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Web Links open to the Archived YafaRay Website.

When this document is opened with a web browser the web links can be opened in a New Tab by using Ctrl Left Click or Middle Mouse Click.

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## YafaRay



[Visit the YafaRay website](#)

[YafaRay User Guide Map](#)

[YafaRay Crash Course](#)

Note that all links to the original YafaRay manual go to the Internet Archive which causes internal page links to move down the page. Scroll up a little bit to see the actual link point in the page.

## YafaRay4tS



YafaRay is a free open source Monte Carlo raytracing engine produced by the YafaRay Team. Raytracing is a rendering technique for generating realistic images by tracing the path of light through a 3D scene. YafaRay4tS is an open source scripting project created by members of the trueSpace community to add functionality to trueSpace7.61 for exporting YafaRay formatted XML files for reading by the YafaRay render engine. Please note that YafaRay4tS is provided without warranty or guarantee of fitness for any purpose. It is provided "as is" and any use of this software is done at your own risk.

## YafaRay4tS - Features Overview



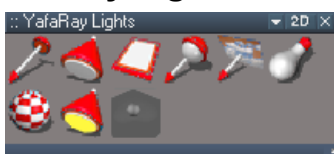
YafaRay4tS is implemented as an XML exporter that uses batch scripting to interface with YafaRay command line XML interface.

The YafaRay4tS user interface exposes the YafaRay render settings for you, so that you can have full control over the output produced. Included in the YafaRay4tS distribution are several features to make using YafaRay with trueSpace easier. This ranges from several optional Viewers to see your rendered results, to the YafaRay specific Light objects and YafaRay specific Direct3D materials for use inside trueSpace. Care was taken in designing the scene export to allow it to support as many of the built in trueSpace geometry types as possible, ranging from Sub-division surfaces to Morph objects. While vertex normals are not supported by YafaRay, YafaRay4tS does allow for an auto-smoothing angle to be set on a per object basis.

## YafaRay4tS - Panels

While an icon interface is included with YafaRay4tS for convenience, most of the render settings work is done in the YafaRay4tS user interface panels. The YafaRay4tS project has focused on implementing as much of the full YafaRay features set as is possible from within trueSpace. As can be seen, YafaRay4tS is well on the way to complete YafaRay support! Much thought has gone into placing the YafaRay features and settings into logical groupings of panel elements to make the interface easier to use without sacrificing the full customizability and power of the YafaRay render engine

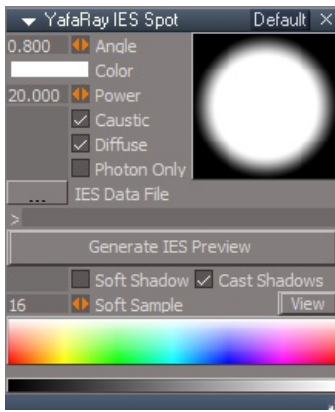
## YafaRay Lights



YafaRay lights differ from trueSpace's built-in light objects so a set of lights has been created for YafaRay4tS to make it easy and intuitive to set up lights from within the trueSpace scene editing environment. The custom YafaRay specific light objects are available via a light library that is installed into the trueSpace main libraries when YafaRay4tS is installed.



Also an icon fly out for easy access to the custom light objects has been added to the YafaRay4tS toolbar next to the YafaRay Render and Settings icons fly out. All of the YafaRay light types are represented from within trueSpace. Each of the light objects has settings panels that will show up in the trueSpace's stack view panel tab, exposing the YafaRay specific light settings for easy editing.



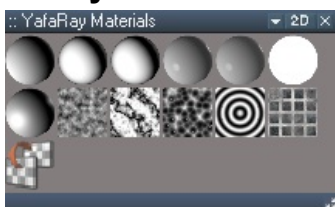
While it is impossible to accurately represent YafaRay photo realistic lighting from within trueSpace's real time viewport, care was taken to get as close an approximation as was practical. For example the YafaRay4tS light objects include built-in scripting so that adjusting the YafaRay parameters for power and size will cause the amount of light generated in the real time display to be updated as the values are changed. Also each light includes a convenient color picker for the light's color and a Color aspect for advanced color options.

## YafaRay4tS Setup Library

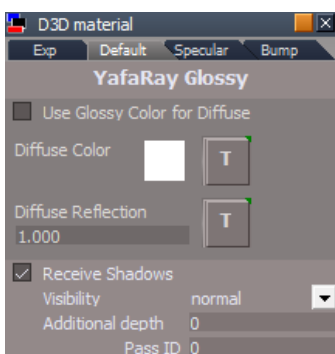


YafaRay4tS.RsScn with YafaRay Light setup and a Yafaray Camera. YafaRay4tS toolbar.RsObj script that reloads the toolbar. YafarayVolume.RsObj Volume Region object for Uniform and Height Fog. Yafaray Camera.RsObj includes a script to select DOF distance and additional settings. EntryPoint.RsObj A Yafaray EntryPoint Camera. When the scene loads the view will switch to this Camera's view. In the YafaRay4tS/ Camera aspect, with this camera selected, select the Set Camera button. when rendering from a Camera View. Several objects that are used to create a D3D Preview of the Background. Tiff Loader.RsObj for loading and displaying Tiff images in trueSpace.

## YafaRay Materials Library



Included with YafaRay4tS are custom trueSpace Direct3D materials. These materials mirror the YafaRay materials Shiny Diffuse, Glossy, Coated Glossy, Glass, Rough Glass, Blend, Texture Map in with which you can add an Image, Procedural Clouds, Marble, Wood, Voronoi, plus one special Light Material used to indicate that an object is to be used as an object light. Also included is a Blend Material Collection (3D Object) used with the YafaRay Blend material for blending two materials together.



By using Direct3D materials the user is able to get rudimentary feedback within the trueSpace real time display as to how the materials will look when rendered. It also allows for the user to use the built-in trueSpace tools for applying and inspecting the material. The YafaRay material settings have been added to the material panel so that they can be easily edited when viewing the material in trueSpace's Material Editor. Unfortunately because of the limitations of DirectX9 reflections and refraction cannot be simulated in the real time viewport. Instead, specular faking and specular mapping are implemented in the DirectX materials to help give the impression of reflective surfaces.

## YafaRay4tS

YafaRay4tS was created to work in trueSpace7.61 'Workspace'  
Tested with the YafaRay v3.3.0 render engine

### trueSpace 7.61 Unofficial Updates

YafaRay4tSv0.9.9 is fully incorporated into trueSpace7.61 and trueSpace7.61Std

No installation is necessary if you apply these updates:

trueSpace7.61 Full Version

trueSpace 7.61 Standalone

## YafaRay Installation

1.) Download the YafaRay v3.3.0 render engine from one of these sites:  
YafaRay Standalone YafaRay for Blender

Unzip the file and copy the 'yafaray\_v3' folder:

Examples:

[YafaRay Standalone](#)

C:\Program Files\yafaray\_v3

C:\trueSpace761\ts\yafaray\_v3

C:\trueSpace761Std\yafaray\_v3

\* For Blender users look at the Blender instructions below.

## YafaRay4tS Installation

### Prerequisites:

Clinton3dPlugin.rxs

- Clintons3dPlugin.rsx

C3DPersistentv2.RsObj - C3D Persistence Autoload.RsObj

### Optional

Clintons3dPluginExt.rsx - Tif image loader for trueSpace7.61

OptDetector.dll

### - iOpt Detectors

The OptDetector.dll must be Installed and Loaded from the Workspace's Package Manager.

Note: If you want to use OptDetector for several installed versions of trueSpace7.61 you only need to install one OptDetector plugin, which can be shared.

Example: Install to your C: / drive. Then copy the 3 OptDetectors libraries to your trueSpace Rs Main Libraries folder.

Warning: After you Reset to Default Context from Workspace the OptDetector's plugin will require that the 3 OptDetectors libraries load again.

Next if you have previously installed YafaRay4tS before, Uninstall YafaRay4tS from the Add & Remove program in the Windows Control Panel first!

2.) Install and Load the Clinton3dPlugin.rxs and Clintons3dPluginExt.rsx plugins from Workspace's Package Manager and reboot trueSpace 7.61

3.) Install the C3DPersistentv2RsObj

4.) [Extract All] of the files from the YafaRay4tS zip file

5.) Open trueSpace7.61 and from the Workspace's File menu, Load the YafaRay4tS\_Installer.RsObj from where you extracted the files.

WARNING: Do not Drag and Drop into trueSpace, only use Workspace's File menu!

6.) From the YafaRay4tS Installer panel select the [Install] button.

You should see a Question message asking:

"Your existing YafaRay4tS Libraries will be replaced with updated versions."

"Would you like to continue?"

If not select your keyboard keys Alt + Tab to bring the message forward. Selecting [Yes] will start the installation and selecting [No] will cancel the installation.

7.) From Workspace in the Stack/Panel - YafaRay4tS/Setup aspect

Set the 'YafaRay Installation Path' to the yafaray-xml.exe file where you have installed YafaRay v3.3.0

Examples:

[YafaRay Standalone](#)

C:\Program Files\yafaray\_v3\bin\yafaray-xml.exe

C:\trueSpace761\ts\yafaray\_v3\yafaray-xml.exe

C:\trueSpace761Std\yafaray\_v3\yafaray-xml.exe

Blender

C:\Program Files\Blender Foundation\Blender\2.79\scripts\addons\yafaray\_

v3\bin\yafaray-xml.exe

BforArtists

C:\Program Files\Bforartists 1.0.0\2.79\scripts\addons\yafaray\_

v3\bin\yafaray-xml.exe

## YafaRay4tS/ Setup - YafaRay Installation Path

Installation Defaults:

If copied to the above examples, the 'YafaRay Installation Path' will be set automatically.

If copied to the trueSpace folder, any folder with 'yafaray' in the name will be found so it's

not limited to 'yafaray\_v3' specifically.

Note: If you want to use YafaRay4tS for several installed versions of trueSpace7.61 you only need

one 'YafaRay Installation Path' that can be shared. Install to C:\Program Files [Recommended]

8.) Set the 'Output - Render File' to where you want to render an image or images.

Examples:

C:\trueSpace761\ts\Image Folder\yaf\_test.png

C:\trueSpace761Std\Image Folder\yaf\_test.png

C:\Temp\yaf\_test.png

9.) Select the [Save Settings] button to save your directories into the default YafaRay4tS object.

10.) Position the YafaRay4tS toolbar and save your Layout.

Congratulations you've finished your YafaRay4tS setup!

\* For Vray users look at the Vray instructions below.

### YafaRay4tS Uninstall

If you have any content saved in the YafaRay libraries, they will be deleted, so save anything you want into a different library.

1.) Open trueSpace7.61 and from the Workspace's File menu, Load the YafaRay4tS\_Installer.RsObj from where you extracted the YafaRay4tS files

2.) Select the [Uninstall] button.

You should see a tS761 Question message asking:  
 "Your existing YafaRay4tS Libraries will be deleted."  
 "Would you like to continue?"

If not Select your keyboard keys Alt + Tab to bring the message forward. Selecting [Yes] will uninstall the installation and selecting [No] will cancel the installation.

### Developer notes:

After a 'Reset to Default Context'

Right click any of the Offline Render icons to load the YafaRay4tS panel

\* For Vray users look at the Vray instructions at the bottom.

The **YafaRay4tS Scene Utilities** in the YafaRay4tS toolbar can be used to update an existing scene.

### Vray:

If you have Vray Installed and Loaded and you want to switch to YafaRay4tS as the Renderer

1.) In the 'Offline renderers' panel select Yafaray as the Renderer

2.) Right click any of the Offline Render icons to load the YafaRay4tS panel

### Blender:

1.) To install for Blender copy the "yafaray" folder into the AddOns folder inside Blender

2.) Start Blender

3.) File > User Preferences

4.) Add-ons

5.) Find and activate yafaray via the checkbox

6.) Select the Save User Settings button

Note: The YafaRay site says YafaRay is no longer compatible with Windows XP, but it does work in trueSpace 7.61

They must be referring to running with Blender on Windows XP.

## -- Output – Render File –

The Output Render File section can be found on many if not most of the YafaRay4tS panels.

**View** - If enabled YafaRay will render the Workspace view.

**Camera** - If enabled YafaRay will render the set Camera view.

**Width** - The width of the image rendered.

**Height** - The height of the image rendered.

> File name for rendered image output. This is where the rendered results will be saved.

**Open Output Folder** - Opens the folder entered into the above path.

**Render** - Exports XML file and spawns the YafaRay renderer.

File Formats - PNG is the default file format. Additional file formats are EXR, HDR, JPEG, and TIF.

Press CTRL+C with the console focused to interrupt a render in progress

## Setup

### -- YafaRay Setup --

**YafaRay Installation Path** - Path to yafaray-xml.exe file.

Use the File browse dialog button.

**Use Custom Temporary Directory** - Path to the Custom Directory.

Directory for storing generated XML file and temporary YafaRay output image. Default working directory is the same as the output image directory. Use this option if you want to use a different directory from the final image output directory.

**Use Custom XML Export file** - Use the File browse dialog button for selecting custom XML file export location.

Use a custom filename and directory for the generated XML file. This is useful when generating multiple XML files for batch rendering.

**Export XML** - Creates an XML file without rendering.

If "Delete XML file after render" is checked, you will have to use the Export XML before using the Render XML each time.

**Render XML** - Renders the Custom XML Export file.

**Delete XML file after render** - Deletes the generated XML file on render completion.

### -- YafaRay4tS Setup --

**Leave console window open after render** - If checked the console window will stay open after the render completes.

By default the console window will close after the render completes. Selecting this option will leave the console open so that the user can scroll through the YafaRay render engine output messages. Leaving console open after render is the only way to see warnings or errors from the YafaRay renderer.

**Start console window minimized** - If checked the console window will open in a minimized state.

With this option checked the console window will no longer pop-up when the render engine is spawned. This is very helpful when batching a sequence of renders.

### -- YafaRay4tS Viewers --

**Disable All Viewers** - Disables all Viewers

**Internal Viewers** - Enable Internal Viewers

**Internal Viewer:**

Generic  
iOptDetector

**Generic Viewer**

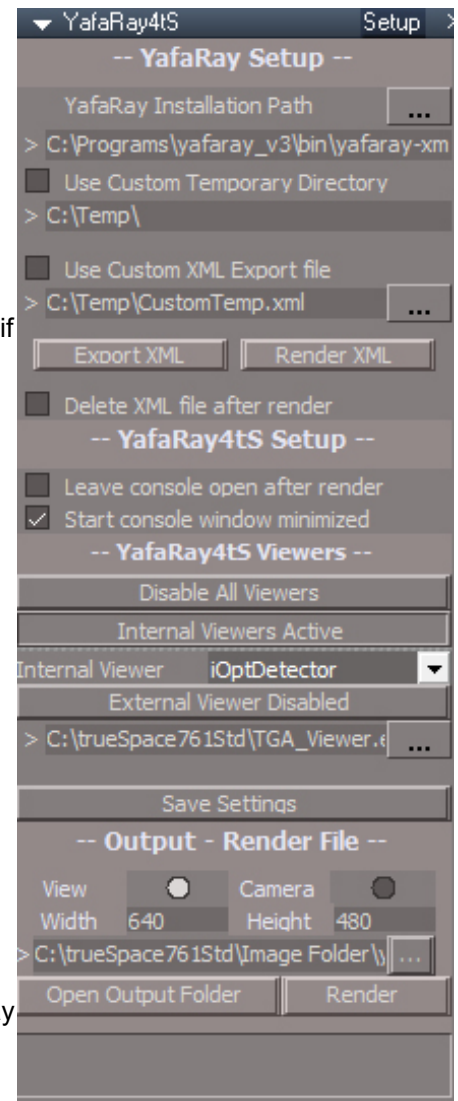
If enabled the Display floating panel view opens when the render completes.

The Display is a trueSpace floating panel that displays the rendered image in a fixed 320x240 [4:3] pixel ratio.

Any rendered image using a different pixel ratio will display distorted, but will render properly.

**iOptDetector Viewer** - If enabled a trueSpace window frame view is used.

Requirement: The iOptDetector plugin must be Installed and Loaded from the Package Manager.



**External Viewer** - If enabled the TGA Viewer opens when the render completes.

> Default path: C:\trueSpace761\tS\TGA\_Viewer.exe

Requirement: The Output- Render File format must be in the Truevision Targa (\*.tga) file format.

From the TGA Viewer - File menu, you can save the rendered image as PNG, JPG, BMP and GIF file formats. Also supports a Custom Viewer.

Opens a user specified image viewer when the render completes. Use the File browse dialog button to enter the path where it is located.

This can also be used to open an Image Editor that is registered to open with the rendered image file format.

Example: C:\trueSpace761\tS\Image Folder\yaf\_test.tga

External Viewers should not be used when rendering an Animation!

**Save Settings** - Saves your preferred current settings within trueSpace and to the trueSpace directory that will reload after Resetting the Default Context.

[-- Output – Render File –](#)

# YafaRay4tS User Interface

## YafaRay4tS Toolbar



After installing the YafaRay4tS toolbar it is important to save or update your trueSpace layout.

LMB = Left Mouse Button

RMB = Right Mouse Button



### YafaRay4tS Settings

LMB = Opens the Default aspect in the Stack/Panel

RMB = Opens the Setup aspect in the Stack/Panel

Inserts the YafaRay4tS object into the current scene if it is not present



### YafaRay4tS Help

LMB = Opens this help file

RMB = Opens the About aspect in the a floating panel

Inserts the YafaRay4tS object into the current scene if it is not present



### YafaRay4tS Scene Utilities

LMB = Opens the YafaRay4tS Scene Utilities



### Infinite

LMB = Activates the Light tool widget

RMB = Opens the Lights preferences panel in the Stack/Panel



### Area Light

LMB = Activates the Light tool widget

RMB = Opens the Lights preferences panel in the Stack/Panel



### Directional Light

LMB = Activates the Light tool widget

RMB = Opens the Lights preferences panel in the Stack/Panel



### Sun Light

LMB = Activates the Light tool widget

RMB = Opens the Lights preferences panel in the Stack/Panel



### Point Light

LMB = Activates the Light tool widget


RMB = Opens the Lights preferences panel in the Stack/Panel



### Spot Light

LMB = Activates the Light tool widget

RMB = Opens the Lights preferences panel in the Stack/Panel


**Sphere Light**

LMB = Activates the Light tool widget  
RMB = Opens the Lights preferences panel in the Stack/Panel


**IES Spot Light**

LMB = Activates the Light tool widget  
RMB = Opens the Lights preferences panel in the Stack/Panel


**YafaRay Camera**

LMB = Activates the Camera tool widget  
RMB = Opens the Camera aspect in the Stack/Panel


**Smooth Normals**

LMB = Apply Smooth Normals to selected object with the value entered in the Default aspect.  
RMB = Removes Smooth Normals from the selected object and opens the Default aspect in the Stack/Panel


**YafaRay Volume**

LMB = Inserts a YafaRay Volume object into the scene  
RMB = open the Volume Integrator panel


**Render Scene**

LMB = Renders scene  
RMB = Opens the current Lighting Method aspect in the Stack/Panel


**Render Object**

LMB = Renders selected object  
RMB = Opens the current Lighting Method aspect in the Stack/Panel


**Render Area**

LMB = Renders portion of screen  
RMB = Opens the Camera aspect in the Stack/Panel  
RClick in 3D Space to deactivate


**Render Animation**

LMB = Opens the Render to File  
RMB = Opens the Animation aspect in the Stack/Panel


**Render to File**

LMB = Opens the Render to File  
RMB = Opens the current Lighting Method aspect in the Stack/Panel

If you lose the YafaRay4tS toolbar, open the YafaRay4tS Setup library and load the YafaRay4tS toolbar to automatically restore it.

## YafaRay4tS Scene Utilities

### Import and Export

For importing and exporting YafaRay4tS scene files

#### Process Imported Scene

Replaces the YafaRay4tS panel in the scene with all of the existing settings, excluding the YafaRay Installation Path. If

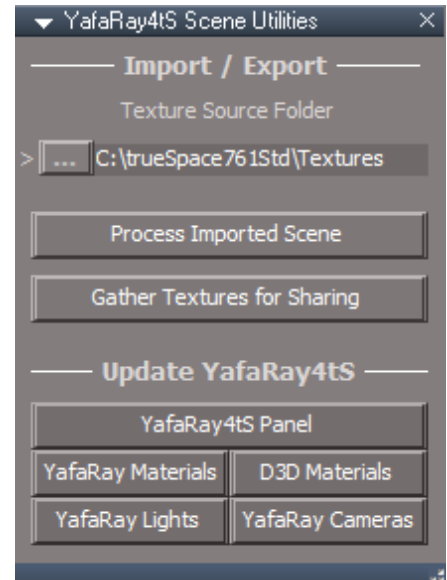
the Output Render File path does not exist, a default path will be assigned. Updates the texture paths based on the path in the Texture Source Folder.

#### Gather Textures for Sharing

Copies all of textures in the scene to the Texture Source Folder.

### Update YafaRay4tS

For updating previous versions of YafaRay4tS scenes to the current version.



#### YafaRay4tS Panel

Replaces the YafaRay4tS panel in the scene with all of the existing settings, excluding the YafaRay Installation Path. It

does not update the Output Render File path.

#### YafaRay Materials

Replaces all of the YafaRay Materials in the scene with the current YafaRay Materials.

#### YafaRay Lights

Replaces all of the YafaRay Lights in the scene with the current YafaRay Lights.

#### YafaRay Cameras

Replaces all of the YafaRay Cameras in the scene with the current YafaRay Cameras.

#### D3D Materials - Opens the D3D Material Converter

In order to render in YafaRay4tS, all existing materials in the scene must be converted to a **D3D Shader**.

From the Default aspect in the D3D Material Converter, uncheck **Selected Only**, and select the **Convert** button.

After all of the scene materials are converted to **D3D Shaders**, you can convert all of the scene materials to **YafaRay Materials**.

From the YafaRay4tS aspect in the D3D Material Converter, uncheck **Selected Only**, and select the **Convert** button.

None of the D3D Preview settings are transferred to the updated YafaRay4tS panel

## Default Panel

### - Render Settings -

**Clay Render** - Enables Clay Render

Renders all materials with a White Diffuse Material

**Smooth Normals** - Enter the amount of smoothing for the selected object

Everything is hard edged by default in the YafaRay renderer

**Input Color Space** - Color processing types for all textures:

**LinearRGB** - Linear with no color processing for HDR/EXR files.

**sRGB** - Color processing with Gamma 2.2. [Recommended]

**XYZ** - Experimental color processing.

### - Denoise Settings -

**Denoise** - Enables Denoise

**Chrominance** - Color Noise control

**Luminance** - Brightness Noise control

**Mix** - Proportion of Denoise and original image

### - Draw Parameter -

**Log Draw Parameter** - Logs rendered results to a html file where you rendered the image.

Enter comments that appears in the html file.

### - Bucket Rendering -

**Tile Order**

**Centre** - Build image from the center

**Random** - Build image randomly

**Linear** - Build image from top to bottom

**Tile Size** - Size of the tiles used for rendering

**Save Time(Partial Save Timer)** - Number of seconds between partial render saves.

**Off/ On** - **Off** sets the Save Time to 0. **On** sets the Save Time to 6.

Can be used to observe a long render to see if things are going well.

Results during the render can be seen in Windows Explorer and in the optional OptDetector Viewer.

Do not set the time too low because your machine may not be able to save quickly enough.

Important: Set to zero or press the button so "Off" is showing to stop the timer.

**Open Render Pass** - Select this button to Open/Close the Render Pass floating panel.

### - Scene Settings -

**Scene Brightness** - Alters the D3D light's Attenuation to match YafaRay renders

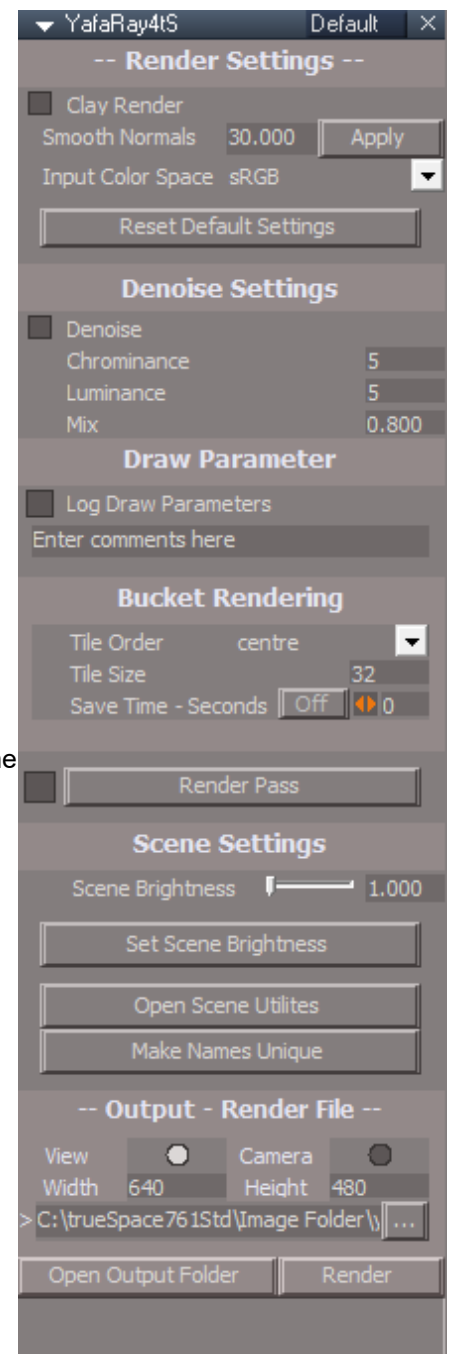
**Open Scene Utilities** - Opens YafaRay4tS Scene Utilities for processing scenes to get them ready for sharing and rendering.

**Make Names Unique** - Renames renderable items that have the same name to avoid material definition conflicts.

### [-- Output - Render File -](#)

**TODO link to the Render Pass page and document it**

Yafaray bug: denoise destroys the alpha channel in tga files



### [YafaRay Render Settings](#)

# Camera

## -- Camera Settings --

**Camera** - Camera that has been set to render from.

**Set Camera** - Sets the selected Camera for rendering.

**Aspect Ratio** - Pixel aspect ratio.

**Camera Type** - Camera type for YafaRay to use.

- Perspective
- Architect
- Orthographic
- Angular
- Equirectangular - for YafaRay v3.4.2 and up

**Convert Camera -> YafaraCamera** - Converts a standard trueSpace camera to a YafaRay Camera.

## - Perspective/Architect -

Perspective is the standard camera mode.

Architect camera type works like a Perspective camera, the only difference is that the vertical component of the perspective effect is neglected, so scene vertical lines are not convergent.

**Aperture** - Aperture size.

**DOF** - Depth of Field.

**Type** - Bokeh type, shape of the out of focus points when rendering with DOF enabled

- Disk1
- Disk2
- Triangle
- Square
- Pentagon
- Hexagon
- Ring.

**Bias** - Bokeh bias.

- Uniform
- Center
- Edge

**Rotation** - Bokeh rotation.

## - Orthographic -

Orthographic - projection of the scene, without perspective effects

**Scale** - Horizontal size of image plane.

## - Angular -

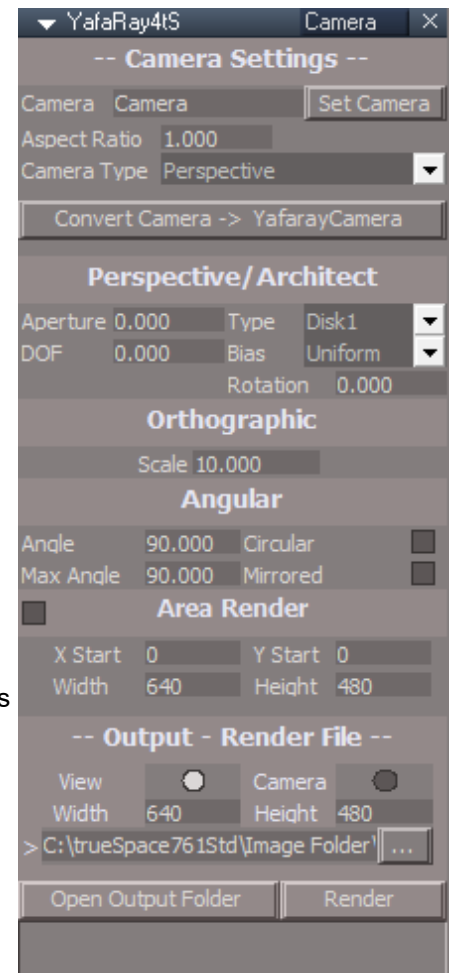
Angular - useful to produce up to 180 degree panoramas or a nice perspective distortion

**Angle** - Horizontal opening angle of the camera.

**Max Angle** - Maximum angle visible.

**Circular** - Blend out areas outside the Max Angle 'Circular Iris'.

**Mirrored** - Mirror X-direction. Use for generating Light Probe images.



## - Area Render -

**Area Render** - Enables Area Render. Used to render a portion of the view.

**X Start** - Left starting coordinate.

**Y Start** - Top starting coordinate.

**Width** - Width of view area to be rendered.

**Height** - Height of view area to be rendered.



### Render Area

LMB = Renders portion of screen

RMB = Opens the Camera aspect  
in the Stack/Panel

RClick in 3D Space to deactivate

This button tells trueSpace to render the selected portion of the current viewport.

On the Render Toolbar, press the Area Render icon button.

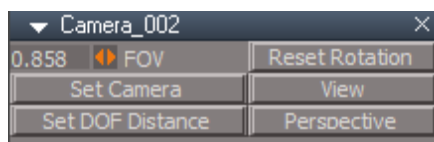
Click on the upper right corner of the section you want trueSpace to do an Area Render on, and then hold and drag the mouse to form the Area Render selection frame.

trueSpace will then render that section of the scene.

## -- Output – Render File –

### YafaRay Camera Settings

## Scene Camera



**FOV** - set the vertical angle of the camera lens

**Set Camera** - set as the render camera

**Set DOF Distance** - press then select a scene object to set the depth of field distance for the camera

**Reset Rotation** - rotate the camera to look in the negative Y direction

**View/Previous View** - Unofficial Updates required

**Perspective/Default** - Unofficial Updates required

## Background

### -- Background Settings --

#### Background Type - Background Shaders:

**None** - Disable Background use.

**Image** - Use with a HDR or EXR file.

**Gradient** - Enables a gradient background type composed of two sky colors above the horizon and two colors below it.

**Sun Sky** - Enables a background type that approximates the full spectrum of daylight for various atmospheric conditions. Uses colors differently than the more advanced Dark Tide Sun Sky.

**Dark Tide Sun Sky** - Enables a background type that approximates the full spectrum of daylight for various atmospheric conditions.

**Constant** - Enables a background type that casts light with a single color.

**Background Power** - Power of light cast by the background.

**Diffuse Photons** -

**Caustic Photons** -

**Transparent** - Render Background as Transparent.

**Casts Shadows** - Background light casts shadows.

**Materials Transparent Refraction** - Materials refract the Transparent Background. Transparent must be enabled for this option to work.

**Preview On** - Makes a D3D Preview in the Workspace scene by adding a large inside out Sphere and Lights. For image type backgrounds enter the path to the image and enable/disable **IBL - Gradient - Constant Color** before pressing the button.

**Preview Off** - remove the sphere and lights.

**Preview Scale** - Sets the size of the Preview Sphere.

The Sphere and Lights are created inside the YafaRay4tS.RsObj, and are not used by the YafaRay renderer.

**IBL - Samples** - Number of samples to be taken from background image when doing lighting calculations .

**IBL - Gradient - Constant Color** - enable image based lighting for image, gradient and constant color backgrounds.

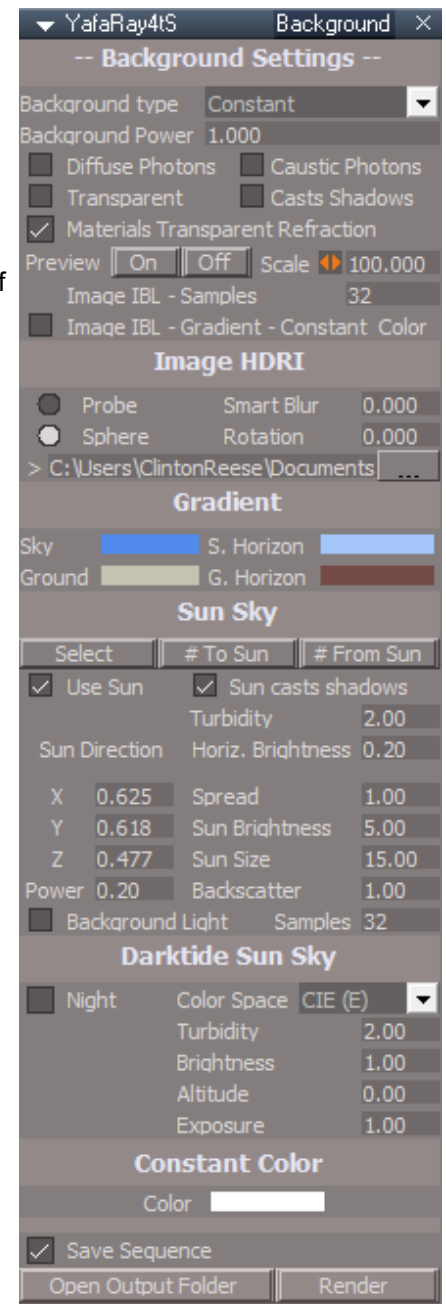
### - Image HDRI -

**Probe** - Sets background image type to Light Probe(mirror ball).

**Sphere** - Sets background image type to Spherical Projection(latitude/longitude).

**Smart Blur** - Reduce noise when using HDRI textures for lighting.

**Rotation** - Horizontal rotation of the background image.



## - Gradient -

**Sky** - Zenith color.

**Ground** - Ground color.

**Sky Horizon** - Sky horizon color.

**Ground Horizon** - Ground horizon color.

## -Sun Sky -

**Select** - Select the light inside the YafaRay node used to represent the Sun. Use Sun and Preview On are required to select and transfer data to and from the Sun Direction settings.

It can be moved but not rotated. It always points to the center of the scene.

**# To Sun** - Transfers the Sun Direction numbers to the position of the Preview Sun Light.

**# From Sun** - Transfers the Sun Light position from the Preview Sun Light to the Sun

**Sun Casts Shadows** - Enables Sun Sky shadows

**Use Sun** - Enables Sun

**Sun Direction** - X, Y, Z component of the Sun's vector position.

**Power** - Amount of Sun light added to the scene.

**Background Light** - Enables background light calculations.

**Turbidity** - Controls the density of particles in the air. The higher the value the more sunlight will be diffused into the sky.

**Horizon Brightness** - Controls the brightness of the horizon colors.

**Spread** - Controls the edge transition of the horizon.

**Sun Brightness** - Controls the brightness of the sun.

**Sun Size** - Controls the size of the sun.

**Backscatter** - Controls the sun's color appearance and the halo around it.

**Samples** - Reduces Noise and better glossy Reflection.

Darktide adds additional controls to the Sun Sky. The controls below are only for Darktide. Controls above are for for both Sun Sky and Darktide Sun Sky

## Darktide Sun Sky

**Night** - Renders the scene with the Sun acting as the Moon.

**Color Space** - Color processing types for the Background.

CIE (D50)

CIE (E)

sRGB (D50)

sRGB (D65)

**Exposure** - Lighting multiplier.

**Brightness** - Controls the brightness of the sky.

**Altitude** - Adjustment relative to the Background center.

If Altitude increases, the Background Horizon lowers.

## [YafaRay Darktide Sunsky](#)

## Constant Color

**Color** - Color to use for the Constant background shader. YafaRay updates allow this background type to work with all lighting methods.

## [YafaRay Background Settings](#)

## Volume Integrator

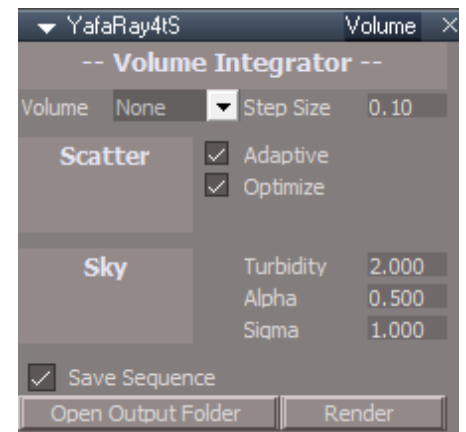
**Volume Type** - Selects the volumetric type:

**None** - Disables volumetrics.

**Scatter** - Enables Single Scatter integrator.

**Sky** - Enables Sky.

**Step Size** - Sets the step size value, the main control for the precision of volumetric rendering.



## Single Scatter

**Adaptive** - Turns adaptive fog calculation on, optimizes stepping calculations for NoiseVolumes.

**Optimize** - precomputes the attenuation in the entire volume at a 3d grid of points.

Attenuation Grid Resolution is found on the Volume Region objects. Higher values give improved shading detail when Optimize is enabled.

## Sky

**Turbidity** - amount of Suspended particles.

**Alpha** - amount of Absorption

**Sigma** - amount of Scattering.

Sky volume integrator is not in the docs - check release notes

## Volume Region

### Volume Type

**UniformVolume** - a uniform density volumetric effect, useful for dust, fog, mist, etc.

**ExpDensityVolume** - decreases the density of the volume as height increases.

**NoiseVolume** - procedural texture controls the density of the volume.

### General Settings - common to all volume types

**Absorption** -  $\sigma_a$ , light absorption.

**Scatter** -  $\sigma_s$  (scattering), scattering occurs when light traveling along a path encounters a particle in a volume and is redirected to a new path

**Attenuation Grid Resolution** - higher values give improved shading detail when the Volume Integrator, Single Scatter, Optimize is enabled.

### ExpDensity Settings

**Height** - controls the density of the volume before it starts to fall off.

**Steepness** - controls how quickly the density falls off.

### Noise Settings

**Sharpness** - controls how sharp a NoiseVolume looks at the border between areas of high and low density.

**Cover** - defining what percentage of a procedural texture maps to zero density.

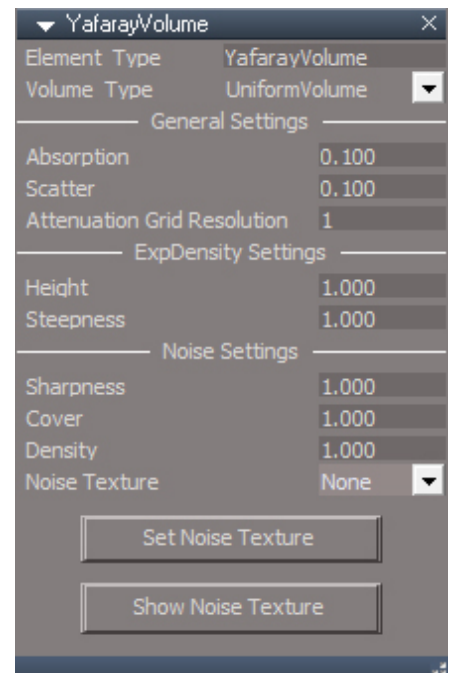
**Density** - a global density multiplier.

**Noise Texture** - the procedural texture to use with the NoiseVolume type

- None - no texture selected
- Cloud
- Marble
- Wood
- Voronoi

**Set Noise Texture** -

**Show Noise Texture** -



Only one noise type volume texture can be used per scene. Cannot have multiple noise volumes with different textures. Any extra noise textures will be ignored and one will be used for all noise based volumes.

## Animation

### -- Animation Settings--

**Set From Timeline** - Sets the Start and End frames from the scene's Start and Stop frames.

**Set From Keyframes** - Sets the Start and End frames from the scene's Keyframes or the selected object in Object Render mode.

**Start Frame** - Frame to start rendering from.

**End Frame** - Last frame to render.

**Start Number** - Number start with for file sequence.

**Zero Padding** - Number of leading zeros to use when padding the number for the file name.

**Start - Batch Render** - Exports the XML files for the frame range specified in **Start Frame** to **End Frame** and spawns the YafaRay renderer to render the frames sequentially in the background. After the images are rendered, the generated XML files are deleted.

**Delete XML file after render** - Delete the generated XML file on render completion.

**Start console window minimized** - If checked the console window open then minimize.

With this option checked the console window will no longer pop-up when the render engine is spawned. This is very helpful when batching a sequence of renders.

### -- Output – Render File –

**View** - If enabled YafaRay will render the Workspace view

**Camera** - If enabled YafaRay will render the Camera view

**Width** - The width of the image rendered.

**Height** - The height of the image rendered.

> - File name for image output. This is where the rendered results will be saved

**Open Output Folder** - Open windows explorer to the rendered image

**Render Animation** - Exports the XML file and spawns the YafaRay renderer

**Cancel Render** - Cancels the animation render

**Model Processing** - Render animations from an opened Model view

**Model Mesh Processing** - Renders Model objects mesh animations: NURBS, Metaballs, and Deformations

**Protect Workspace** -Opens Protect Workspace

### Sequence Player

Plays a sequence of images in a loop

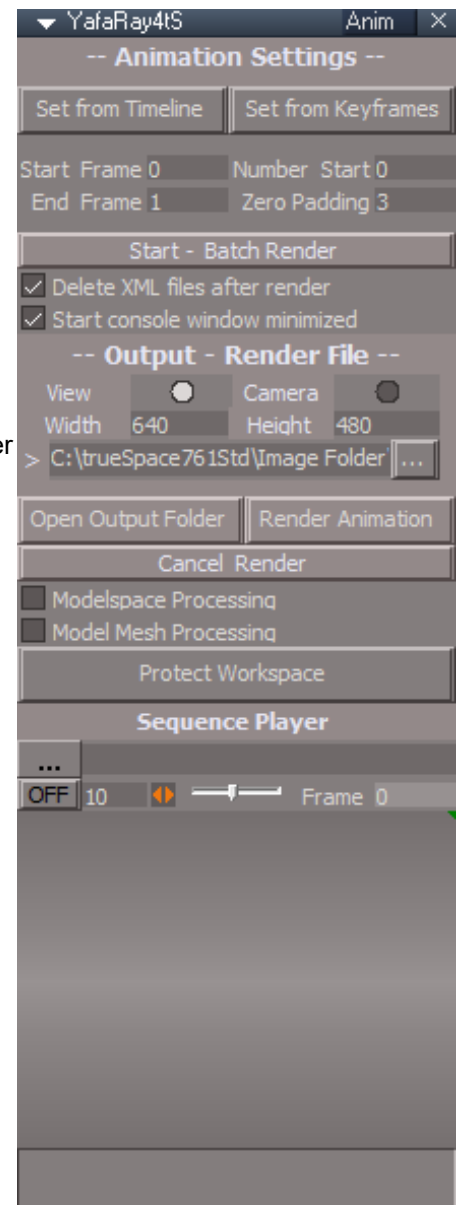
**File Dialog**- File browse dialog for selecting the first image in a sequence of images

**Off / On**- Stop / Play

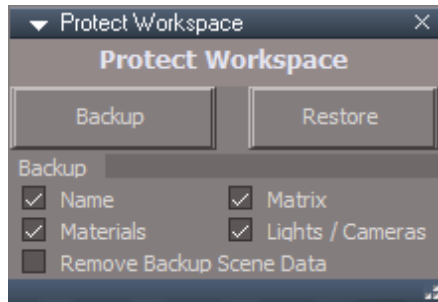
Enter the amount of images in the sequence of images

Slider control sets the speed of the playback

Right click the display to Reset



## Protect Workspace



**Backup** - Performs a backup of the scene

**Restore** - Restores the Backup

**Name** - Protects changes to object names

**Materials** - Protects conversion of Workspace materials to Lightworks materials

**Matrix** - Protects changes to transformation attributes

**Lights /Cameras** - Protects changes to Light's Angle, and Camera's FOV attributes

**Remove Backup Scene Data** - Removes all of the backup data nodes from the scene when restoring

## Model Processing

Steps to process Model animations from the **Anim** aspect, with the main view in Workspace and no Model view open

- 1.) Check **Model Processing**
- 2.) Select the **Protect Workspace** button, **Backup** button, and Save your scene
- 3.) Switch the main view to Model and open a new Workspace 3D Window
- 4.) Select the **Render Animation** button
- 5.) When the render has completed, switch the main view to Workspace
- 6.) Select the **Restore** button

## Model Mesh Processing

Steps to process Model mesh animations, NURBS, Metaballs, or Deformations from the **Anim** aspect, with the main view in Workspace and no Model view open

- 1.) Check **Model Processing** and **Model Mesh Processing**
- 2.) Select the **Protect Workspace** button, **Backup** button, and Save your scene
- 3.) Switch the main view to Model and open a new Workspace 3D Window
- 4.) Select the **Render Animation** button
- 5.) When the render has completed, switch the main view to Workspace
- 6.) Select the **Restore** button

**WARNING!** Rendering with Model Mesh Processing

Switching layouts will crash trueSpace if you do not Exit trueSpace first.

Rendering with the main view in Workspace and a new Model view will also crash trueSpace.

**IMPORTANT!** Close Model before using Protect Workspace - Backup or Restore

## Lighting Methods

**Lighting Method** - At the top of each panel is the lighting method that will be used by the YafaRay render engine. When you choose a lighting method from this combo control from the Stack, it will switch to that lighting method aspect. Every lighting method has a common Anti-Aliasing Settings, General Settings, Output - Render File, and their relevant settings. This does not work from the Link Editor.

### Common Lighting Controls

All the lighting methods have 3 sections in common. Anti-Aliasing, General and Output - Render File.

#### -- Anti-Aliasing Settings --

**Filter** - 3 Anti-Aliasing reconstruction filters to use when resampling:

**Gaussian** - Slight blurring

**Mitchell-Netravali** - Improves sharpness of the edges, Default setting

**Box** - Equal weighting of all samples. It is fast, but isn't efficient dealing with certain types of noise and produces post-aliasing.

**Min Sample** - Number of samples to use on first Anti-Aliasing pass.

**Pixel Width** - Width of Anti-Aliasing pixel filter. [0-8]

**Passes** - Maximum number of Anti-Aliasing passes.

**Inc Sample** - Number of samples for additional Anti-Aliasing passes.

**Threshold** - Color threshold for additional Adaptive Anti-Aliasing samples in subsequent passes. If AA Threshold is 0, the whole image is resampled in every pass.

#### -- General Settings --

**Ray Depth** - Amount of times that rays can be reflected in specular surfaces or pass through transparent surfaces.

**Transparent Shadow depth** - Amount of transparent surfaces that shadow rays can get through to find light sources.

**Gamma** - The gamma value target for the rendered image.

**CPU Threads** - Number of CPU threads used by YafaRay. [-1] All threads.

This number should be equal to the number of CPU threads in your computer or minus one if you find that using all the CPU threads bogs down your computer.

**Normal Shadows / Transparent Shadows** - Switches from Normal to Transparent Shadows.

**Save Alpha** - Exports an alpha file in addition to the RGB output file.

**Clamp RGB** - Color depth is reduced to a low dynamic range for better Anti-Aliasing filtering in high contrast areas.

#### -- Output - Render File --

**View** - If enabled YafaRay will render the Workspace view.

**Camera** - If enabled YafaRay will render the set Camera view.

**Width** - The width of the image rendered.

**Height** - The height of the image rendered.

> File name for rendered image output. This is where the rendered results will be saved.

**Save Sequence** - This will let you render repeated images, saving them to a new file name each time without the need to manually type in a new name. Only works when rendering from the panel.

**Open Output Folder** - Opens the folder entered into the above path.

**Render** - Exports XML file and spawns the YafaRay renderer.

[YafaRay Lighting Methods](#)

[YafaRay Render Settings](#)

see more AA settings, "Resampled Floor",  
also quote "Also I think I would be good to uncouple number of  
samples for first pass which is for antialiasing purposes, from sampling  
strategy for adaptive sampling which mainly is for montecarlo noise  
removal IMO"

## Lighting Methods Overview.

### Direct Lighting

For scenes we don't need global illumination for, or we can get by with background lighting and/or AO. Use cases include Studio Lighting with arealights/IBL/ AO/ Caustics, AO pass for composition, Fluids animation with Caustic photons and Outdoors with IBL or Sunsky.

#### Advantages:

Very fast in scenes where indirect lighting is not needed.

Can render independent caustic photonmaps and ambient occlusion.

HDR backgrounds (IBL, Sunsky) can work as light sources, simulating indirect lighting.

#### Disadvantages:

No indirect lighting.

### Path Tracing

Path tracing is effective if most of the path rays are able to find a light source from the first and second bounce. By using big area lights, the chance of finding a light source for path rays increases. The best area light for path tracing is a IBL/Sunsky background, which works as an dome arealight. Path tracing is a good for all kinds of open scenes.

#### Advantages:

It performs Global Illumination.

Fast in outdoors, because paths find the background easily.

Unbiased, delivers correct results.

Soft indirect lighting if enough sampling.

#### Disadvantages:

Variance shows up as noise.

Lot of rays are needed for caustics.

Inefficient in indoor scenes, when light sources are too hidden or too small.

Doesn't like omni lights (spot, point) and mirror surfaces. Better use area light types and glossy.

## Photon mapping

Global 'Photon mapping' constructs a low resolution irradiance map. It needs an interpolation algorithm = Final Gather. The precision of the GI estimation improves if there are enough photon hits and the photons flow is optimised. PM is good for 'closed' scenes.

### Advantages:

- It performs Global Illumination.
- Fast, efficient GI estimation in indoors.
- Best quality/speed ratio.
- Fast caustics.

### Disadvantages:

- Not well suited for outdoors
- Sometimes requires photon map tweaking.
- Artifacts.

## Bidirectional path tracing

### Advantages:

- It performs Global Illumination.
- Combine advantages from path tracing and photon mapping.
- More efficient than path tracing for indoors and for caustic effects.
- Unbiased, delivers correct results.
- Good for scenes with lot of indirect lighting.

### Disadvantages:

- Variance shows up as noise.
- Not well suited for outdoors.
- Inefficient in indoor scenes, when light sources are too hidden.
- "Is unstable"

## Direct Lighting

### - Caustics -

**Photons** - Number of Caustic Photons to use.

**Caustic Photon Method** - Caustics Photon Method types:

**None** - No Caustics Photons are rendered.

**Path + Photons** - Mix of a Caustic Photon Map and Path tracing Caustic rays are rendered.

**Photons** - Fast photon map is used to render caustics. Path tracing caustics rays are not rendered.

**Path** - Path tracing caustics rays are rendered.

**Mix** - Maximum number of photons to be mixed for caustic calculation.

**Depth** - Maximum number of scattering events for photon shooting.

**Radius** - Blur radius for photons.

**Photon Map Processing** - Types of Caustic Photon Map Processing to generate:

**Generate Only** - Generates the Caustic Photon Map in the scene.

**Generate Save** - Generates and Saves a **yaf\_test\_caustic.photonmap** file to where you rendered the image.

**Load** - Loads the **yaf\_test\_caustic.photonmap** file from where you rendered the image.

**Reuse Previous** - Reuses the previously generated Caustic Photon Map from memory. "This should greatly improve render speeds in scenes where only camera moves."

When loading a saved map, it is very IMPORTANT to ensure they match the scene and ONLY for camera changes.

### - Ambient Occlusion -

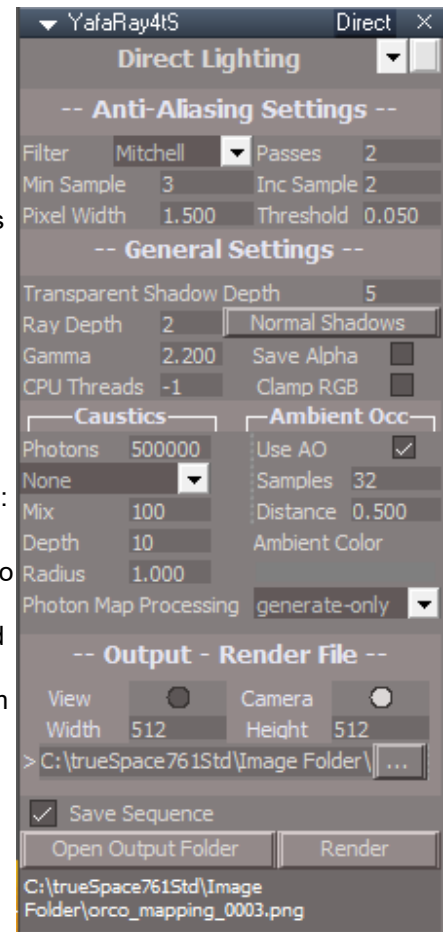
**Use AO** - Enables Ambient Occlusion.

**Samples** - Number of samples to use for Ambient Occlusion.

**Distance** - Blur radius.

**AO Color** - Color for Ambient Occlusion output. Useful for testing the AO effect.

### [-- Output – Render File –](#)



[YafaRay Caustics](#)

[YafaRay Ambient Occlusion](#)

## Photon Mapping

### - Diffuse Photons -

**Photons** - Number of photons to use.

**Search** - Maximum number of non-caustic photons to be filtered.

**Radius** - Blur radius for photons.

**AO Color** - Color for Ambient Occlusion output. Useful for testing the AO effect.

### - Caustics Photons -

**Count** - Number of photons to use.

**Radius** - Blur radius for photons.

**Photon Map Processing** - Types of Caustic Photon Map Processing to generate:

**Generate Only** - Generates the Caustic Photon Map in the scene.

**Generate Save** - Generates and Saves a **yaf\_test\_caustic.photonmap** file to where you rendered the image.

**Load** - Loads the **yaf\_test\_caustic.photonmap** file from where you rendered the image.

**Reuse Previous** - Reuses the previously generated Caustic Photon Map from memory. "This should greatly improve render speeds in scenes where only camera moves."

When loading a saved map, it is very IMPORTANT to ensure they match the scene and ONLY for camera changes.

### -- Final Gather --

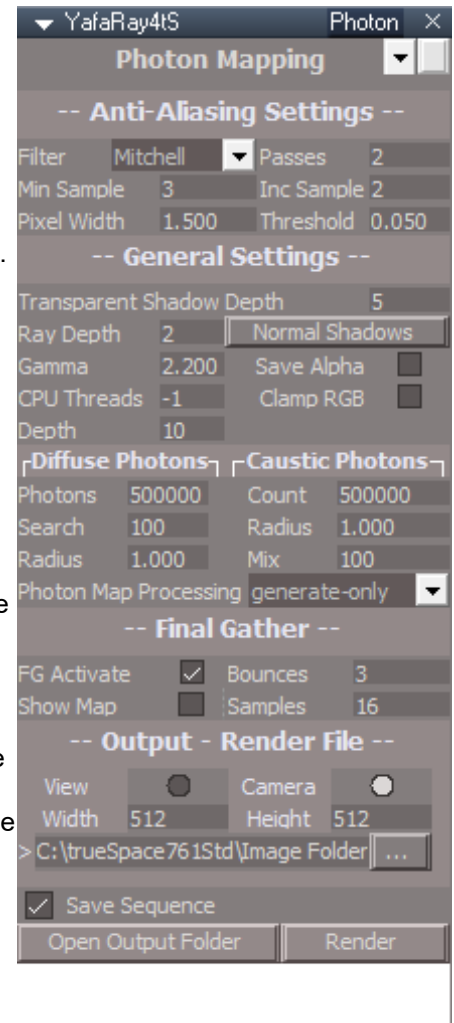
**FGActive** - Enable Final Gather (Photon Mapping only).

**Show Map** - Directly show radiance map (disables final gathering step).

**Bounces** - Number of bounces to recuse the Final Gather.

**Samples** - Number of samples to use for Final Gather.

### -- Output - Render File --



[YafaRay Photon Mapping](#)

[YafaRay Caustics](#)

[YafaRay Final Gather](#)

## Pathtracing

### -- Caustics Options --

**Caustic Photon Method** - Caustics Photon Method types:

**None** - No Caustics Photons are rendered.

**Path + Photons** - Mix of a Caustic Photon Map and Path tracing Caustic rays are rendered.

**Photons** - Fast photon map is used to render caustics. Path tracing caustics rays are not rendered.

**Path** - Path tracing caustics rays are rendered.

### -- Photon Options --

**Photons** - Number of photons to use.

**Depth** - Maximum number of scattering events for photon shooting.

**Mix** - Maximum number of photons to be mixed for caustic calculation

**Radius** - Blur radius for photons.

**Photon Map Processing** - Types of Caustic Photon Map Processing to generate:

**Generate Only** - Generates the Caustic Photon Map in the scene.

**Generate Save** - Generates and Saves a **yaf\_test\_caustic.photonmap** file to where you rendered the image.

**Load** - Loads the **yaf\_test\_caustic.photonmap** file from where you rendered the image.

**Reuse Previous** - Reuses the previously generated Caustic Photon Map from memory. "This should greatly improve render speeds in scenes where only camera moves."

When loading a saved map, it is very IMPORTANT to ensure they match the scene and ONLY for camera changes.

### -- Path Options --

**Photon Bounces** - Number of photon (Caustics) bounces to calculate for.

**Path Samples** - Number of samples to use when Pathtracing. This setting is only used by the Pathtracing lighting method.

**Min Bounces** -

If this parameter is set to 0, russian roulette will be enabled.

If set to the same value specified in depth (max bounces), russian roulette will be disabled

If set to a value between 0 and max bounces, then russian roulette will only start be applied after this number of bounces, so we can get decent sampling in dark areas for example and get a good speedup with less noise.

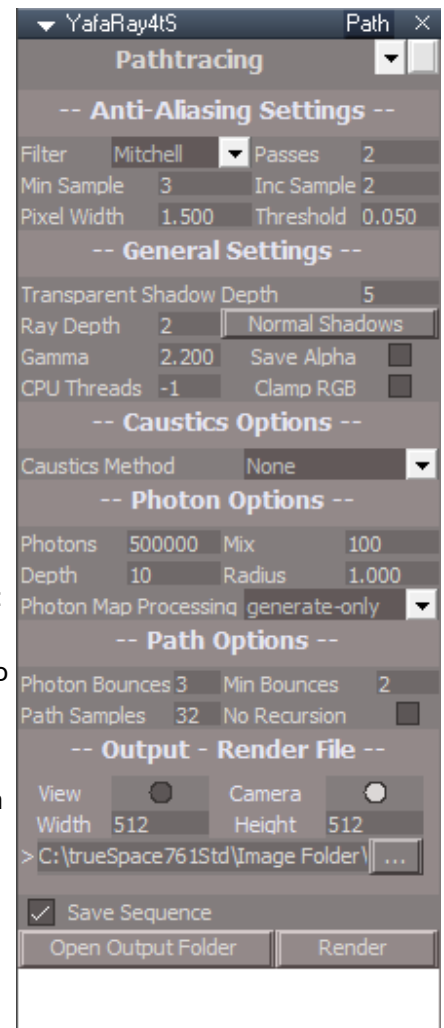
**No Recursion** - Turn off recursion for Pathtracing lighting method.

### -- Output – Render File –

[YafaRay Caustics](#)

[YafaRay Photon Mapping](#)

[YafaRay Path Tracing](#)



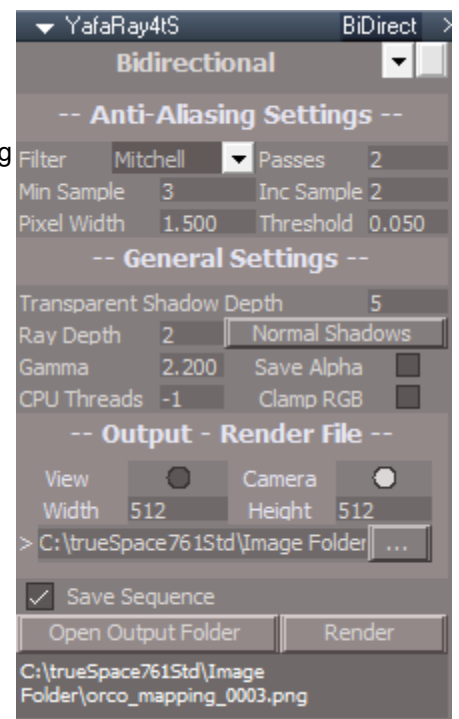
## Bidirectional

“constructs random rays from the camera and from light sources, and connect each others' bounces with visibility rays to ensure they are mutually visible.”

“It combines advantages from both path tracing (unbiased) and photon mapping (caustics).”

“Unstable”

### -- Output – Render File –



### *YafaRay Bidirectional*

## SPPM Lighting

### Stochastic Progressive Photon Mapping

#### -- Additional Settings

**Photons** - Number of photons to use.

**SPPM Passes** - Number of passes.

**Bounces** - Number of bounces.

**Radius Factor** - Radius to search for diffuse photons.

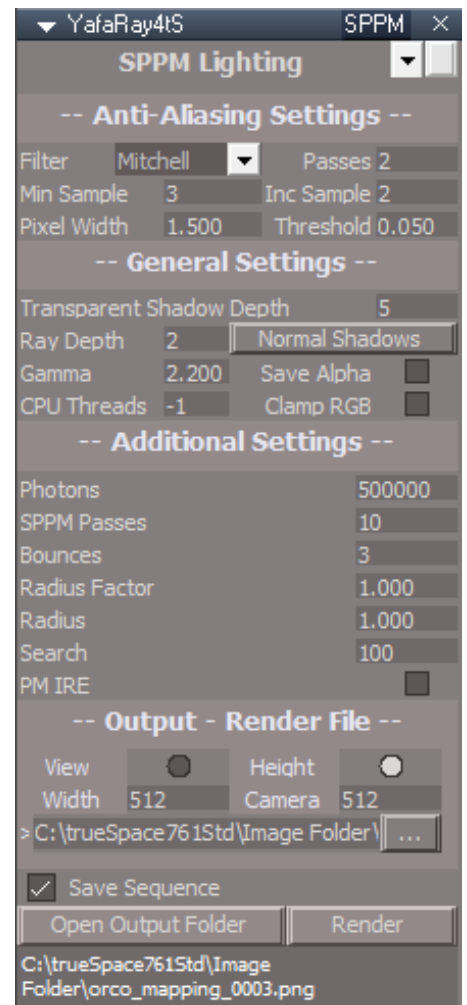
**Search** - Maximum number of diffuse photons to be filtered.

**PM IRE**- Initial radius estimation.

#### [Tutorial - Introduction to SPPM](#)

“SPPM—and other progressive photon mapping methods more generally—cut down the memory used to store a photon map for lighting.”

From <https://www.reedbeta.com/blog/new-ideas-in-raytracing/>



#### [-- Output – Render File –](#)

# YafaRay4tS Lights

## Common Light Controls

**Color** - Light color.

**Power** - Intensity multiplier.

**Caustic** - Enable light to shoot Caustic Photons.

**Diffuse** - Enable light to shoot Diffuse Photons.

**Photon Only** - No direct light.

**Cast Shadows** - render shadows generated by the light.

All YafaRay4tS lights have a built in Color Picker. Select the Color aspect for advanced color options.



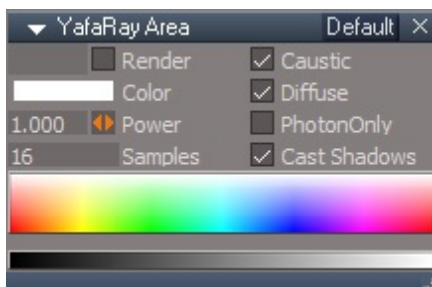
## Infinite Light

Sun light model which produces parallel rays and hard-edged shadows. The same as Directional Light but does not show shadows inside trueSpace.



## Area Light

Areallight is a area light type that can produce soft shadows and its shape can be seen in reflective surfaces



**Render** - Make the light visible in the rendered output.

**Samples** - Number of samples for shadows.



## Directional Light

Directional light is a traditional sun light model which produces parallel rays and hard-edged shadows. The same as Infinite Light but can preview shadows.

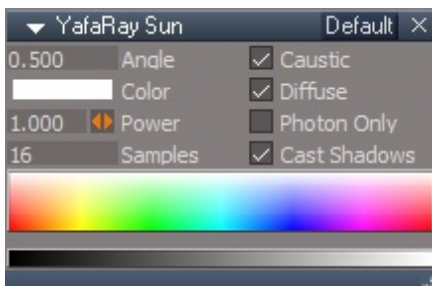


**Size** - Light cylinder radius in world units. This has no effect on the render.



## Sun Light

Sun light will help us to get blurred-edged shadows when the shadow itself gets away from the casting object



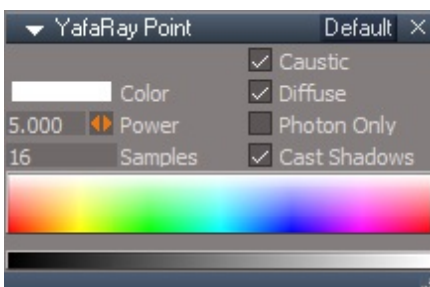
**Angle** - Angle of shadow casting cone.

**Samples** - Number of samples used for calculating lighting and shadows.



## Point Light

A Point light is a typical omni directional point light source with hard shadows

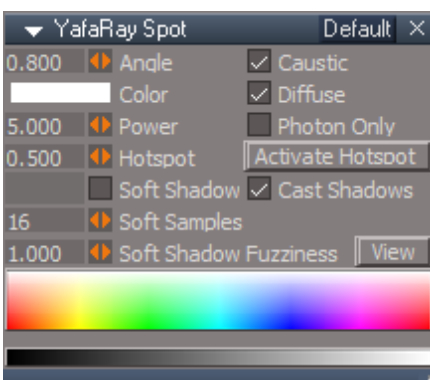


**Samples** - Number of samples used for calculating lighting and shadows.



## Spot Light

Spot is a common point light with directional properties.



**Angle** - Angle of shadow casting cone.

**Hotspot** - Angle of the light cone hotspot.

**Soft Shadows** - Enable soft shadows.

**Soft Samples** - Number of samples used for calculating lighting and shadows.

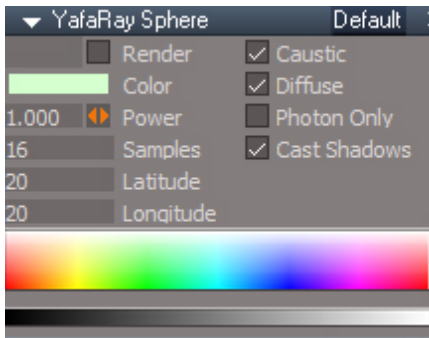
**Soft Shadow Fuzziness** - Amount of blurring to the Soft Shadow.

**View** - View from light. With light selected adjust the location of the light with the View Widget.



## Sphere Light

Sphere light is a spherical area light source which can produce soft shadows.



**Render** - Make the light visible in the rendered output.

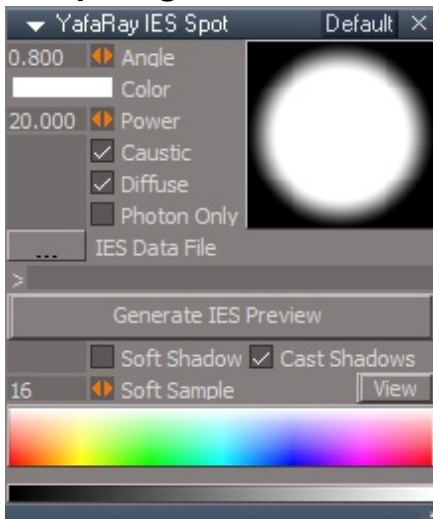
**Samples** - Number of samples used for calculating lighting and shadows.

**Latitude** - mesh detail for the Render option.

**Longitude** - mesh detail for the Render option.



## IES Spot Light



**Angle** - Angle of shadow casting cone.

**IES Data File** - Use the File dialog to select an IES Data file to use.

Example: C:\trueSpace761\tS\SupportFiles\IES Files

**Generate IES Preview** - Generates the IES light in the Workspace scene.

**Soft Shadows** - Enable soft shadows.

**Samples** - Number of samples used for calculating lighting and shadows.

**View** - View from light. With light selected adjust the location of the light with the View Widget.

## [YafaRay Lights](#)

# YafaRay4tS Materials

## Common Material Settings

### Per Material settings:

**Receive Shadows** - Surface will receive shadows.

**Visibility** - Visibility options:

**Normal** - Render all.

**Invisible** - Render only reflections and shadows.

**Shadow only** - Render shadows only.

**No Shadows** - Render without shadows.

**Additional depth** - Amount of raytracing depth.

**Pass ID** - Material ID used in the Render Pass.

**Sampling Factor** - a multiplier of the AA samples on all the AA passes after the first one. The minimum value is 1 so it is only used to increase the number of AA samples for the material. So to decrease the AA samples for a material reduce the general AA samples settings and use larger sampling factors on all other materials to compensate.

## Wireframe

Wireframe stuff

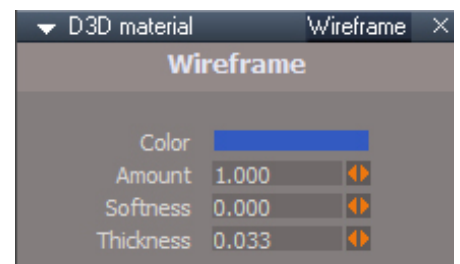
<https://github.com/YafaRay/Core/releases?page=2>

**Color** - Edge Color.

**Amount** - Edge Visibility.

**Softness** - Edge Hardness.

**Thickness** - Edge Weight.



The wireframe can be used in two different ways, depending on whether we want it to be part of the final rendered image or if we want it in a separate Render Pass:

\* Embedded in the Render itself: set a wireframe amount. Set the other wireframe options such as color, thickness and softness, and render the scene.

\* Separate Render Pass: make sure the Wireframe amount in the materials is set to 0.0 so the Wireframe does not appear in the Combined Render. Set the rest of the material wireframe options (color, thickness, etc). Enable Render Passes and select a Debug-Wireframe pass in one of the passes (preferably one of the RGBA render passes such as Vector or Color)

All Quads and Polygons will be always seen as Triangles (with the crossed line).

## YafaRay Shiny Diffuse

### - Diffuse -

**Color** - Diffuse Color.

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**Use Oren-Nayar** - Enables the Oren-Nayar specular reflectance model.

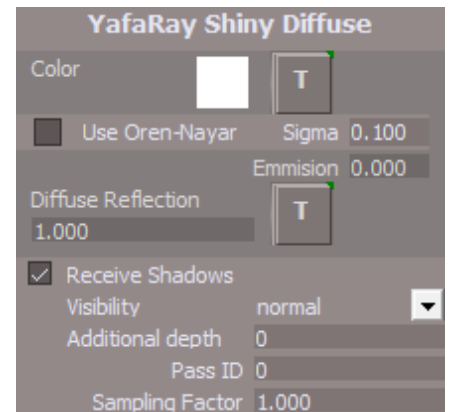
**Sigma** - Oren-Nayar micro facet distribution parameter.

**Emission** - Adds brightness to the material regardless of lighting.

Does not actually cast any light into the scene.

**Diffuse Reflection** - Amount of Diffuse reflection.

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings



### [Common Material Settings](#)

### - Transparency -

**Transparency** - Amount of transparency. [0-1]

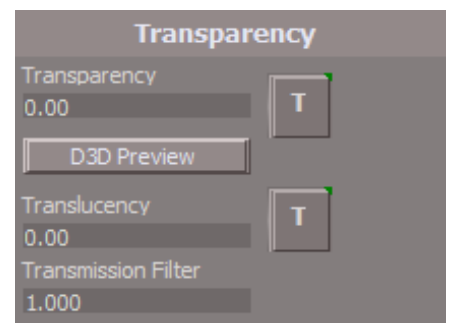
**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**Transparency D3D Preview** - Enables Transparency for D3D Preview.

**Translucency** - Amount of translucency. [0-1]

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**Transmission Filter** - Controls amount of tinting for light passing through the material.



### - Specular -

**Use Fresnel Refl.** - Enables Fresnel reflection.

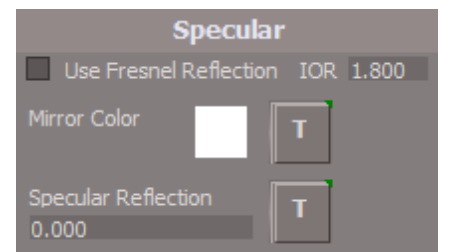
**IOR** - Index of Refraction. Controls the strength of the Fresnel effect.

**Mirror Color** - Mirror color multiplier

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**Specular Reflection** - Amount of specular reflection.

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings



### - Bump -

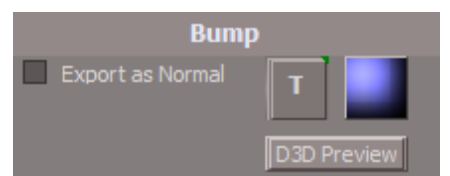
**Export as Normal** -

**T** - LMB - Opens Texture Mapping /

**RMB** - Opens Settings

**D3D Preview** - Creates a Bump / Normal Map preview for the Workspace scene.

The preview has no effect on the final render.



### [YafaRay Shiny Diffuse](#)

## YafaRay Glossy

A glossy reflection means that tiny random bumps on the surface of the material cause the reflection to be blurry. In fact there is a wide range of materials with such a reflection. YafaRay glossy material can be useful for all kinds of finished surfaces such as plastics, polished metal, car paint, finished wood, lacquered surfaces, painted surfaces, varnished wood, glaze, organic materials, etc. The glossy effect can be reinforced by using a fine bump map, or by mapping glossy reflection with a fine texture.

### - Diffuse -

**Use Glossy Color for Diffuse** - Enable Glossy color for Diffuse.

**Diffuse Color** - Diffuse color.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Diffuse Reflection** - Amount of diffuse reflection.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

### [Common Material Settings](#)

### - Specular -

**Glossy Color** - Glossy color multiplier.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Glossy Reflection** - Amount of glossy reflection.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Specular Exponent** - Amount of blur in the glossy reflection.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Use Anisotropic Specular** - Enables Anisotropic Specular.

The Exponent value is divided into vertical and horizontal components. By using a different value for each component.

The reflection will take an anisotropic oval shape.

**U Exponent** - Amount horizontal reflection.

**V Exponent** - Amount vertical reflection.

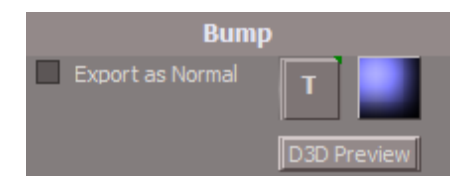
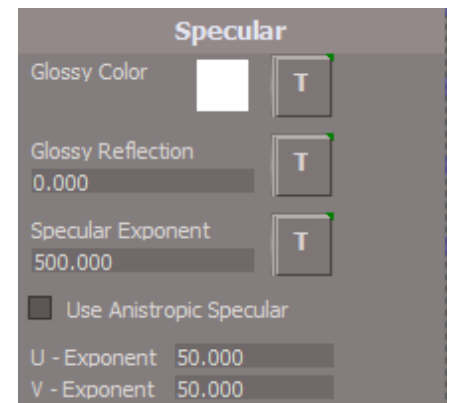
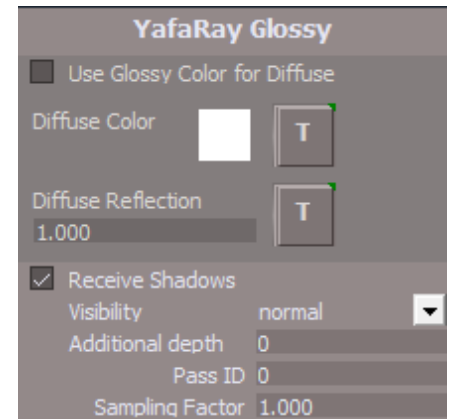
### - Bump -

**Export as Normal** - Enable export as normal.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**D3D Preview** - Creates a Bump / Normal Map D3D Preview.

The D3D Preview has no effect on the YafaRay render.



## [YafaRay Glossy](#)

## YafaRay Coated Glossy

Coated Glossy is basically a glossy material (see the previous section) with some kind of reflective coating layer on top. IOR is the setting that controls reflectivity of the coating top layer.

“Coated Glossy is a Glossy material with a transparent coating layer on top”

### - Diffuse -

**Use Glossy Color for Diffuse** - Enable Glossy color for Diffuse.

**Diffuse Color** - Diffuse color.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Diffuse Reflection** - Amount of diffuse reflection.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

### [Common Material Settings](#)

### - Coated -

**Mirror Color** - Mirror color multiplier.

**Mirror Reflection** - Amount of reflection.

**Index of Refraction** - Amount of reflection to the coated surface.

### - Specular -

**Glossy Color** - Glossy color multiplier.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Glossy Reflection** - Amount of glossy reflection.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Specular Exponent** - Amount of blur in the glossy reflection.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Use Anisotropic Specular** - Enables Anisotropic Specular.

The Exponent value is divided into vertical and horizontal components. By using a different value for each component. The reflection will take an anisotropic oval shape.

**U Exponent** - Amount horizontal reflection.

**V Exponent** - Amount vertical reflection.

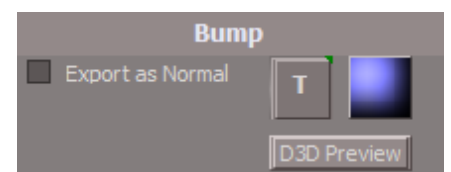
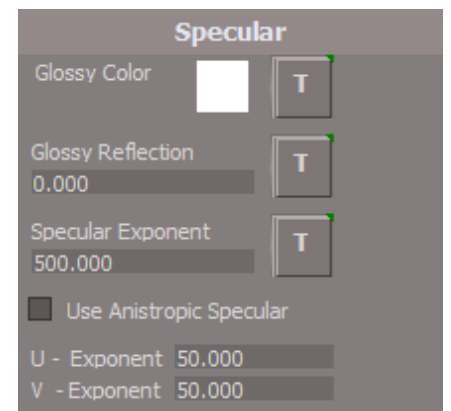
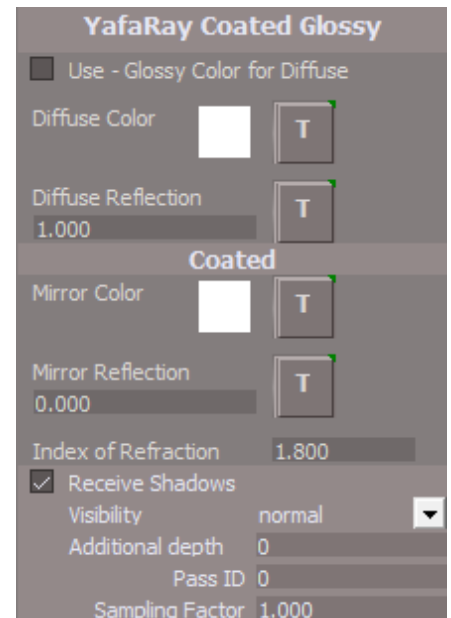
### - Bump -

**Export as Normal** - Enable export as normal.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**D3D Preview** - Creates a Bump / Normal Map D3D Preview.

The D3D Preview has no effect on the YafaRay render.



### [YafaRay Coated Glossy](#)

## YafaRay Glass

Glass is basically refraction, reflection and absorption of incoming light.

### - Real Glass -

**Use Absorption** - Enables Absorption.

**IOR** - Index of Refraction. Controls the strength of the Fresnel effect.

**Absorption Color** - Absorption color.

**Absorption Distance** - Amount of distance of the absorption color.

**Dispersion** - Amount of dispersion of the separation of white light into different colors.

### - Fake Glass -

**Use Fake Shadows** - Enables Fake Shadows.

**Filter Color** - Filter color.

Use instead of Absorption for uniform glass. Also needed to tint Transparent Shadows when Fake Shadows and Transparent Shadows are enabled.

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**Mirror Color** - Color of Reflections.

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**Transmission Filter** - Controls amount of tinting for light passing through the material.

1 = Blends with Absorption, if enabled.

0 = No blending with Absorption, if enabled.

**Alpha strength** - Amount of alpha displayed in the D3D Preview.

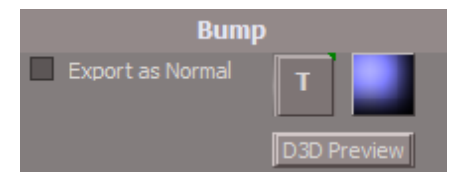
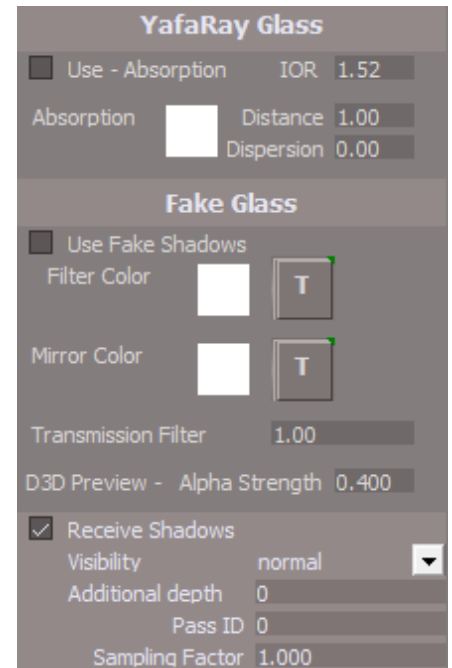
## [Common Material Settings](#)

### - Bump -

**Export as Normal** - Export as Normal verses Bump.

**T** - LMB - Opens Texture Mapping / **RMB** - Opens Settings

**D3D Preview** - Creates a Bump / Normal Map D3D Preview.



## [YafaRay Glass](#)

## YafaRay Rough Glass

### - Real Glass -

**Use Absorption** - Enables Absorption.

**IOR** - Index of Refraction. Controls the strength of the Fresnel effect.

**Absorption Color** - Absorption color.

**Absorption Distance** - Amount of distance of the absorption color.

**Dispersion**- Amount of dispersion of the separation of white light into different colors.

**Exponent**- Amount of exponent.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

### - Fake Glass -

**Use Fake Shadows** - Enables Fake Shadows.

**Filter Color** - Filter color.

Use instead of Absorption for uniform glass. Also needed to tint Transparent Shadows when Fake Shadows and Transparent Shadows are enabled.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Mirror Color** - Color of Reflections.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**Transmission Filter** - Controls amount of tinting for light passing through the material.

1 = Blends with Absorption, if enabled.

0 = No blending with Absorption, if enabled.

**Alpha strength** - Amount of alpha displayed in the D3D Preview.

### [Common Material Settings](#)

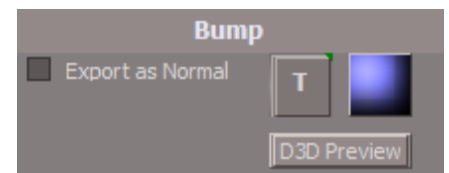
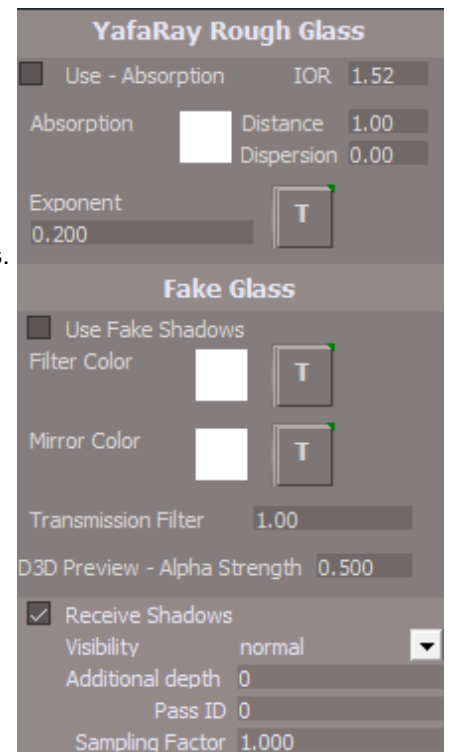
### - Bump -

**Export as Normal** - Enable export as normal.

T - LMB - Opens Texture Mapping / RMB - Opens Settings

**D3D Preview** - Creates a Bump / Normal Map D3D Preview.

The D3D Preview has no effect on the YafaRay render.



### [YafaRay Rough Glass](#)

**YafaRay Blend** takes two defined materials and mixes them into a third one.

**Blend** - Amount of blending between two materials.  
**T** - LMB - Opens Texture Mapping / RMB - Opens Settings  
 Controls the blend with a texture, this will override the Blend slider.  
 Select **Update D3D Preview**

**Blend Material Collection** - Opens the Blend Material Collection.

**Update D3D Preview**- Generates D3D Preview of the blended materials.

**Update Material Lists** - Updates the Material List 1 and 2 from the Blend Material Collection.

**Material List 1** - Select the BlendMaterial# for the first material to be blended.

**Material List 2** - Select the BlendMaterial# for the second material to be blended.

## Blend Material Collection

**Reset** - Removes all of the spheres in the collection except for the first two original spheres.

**Add Material** - Adds a new sphere to the collection, selects it, activates the Inspect tool, and adds a BlendMaterial# to the Material combo control.

**Select Material** - Selects the BlendMaterial# in the present Material combo control and activates the Inspect tool.

**BlendMaterial** - Each material in the collection has a panel where you can enter a description of the material for further references.

**C** - LMB = Camera view of the collection. RMB = Previous view

**X** - LMB = Remove - Blend Material Collection from the scene

Adding a **YafaRay Blend** material to the **Blend Material Collection** is not supported!

### Steps to apply a YafaRay Blend material

1. The easiest way to apply a **YafaRay Blend** material is to select your Object first.
2. Load the **YafaRay Blend** material from the library into the D3D Material Editor.
3. Select **Blend Material Collection**  
This loads the required Blend Material Collection into the scene and selects BlendMaterial1.
4. Load a YafaRay material from the library into the D3D Material Editor.  
BlendMaterial1 will be painted with your selected material or if needed use the Paint tool.
5. Right click another sphere in the collection and then left click with the Inspect tool.
6. Load a YafaRay material from the library and Paint the sphere if needed.
7. Using the Inspect tool, left click your object and select **Update D3D Preview**.
8. Adjust the amount of **Blend** between the two blended materials.
9. Right click in 3D Space to exit the Inspect tool.

You can also manually select a BlendMaterial# with the **Select Material** button.

Ensure that any sphere in the collection is not painted with a **YafaRay Blend** material.

Requirements: In order to use **YafaRay Blend** materials, the **Blend Material Collection** must be included with your scene.

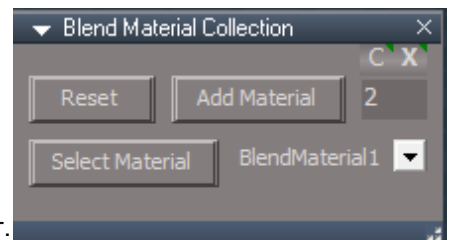
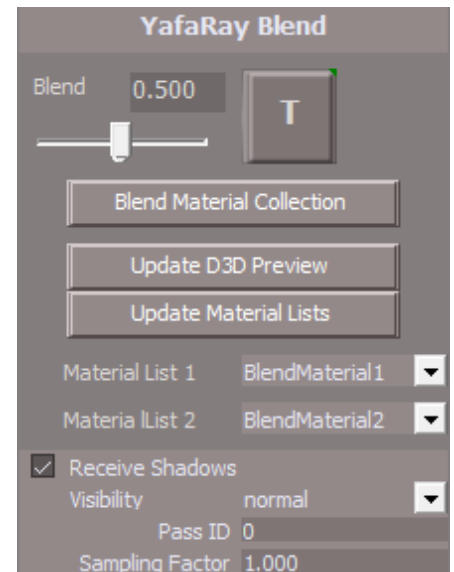
Only one Blend Material Collection is supported per scene.

You cannot rename the Blend Material Collection.

Using different **YafaRay Blend** materials for different objects, must be included in the Blend Material Collection.

The Blend Material Collection supports up to 25 materials.

The Blend Material Collection does not render and is completely transparent to the YafaRay render engine.



## YafaRay Light Material

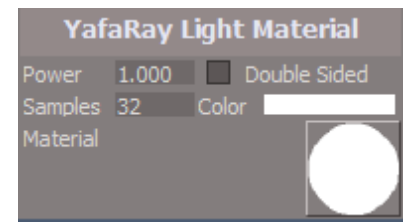
Objects in the scene can act as area light sources when this material is applied to them.

**Power**- Amount of the material color intensity.

**Samples**- Amount used to sample the Soft Shadow.

**Double Sided** - Enables the light on the backside of all faces.

**Color**- Material color.



## [YafaRay Mesh Light](#)

## Texture Mapping

**Gamma** - Amount of Gamma for the Image Map

**Attribute Name** - Used for the Yafaray render engine

**Image** Use the File browse dialog button to choose an Image file

**None** - Removes Texture Mapping

**Image** - Enables the use of an Image

**Clouds** - Enables the use of a procedural Clouds

**Marble** - Enables the use of a procedural Marble

**Wood** - Enables the use of a procedural Wood

**Voronoi** - Enables the use of a procedural Voronoi

**Switch** - Generates the Texture Map

Or select the image to generate the Texture Map

**Blend**- Amount of blending between the Blend color and the Material color

**Color** - Blend and or Procedural texture color

**X Offset** - Texture Map U/X offset

**Y Offset** - Texture Map V/Y offset

**Z Offset** - Texture Map Z offset

**X Scale** - Texture Map U/X scale

**Y Scale** - Texture Map V/Y scale

**Z Scale** - Texture Map Z scale

**Texture Coordinates** - object mapping coordinates

Global - the texture uses the scene's Global 3D coordinates for mapping

UV - UV coordinates are used for texturing

Generated - the texture uses the object's local space.

**Projection** - shape of the projection, Use plain for UV mapping

plain  
cube  
tube  
sphere

**Negative** - produces a negative of the texture.

**NoRGB** - Converts a texture into a gradient, the two extremes of the gradient scale being Material main color and color set in Color Swatch.

**Blend Mode**

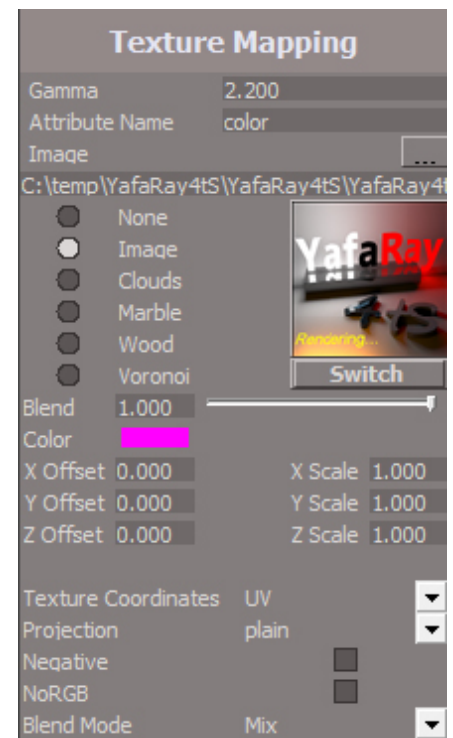
Add  
Darken  
Difference  
Lighten  
Mix  
Multiply  
Overlay  
Screen  
Subtract

Note about: The YafaRay material's **T** button

LMB - Opens this Texture Mapping panel where you can enable one of the above options

RMB - Opens Settings for any assigned Procedural - Texture Map

There is no Settings for None or Image

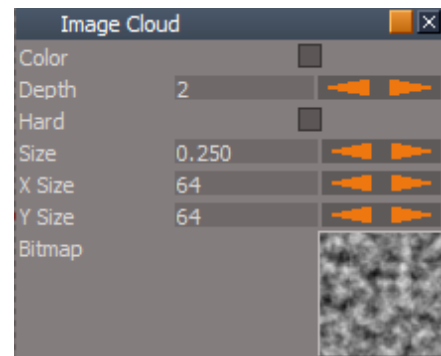


### [YafaRay Texture Mapping](#)

## YafaRay4tS Procedurals

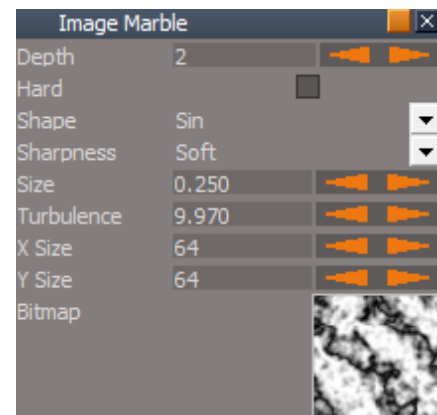
### Image Cloud

- Color** - Enable Color Noise.
- Depth** - Amount of Noise detail.
- Hard** - Soft / Hard Noise strength, changes contrast and sharpness.
- Size** - Amount of Noise size.
- X Size** - Amount of Pixels in Width
- Y Size** - Amount of Pixels in Height



### Image Marble

- Depth** - Amount of Noise detail.
- Hard** - Soft / Hard Noise strength.
- Shape** - shape of the wave used to produce the veins:
  - Sin
  - Saw
  - Triangle
- Sharpness** - settings for soft to more clearly defined Marble.:
  - Soft .
  - Sharp.
  - Sharper.
- Size** - Amount of Noise size.
- Turbulence** - Amount of turbulence in the veins.
- X Size** - Amount of Pixels in Width.
- Y Size** - Amount of Pixels in Height.



## Image Wood

**Hard** - Soft / Hard Noise strength.

**Shape** - noise basis, shape of the wave:

Sin.

Saw.

Triangle.

**Size** - Amount of Noise size.

**Turbulence** - Amount of turbulence noise for bands or rings.

**Wood Type** - band types, straight or ring-shaped, with or without turbulence:

Band Noise - straight with Noise.

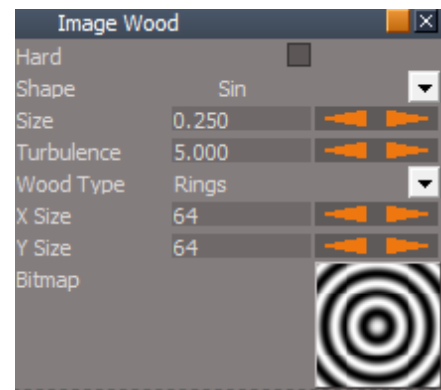
Band - straight without noise.

Ring Noise - Use Rings with Noise.

Ring - Use Rings without noise.

**X Size** - Amount of Pixels in Width.

**Y Size** - Amount of Pixels in Height.



## Image Voronoi

**Color Type** - methods to calculate color and intensity:

Intensity - Intensity only.

Position - Position only.

Position and Outline - Position and Outline only.

Position, Outline, and Intensity - All three types.

**Distance Metric** - the algorithm used to find the distance between cells:

ActualDistance

Chebychev

Distance Squared

Manhattan

Minovsky 1/ 2

Minovsky 4

**Intensity** - Amount of intensity applied to the image.

**Size** - Amount of Cell size.

**Weight 1** - Amount of distance between each cell based on the distance metric.

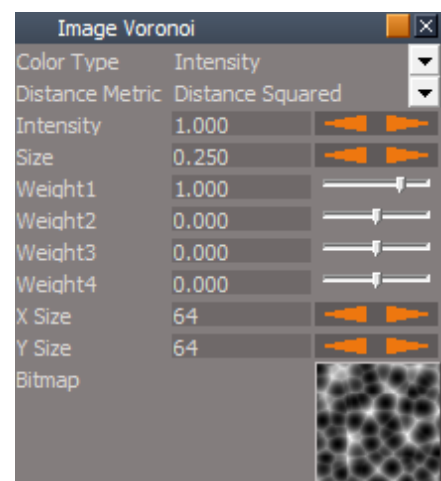
**Weight 2** - Amount of distance between each cell based on the distance metric.

**Weight 3** - Amount of distance between each cell based on the distance metric.

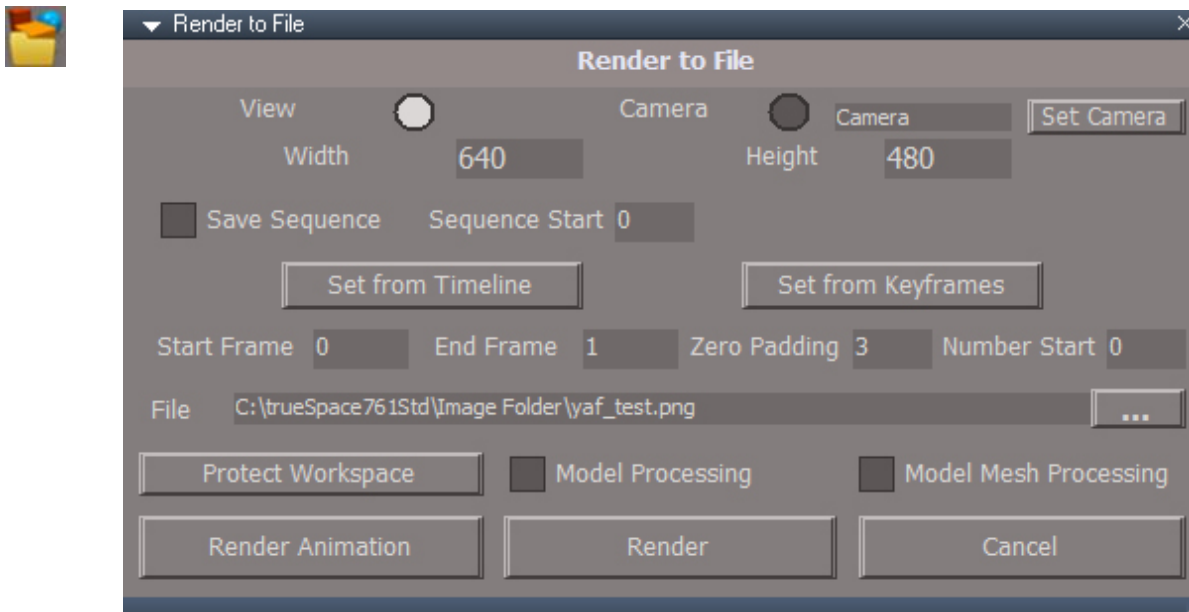
**Weight 4** - Amount of distance between each cell based on the distance metric.

**X Size** - Amount of Pixels in Width.

**Y Size** - Amount of Pixels in Height.



## Render to File



**View** - render the Workspace view.

**Camera** - render the set Camera view.

**Set Camera** - set the selected camera as the render camera and switch to the Camera render option

**Width** - The width of the image rendered.

**Height** - The height of the image rendered.

**Save Sequence** - This will let you render repeated images, saving them to a new file name each time without the need to manually type in a new name.

**Sequence Start** - the number to be appended to the file name. This number increments after each render.

**Set From Timeline** - Sets the Start and End frames from the scene's Start and Stop frames.

**Set From Keyframes** - Sets the Start and End frames from the scene's Keyframes or the selected object in Object Render mode.

**Start Frame** - Frame to start rendering animation.

**End Frame** - Last animation frame to render.

**Zero Padding** - Number of leading zeros to use when padding the number for the file name.

**Number Start** - Number start with for file sequence.

**File** - name for rendered image output. This is where the rendered results will be saved.

**Protect Workspace** -Opens Protect Workspace

**Model Processing** - Render animations from an opened Model view

**Model Mesh Processing** - Renders Model objects mesh animations: NURBS, Metaballs, and Deformations

**Open Output Folder** - Opens the folder entered into the above path.

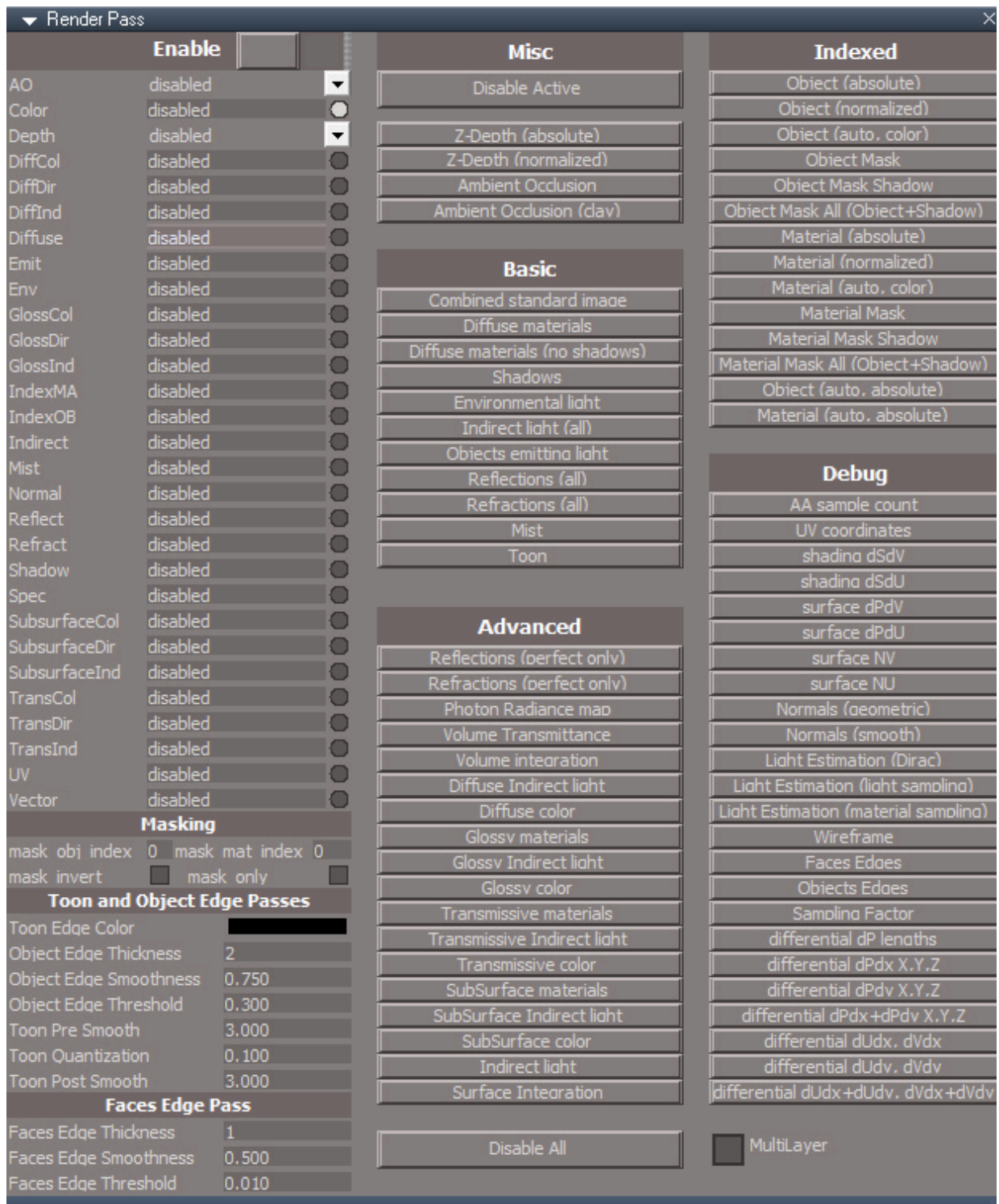
**Render Animation** - Exports the XML files for the frame range specified in **Start Frame** to **End Frame** and spawns the YafaRay renderer to render the frames sequentially in the background. After the images are rendered, the generated XML files are deleted..

**Render** - Exports XML file and spawns the YafaRay renderer.

[Protect Workspace and Model Processing](#)



## Render Passes



Passes can be used to split rendered images into colors, direct and indirect light to edit them individually, and also to extract data such as depth or normals.

**MultiLayer** - make an exr file with render passes as custom layers instead of separate images.

### [Blender Passes](#)

Feature changes/additions in v3.1.0:

\* New Render Passes: Basic Toon effect, Object Edges and Faces Edges. See: <http://www.yafaray.org/community/forum/viewtopic.php?f=23&t=5181>

"Wireframe" material options and render pass will be calculated at "material" integration level. It should be more finely detailed but will only show triangles (quads will show the "crossing" line).

"Faces edges" will be a render pass calculated at Film level showing the edge contours. In this case, quads will be shown more correctly. However, to calculate the faces edges with the current architecture I had to use indirect methods that are way less precise, so some artifacts and missing or incomplete edges are to be expected, including aliasing in the edges. I've added some parameters that can be accessed in the Render Passes tab for users to fine tune the edges generation as much as possible.

"Object edges" will be the same, but only rendering object edges and contour, more useful for toon-like renders, for example. Limitations are the same as with the Faces Edges.

"Toon" render pass: as I already got the above working, I thought it could be nice to work a bit more and get a full "toon-like" Render Pass. This render pass will take the original image, apply some smoothing and color quantization to make the image more "cartoon-like" and add the Object Edge. The users will be able to choose the edge color, adjust a bit the thickness and smoothing/quantization. This will be only a \*very basic\* toon render pass, don't expect a perfect contouring, etc!! I didn't even try making an animation yet, I suppose there will some edges changing from one frame to the next, not sure if it will be distracting or not...

Changes from v3.0.0-beta to v3.0.1-beta:

\* Render passes: added new debug passes for diagnosing light estimation problems

<https://github.com/YafaRay/libYafaRay/blob/master/CHANGELOG.md>

"Ability to AutoSave image files. Either at the end of each pass or using a user-configurable time interval."

?at end of each pass?

"The Passes are especially intended for Direct Light and Photon Mapping integrators."

"Debug passes and UV debug pass available to be able to find mesh/mapping/texturing problems at the same time as rendering the scene."

## Beta Releases

### YafaRay4tS version: 0.9.9

Tuesday, December 24, 2019

Add Model view animations to the render  
 Render simple non-compiled D3D shaders as Glossy materials  
 Internal viewer tif display support via external plugin Tif Loader  
 Works with the latest Unofficial Update lights  
 Incorporated the YafaRay4tS Scene Utilities  
 Render Displays update  
 YafaRay materials UI update

### YafaRay4tS version: 0.9.0

Wednesday, July 11, 2018

Uses YafaRay v3.3.0  
 Updated D3D preview to more closely match the rendered result  
 New integrated render buttons  
 Updated materials with texture maps for all compatible attributes  
 Added blend values for texture maps  
 Updated draw parameters  
 New blend material  
 New procedural texture maps - clouds, marble, voronoi and wood  
 New YafaRay camera  
 Updated IES lights  
 Now works with standard trueSpace lights  
 Enhanced light color picker  
 New toolbar buttons for YafaRay camera, smoothing, volume primitive  
 Sphere light exports scale instead of the size attributes  
 Constant default color matches tS default background color  
 New support for resizable iOptDisplay window not limited by resolution or image aspect ratio  
 iOptDisplay  
 New animation preview system  
 New option to turn off caustic photons and diffuse photons for each light source.  
 New background cast shadows option and background sun shadow option.  
 New smart blur value for image based lighting  
 New photon map saving and loading  
 Additional rays on materials  
 Russian roulette for path tracing  
 New Denoise option

### YafaRay4tS version: 0.8.0

Sunday, Jan 31, 2016

Partial save timer - save file while rendering to see progress  
 Tile rendering options - linear or random for bucket style renders  
 Custom text for the Draw PARAM's option  
 New material options are at the bottom of the materials  
 Pass ID is used with the render passes  
 Visibility can be set to normal, shadow only, no shadows, invisible  
 Receive Shadows uncheck so material does not get shadows

Threads default to -1

#### Render Passes

Check "enable" to turn on render passes

Use the dropdown to select render passes

RenderPassList.txt contains a list of all possible passes that can be typed into any slot. The channel isn't limited to the dropdown list selections. The

RenderPassList.txt can be found in the trueSpace directory.

The Multi-Layer option at the bottom only applies to the exr file format YafaRay 0.1.2 Beta support:

**YafaRay4tS version: 0.7.5**

Sunday, July 24, 2011

trueSpace 7.61 version required and is not backwards compatible.

Improved skeletal meshes/Actors with animation support.

Skeletal meshes and Characters, will export if you apply SDS to the mesh. The first Level of SDS is the preferred method unless the mesh is already subdivided.

Skeletal meshes will also export if you apply a morph to the character. Apply morph then right click to immediately exit the tool.

Support for multiple materials on one mesh.

Fixed mesh normals for better glass objects.

Spotlight and Omni light power exports the same as Blender with a export power =  $\text{power} * \text{power} / 2$ .

Area and Sphere lights have a render option to make them visible.

Area light has a new mesh so when the mesh is at (0, 0, 0) the resulting light is also at (0, 0, 0).

Adjusted light attenuation parameters to make the preview more closely match the render.

Does not lose camera selection if the scene name changes.

Glass material absorption value was not connected so value was never used.

Added a strength control to the glass material to control the D3D transparency preview (no effect on the final render).

Bump map preview for materials.

Changed the default render parameters to match Blender's UI values.

YafaRay4tS materials default to the corresponding Blender material default values.

Added a global input gamma that is applied to colors, lights and textures to translate them to linear color space used by YafaRay.

Gamma value does not affect the display in trueSpace 3D viewport.

Added DarkTide's sun sky background option.

Added support for rendering to the OpenEXR file format (exr).

New aspects for each Lighting Method.

YafaRay4tS Settings button shows the YafaRa4tS panel's presently used Lighting Method aspect in the Stack.

YafaRay4tS Export and Render button no longer shows the YafaRa4tS panel in the Stack with the LMB.

YafaRay4tS Export and Render button shows the YafaRa4tS panel's presently used Lighting Method aspect in the Stack with the RMB.

Diffuse Reflect Map fixed in new improved Yaf Coated Glossy and Yaf Glossy materials.

New improved YafaRay4tS Spot light with Hotspot generator.

Updated YafaRay4tS Help file.

New tS7.61 YafaRay4tS Installer script.

**YafaRay 0.1.2 Beta support:**

Requires YafaRay version 0.1.2 beta to be setup with YafaRay4tSv0.7.5 and the YafaRay 0.1.2 xml format - beta checkbox enabled, located in the Setup aspect.

Only one version of YafaRay can be installed at one time.

New file formats hdr, jpg, png and tif.

Save Alpha located in the Lighting Method aspects. - Exports an alpha file in addition to the rgb output file.

Z - Channel option works.

Z - Channel option works.

New Volume Region mesh: Uniform and Height Fog work with the YafaRay Volume.RsObj

Support for normal map textures.

Rough Glass material.

Photon only and soft shadow parameters for the Spot light.

IES Light with preview.

SPPM lighting method (not working at this time for the xml renderer, YafaRay version 0.1.2-Beta2).

#### **YafaRay4tS version: 0.7.0**

Thursday, June 11, 2009

trueSpace 7.61 version required and is not backwards compatible.

Animation rendering is now supported. Support is included for sequential image batch rendering to occur in the background while you continue working inside trueSpace.

#### **YafaRay4tS version: 0.6.1**

Tuesday, May 5, 2009

Setup directories now handled correctly, and YafaRay4tS will guess YafaRay install location if not found at location specified.

Texture handling fixed. This fixes the mirror color texture bug for Shiny Diffuse material

TGA Viewer app added

internal viewer panel added

Support for custom external viewer added.

Lights, Materials, setup objects moved into separate libraries.

Light objects changed to quadratic falloff and the export values adjusted accordingly.

Scripts added to Area and Sphere light objects to have size affect visual display brightness.

Gamma scripting for real time texture display in materials now adjusts relative render target value.

Help file added.

Fixed a bug with Glass Material absorption toggle not working. Also added option for absorption dist. of 0.0 to set logarithmic absorption.

#### **Yaf(a)Ray4tS version: 0.6.0**

Saturday, February 14, 2009

Full geometry support with UV mapping

Support for all YafaRay light types.

HDRI, IBL, and background shader support

Photon mapping, Caustics, GI, and Final Gather

Fog

Multi-threaded rendering

Mapped versions of the following YafaRay materials:

Glossy

Coated Glossy

Shiny Diffuse

Glass

Rendering from View or Camera

#### **Limitations:**

This current version of Yaf(a)Ray4tS doesn't support Skinned (Actor/Skeleton) objects.

Fog currently is non-functional.

Animation is not supported.

Multiple materials on a single object are not supported at this time

**New Update** - Clinton Reese @Clintons 3D Creations has single handedly brought the newest version of YafaRay v3.3.0 to YafaRay4tSv0.9.9 for trueSpace 7.61 and trueSpace 7.61 Standalone.

Almost all of the code has been revamped making it more efficient and fixed several items that were not working properly. He has developed a D3D Preview that closely matches YafaRay rendered results for Workspace's D3D real time view. All of the Background types and Materials, including his newly developed Blend, Texture Map, and Procedurals materials, are created with just a few clicks of a D3D Preview button. He has integrated YafaRay4tS into Workspace's Offline Renderer. Be sure to read the Beta Releases in the History page for all of the improvements and additions.