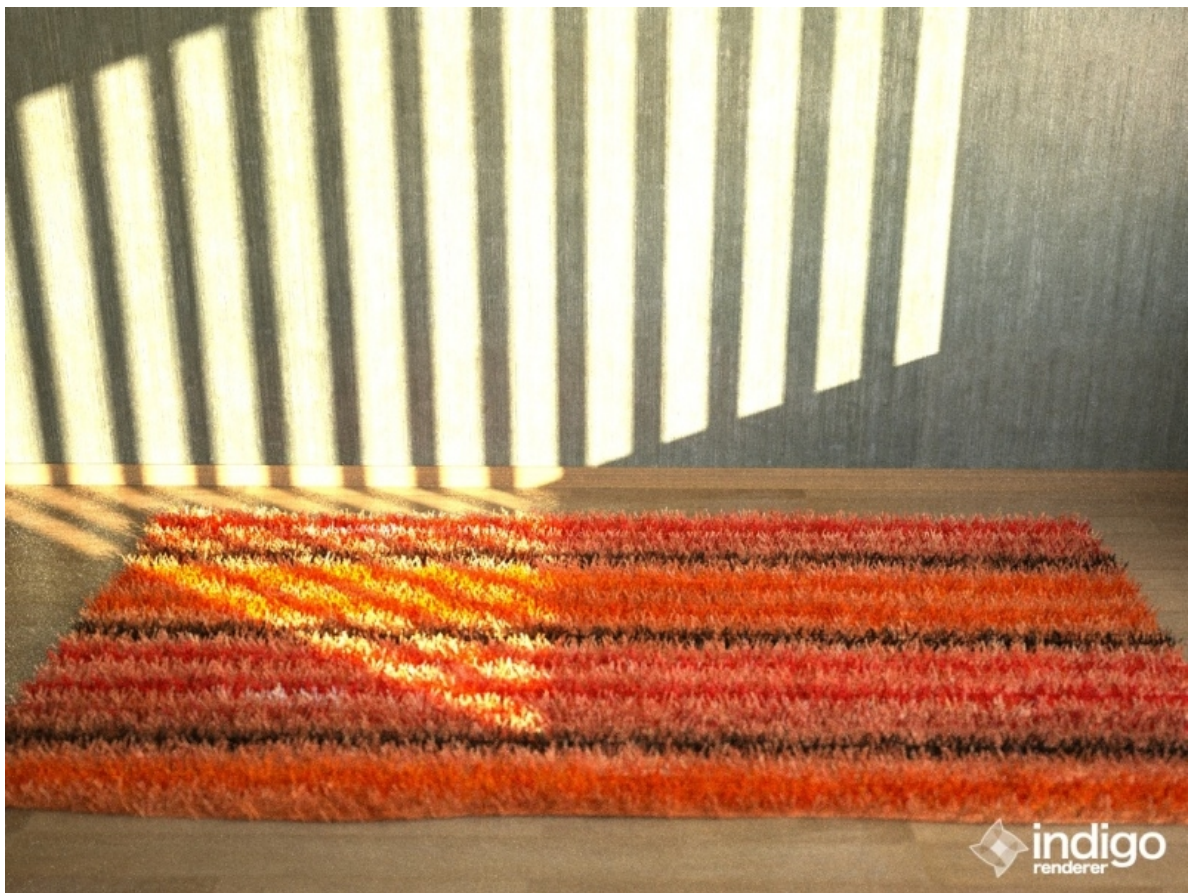
To use, apply this modifier to the object you wish to scatter, and press **Pick..** to choose the surface to scatter onto.

Density: The amount of scattered objects.

Seed: Used to change to a different randomized set.

Clumps Count: Uses the **density** amount and creates clumps of this amount.

Radius: The radius of the clumps.



The power of Maxigo Scatter

Going Further

You are now ready to start exploring 3ds Max 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 3ds Max sub-forum.

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

If you need support, please email:

support@indigorenderer.com

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