KeyShot® 5

User Manual

Disclaimer

KeyShot® Manual

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KeyShot Overview

KeyShot is an entirely CPU based and standalone render engine for 3D data. It is designed to simplify the process of creating computer-generated, photo-realistic images. Its simplicity and CPU based architecture make KeyShot one of the most widely used rendering solutions among designers, engineers, and CG professionals worldwide.

- [CPU Rendering](#)

- [HDRI Lighting](#)

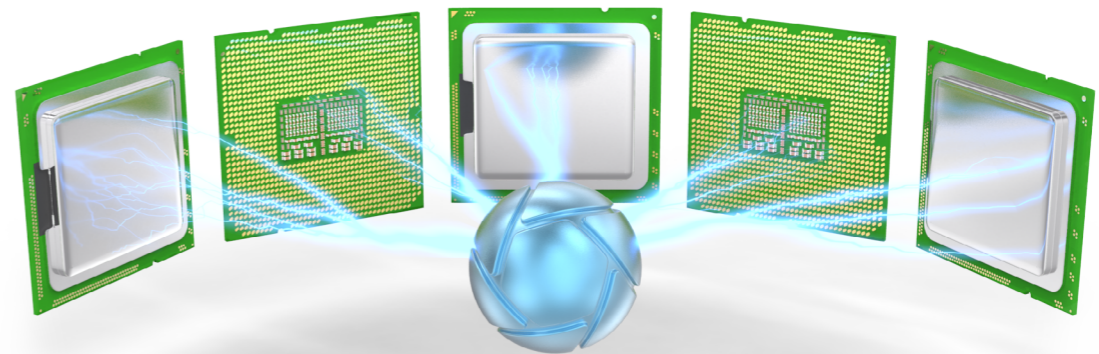- [Physically Accurate Materials](#)

- [Stereoscopic Viewing](#)

CPU Based Rendering

KeyShot is entirely CPU based and it is designed to utilize 100% of all CPU power available in your system. The render engine's performance is approximately linear in scale to the number of processor cores in your system. A higher number of cores yields faster rendering speeds.

Why CPU?

KeyShot delivers fast, noise-free results thanks to the powerful algorithms behind the render engine. The CPU is the only module in your computer capable of calculating such algorithms. Because KeyShot is 100% CPU powered, there is no need for special graphics cards or hardware. In addition, Your 3D data is stored in RAM and does not dependent on the VRAM in your graphics card. This makes KeyShot a mobile rendering solution available to anyone.

HDR Lighting

High dynamic range lighting (HDR lighting) is a technique used across the CG industry for lighting 3D models easily and realistically. This lighting technique makes use of HDR images which contains a wide range of color intensity. KeyShot uses HDR images to accurately simulate differences in brightness; from a simple LED all the way up to the intensity of the sun.

Any model imported into KeyShot is placed within the mapped HDR image. No initial lighting setup is necessary for you to achieve immediate realistic lighting.

For more information on tuning your lighting see the section on adjusting lighting.

Realistically lit 3D model.
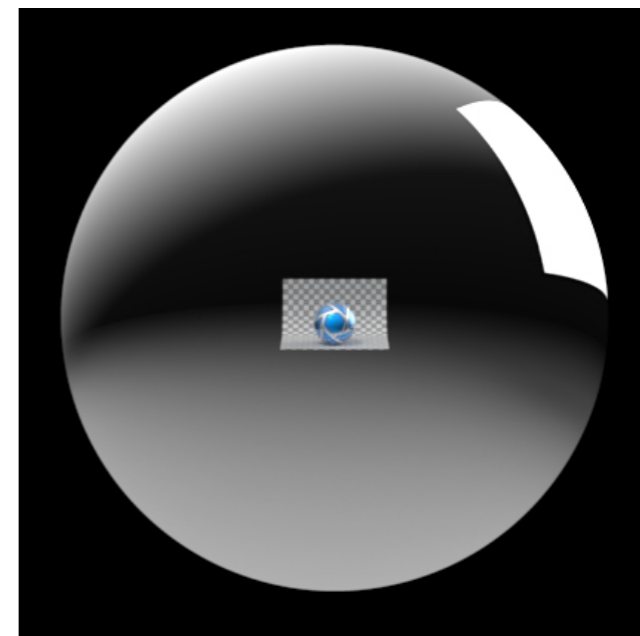
The same scene but the camera has been pulled back to reveal the sphere that contains the HDR image which is casting the light.

The Science Behind the Materials

All KeyShot materials are scientifically accurate and have physical properties based on real world materials. The material types contain only the properties necessary for creating that specific material type. For example, you won't find a property under the "Glass" material that will make it look like a metal. This makes setting up realistic materials extremely easy and foolproof.

Included:

500+ materials
Axalta Coating Systems® materials
Mold-Tech® materials

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Stereoscopic Viewing(3D)

KeyShot gives you the ability to view you models in realtime 3D. (*hardware not included)

How to Enable It
Enabling stereoscopic viewing can be found under "View" -> "Stereoscopic settings". You will need 3D enabling hardware:

3D monitor

3D graphics card (support 3D vision, or OpenGL quad buffering)

3D glasses

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Directory Structure

- [Overview](#)

- [PC location](#)

- [Mac location](#)

KeyShot Resources

KeyShot has a default directory structure called KeyShot Resources. Assets such as materials, environments, and textures are stored here. When you open a BIP file, KeyShot will automatically read the KeyShot resources folder and load any resource files applied to the scene.

KeyShot Resources contains the following sub folders:

Animations
Backplates
Colors
Downloads
Environments
Favorites
Materials
Material Templates
Models
Renderings
Scenes
Textures

You can specify the location of the KeyShot resources folder in the folder preferences.

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Animations:

Animations will be saved to this folder by default. At render time, other locations can be specified inside the Render Options window.

Backplates:

The KeyShot Library loads backplates from here and saves imported backplates to this folder by default.

Colors:

The KeyShot Library loads color library files from here and saves imported color library files to this folder by default.

Downloads:

Resources downloaded from the KeyShot Cloud will be saved here.

Environments:

The KeyShot Library loads environments from here and saves imported environments to this folder by default.

Favorites:

This folder is empty until a favorite list of resources is created. Once created, the favorite list is saved to this location as a .XML file.

Materials:

The KeyShot Library loads materials from here and saves imported materials to this location by default.

Material Templates:

This folder is empty until a material template is created. Once created, the material template is saved to this location.

Models:

This folder contains standard primitives that you can import into KeyShot.

Renderings:

Renderings will be saved to this folder by default. At render time, other locations can be specified inside the Render Options window.

Scenes:

This folder contains sample scenes that you can only with KeyShot. These scenes are saved as "Better Than Photo" BIP files.

Textures

The Keyshot Library loads textures from here and saves imported textures to this folder by default.
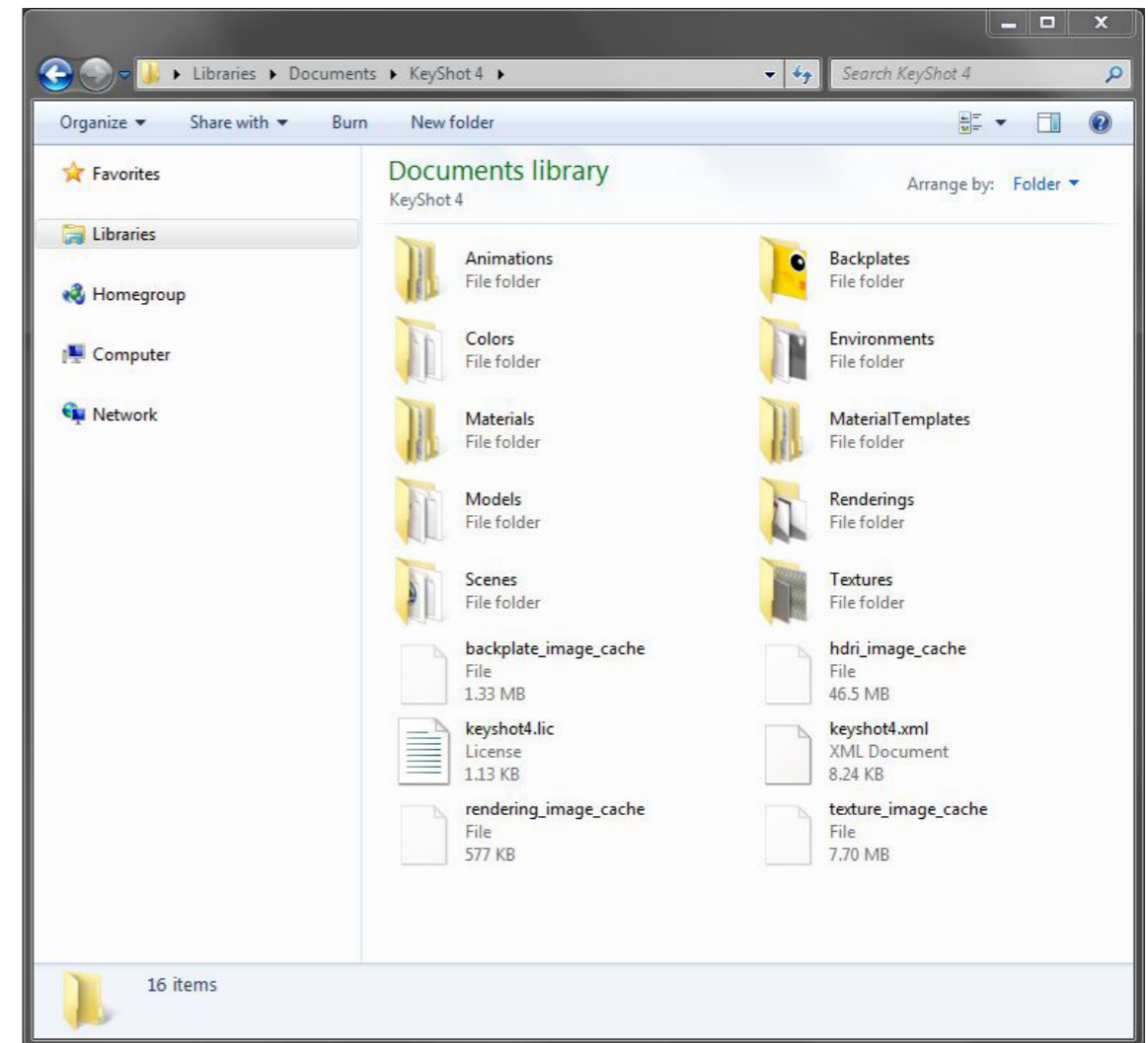
Location

After KeyShot 5 is installed, a "KeyShot 5 Resources" shortcut is created on your desktop. By default, this shortcut points to:

Documents - > KeyShot 5

Setting Permissions

You must have read and write permissions to your KeyShot 5 folder in order to save renders, animations, and more. Here's how to set permissions:

1. Right-click the KeyShot 5 resources folder and select "Properties".

2. Go to the Security tab and highlight your group or user name

3. Click the Edit button

4. Set permissions to "Full Control"

5. Click Apply and OK
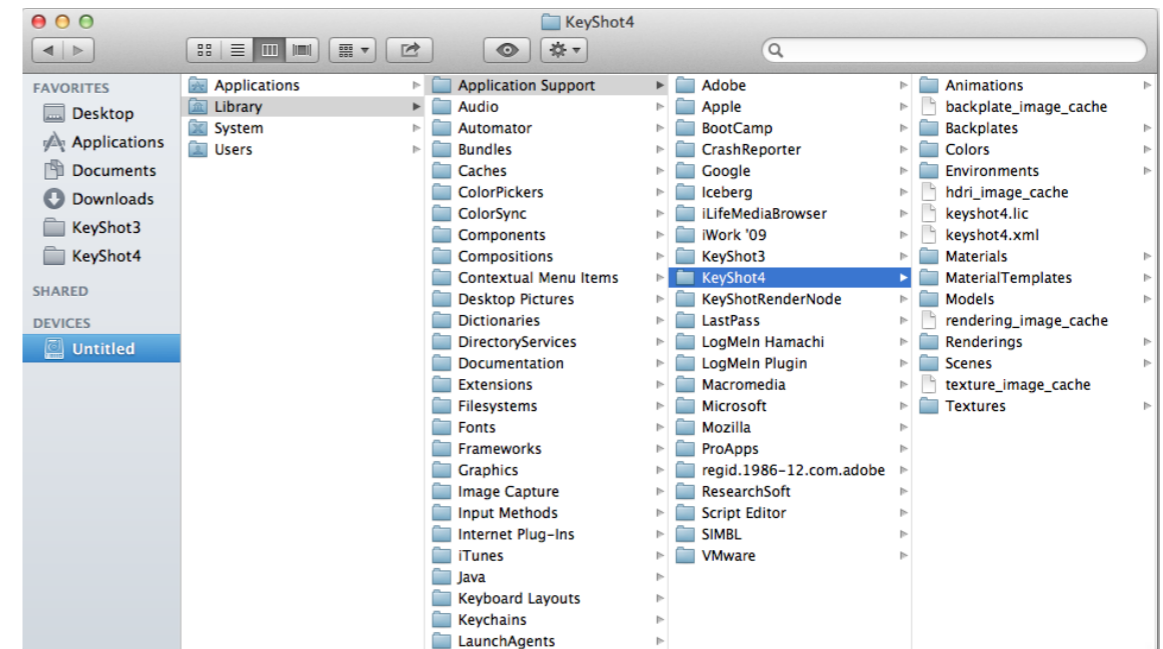
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Location

On a Mac your KeyShot 5 resources folder is saved inside the Application Support:

Library -> Application Support -> KeyShot 5

Setting Permissions

You must have read and write permissions to your KeyShot 5 folder in order to save renders, animations, and more. Here's how to set permissions:

1. Right-click the KeyShot 5 resources folder and select "Get Info".

2. Expand "Sharing & Permissions" and unlock access

3. Change all privileges to "Read & Write"

4. Click the settings button and select "Apply to enclosed items..."

5. Click OK and close the window

Resources Folder Location
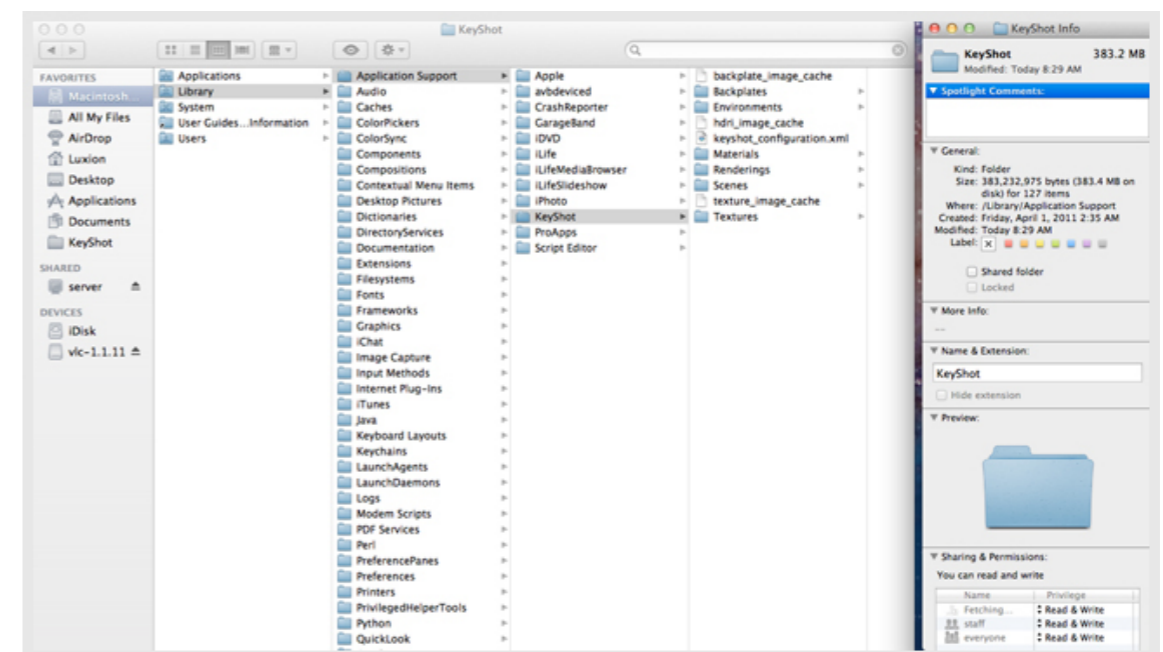
License File Location

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Licensing

Licensing

The standard node locked license is serial code based and can be active on one machine at a time. However, you can transfer your license to three machines as many times as you want.

Contents

- **Installing Your License**

- **Transferring Your License**

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Automatic Install

When you receive your 'keyshot5.lic' file save it to your machine. Next, start KeyShot and select 'install license' and browse to the 'keyshot5.lic' file. If your license fails to copy, check to ensure you have full permissions set on your <u>Keyshot resources</u> folder on PC and full permissions set on the KeyShot application 'package contents' on Mac. Click one of the following links for information on setting your permissions on <u>PC</u> or <u>Mac</u>.

Manual Install

When you receive your 'keyshot5.lic' file you can manually copy it to the <u>Keyshot resources</u> directory for <u>PC</u> or to the application package contents on <u>Mac</u>.
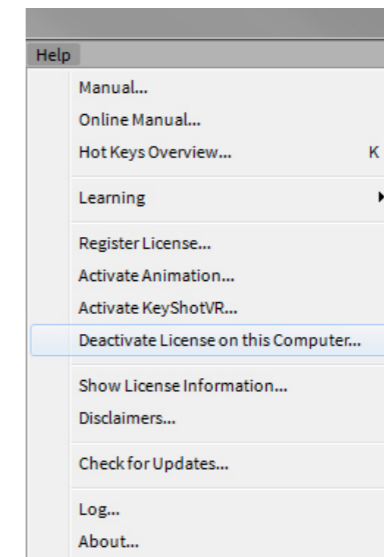
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Transferring overview

During the license transfer process, an Internet connection is required. Once the license has been successfully transferred KeyShot can run without being connected to the Internet.

Transferring your license

To transfer your license on PC, ensure you are connected to the Internet on the active machine. Start KeyShot and go to 'File -> Deactivate license on this machine'. Then, ensure the new machine is connected to the Internet and that KeyShot is installed. Start the software, fill out your information on the activation screen, and press 'Next'. On the following screen you will be asked for your KeyShot serial code(s). Type in your information and press 'Next' to finalize the activation.

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Accessing the Hotkey Reference Menu

Learning and using the hotkeys will speed up the process of working inside KeyShot. You can access the list of hotkeys and their functionality by pressing the 'K' key on PC or Mac.

Camera

Tumble	LMB Drag
Pan	MMB Drag
Dolly	Alt + RMB
Focal Length Zoom	Alt + Mouse Wheel
Perspective	Shift + Alt + RMB Drag
Select "Look At" Point	Alt + Ctrl + RMB
Tilt	Alt + Ctrl + Mouse Wheel
Next Camera	Shift + N

Environment

Brightness Large Change	Up/Down Arrows
Brightness Small Change	Left/Right Arrows
Rotate Environment	Ctrl + LMB Drag
Reset Environment Position	Ctrl + R
Background Mode: Environment	E
Background Mode: Color	C
Background Mode: Backplate Image	B
Flatten Ground	G
Show Light Sources	L

File

New Project	Ctrl + N
Save Project	Ctrl + S
Save Project As	Ctrl + Alt + S
Open Project	Ctrl + O
Quit Application	Ctrl + Q

General

Undo	Ctrl + Z
Import Model	Ctrl + I
Open Environment	Ctrl + E
Open Backplate	Ctrl + B
Screenshot	P
Render	Ctrl + P

Interface

Toggle Project Menu	Spacebar
Toggle Library	M
Toggle Toolbar	T
KeyShotVR	V
Toggle Hotkey List	K
Toggle Heads-Up Display	H
Toggle Full Screen	F
Toggle Presentation Mode	Shift + F
Show Next Model Set	Shift + M
Marque Select	Shift + LMB Drag

Materials

Edit Material	Double Click LMB
Select Material	Shift + LMB
Apply Selected Material	Shift + RMB
Apply Copy of Material	Shift + Ctrl + RMB

Realtime

Performance Mode	Alt + P
Toggle Pause	Shift + P
Toggle Self Shadows	S
Toggle Global Illumination	I
Selection Outlines	Alt + S

Animation

Toggle Playback	Shift + Spacebar
Toggle Timeline	A

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- **File**

- **Edit**

- **Environment**

- **Camera**

- **Render**

- **Settings**

- **View**

- **Window**

- **Help**

Menu Bar

File

New
Opens a new blank scene in KeyShot.

Import
Imports a 3D file into an open or new scene. See Importing section for more details.

Open...
Opens a KeyShot scene, or opens the import panel to open the model in KeyShot.

Open Recent
KeyShot lists the last 10 scenes that were opened/saved that you can quickly open.

Save
Save the currently open scene in KeyShot

Save As...
Save the current scene in Keyshot with the option to change the name of the file.

Save Package
Save a KeyShot Package which includes the model, materials, environments, textures, cameras, and backplates used in the scene.

Revisions Manager
Enable Backup options under Preferences > General. See Preferences

section for more details.

Export
KeyShot Can Export to .OBJ, .ST L, and ZPR file formats.

Upload to GrabCAD
Upload a rendering to GrabCAD.com. Login is required. See GrabCAD.com for details.

Exit
Quits out of KeyShot

Menu Bar

Edit

Undo
Undo previous actions.

Add Geometry
Add pre-installed primitives into your scene. You can also place commonly used models into the "Models" folder in your KeyShot 5 Resources directory.

Clear Geometry
Clears all geometry in the scene.

Set Scene Units
Change the set units used in the scene. For accurate results, use the same units the model was modeled in.

Preferences
Set KeyShot Preferences. See Preferences section for more details.

Menu Bar

Environment

HDRI Editor (PRO)

Opens the HDRI editor. See HDRI editor for more details

Background

Toggle background mode from lighting environment, color, and backplate image. See background for more information.

Ground Shadows

Toggle ground shadows on and off. See ground shadows for more information.

Ground Reflections

Toggle ground reflections on and off. See ground reflections for more information.

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Menu Bar

Camera

Cameras

Choose a saved camera. Cameras that are saved from your list of saved cameras is populated here. See camera list for more information.

Lock Camera

Lock the camera in your realtime view. See camera tab for more information.

Add Camera

Add a camera to your saved camera list. See camera list for more information.

Add Viewset

Add a viewset to your saved camera list. See camera list for more information.

Perspective

Toggle camera to perspective mode. See lens settings for more information.

Orthographic

Toggle camera to orthographic mode. See lens settings for more information.

Stay Above Ground

Toggle camera to stay above ground. See position and orientation for more information.

Grid

Enable grid. See position and orientation for more information.

Ground Grid

Enable ground grid. See lens settings for more information.

Match Backplate

Enable the match backplate tool. See match backplate for more information.

Menu Bar

Render

Pause Realtime Render

Enable pause realtime render.

Performance mode

Toggle performance mode. See lens settings for more information.

Save Screenshot

See save screenshot for more information

Add to Queue

See render queue for more information.

Render

Opens the render options. See render options for more information.

Menu Bar

Settings

Resolution presets

Choose from commonly used resolution presets.

Lock Aspects

Lock the aspect ratio from being changed. See settings for more information.

Lock Resolution

Lock resolution dimensions from being changed. See settings for more information.

Self Shadows

Enables self shadows. See render queue for more information.

Global Illumination

Enables global illumination. See global illumination for more information.

Ground Illumination

Enables ground illumination. See ground illumination for more information.

Focused Caustics

Enables focused caustics. See focused caustics for more information.

Menu Bar

View

Scene Sets

Switch between next and previous scene sets.

Show Fullscreen

Enables fullscreen mode.

Presentation Mode

Enables presentation mode.

Heads-Up Display

Hides or shows the heads- up display which contains frames per second, amount of triangles in the scene, current scene resolution, and the current focal length of the camera.

Show Coordinate Legend

Hides or shows the coordinate legend on the lower left corner of the realtime render window.

Selection Outlines

Toggles selection outlines to be shown.

Show Light Sources

Hide or show physical light sources.

Stereoscopic Settings

Requires a video card with stereoscopic capabilities and 3D glasses to enable this feature.

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Menu Bar

Window

Show Toolbar
Toggle toolbar on/off.

Show Ribbon
Toggle Ribbon on/off.

Enable Docking
When enabled, windows can be docked in the realtime render window.

Dock Windows
Auto-docks all open windows to default locations.

KeyShot Cloud
Hide/show the KeyShot Cloud window.

Project
Hide/show the project window.

Library
Hide/show the library window.

Animation
Hide/show the animation window.

KeyShot VR
Hide/show the KeyShotVR window.

Material Templates
Opens the material template window. See material templates for more information

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Menu Bar

Help

Manual
Opens The KeyShot Manual

Online Manual
Opens the KeyShot Online Manual in a default browser window.

Learning
Opens the Keyshot Learning page for tutorials, webinars, and quicktips.

Register License
Opens the KeyShot Registration window.

Activate Animation
If you have purchased the animation add-on separately, click here to activate it.

Activate KeyShotVR
If you have purchased the KeyShotVR add-on separately, click here to activate it.

Deactivate License on this Computer
Use this to deactivate your license to be used on a different computer.

Show License Information
Shows Keyshot version and active licenses.

Disclaimers
Opens disclaimers pertaining to KeyShot partners.

Check for Updates
Checks Online for the latest version of KeyShot. Requires Internet connection.

Log
Opens log window for errors.

About
Displays KeyShot 5 "about" window.

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- [General](#)

- [Interface](#)

- [Folders](#)

- [Plugins](#)

- [Color Management](#)

- [Advanced](#)

General

Show News Window at Application Start Up
Display News and recently opened window at start up.

Adjust aspect ratio to backplate
Automatically resize the realtime window to the same aspect ratio of any backplate image that is loaded into the realtime window.

Auto Update
Prompt the user to download and run the update installer when a newer version becomes available.

Pause Realtime Render After
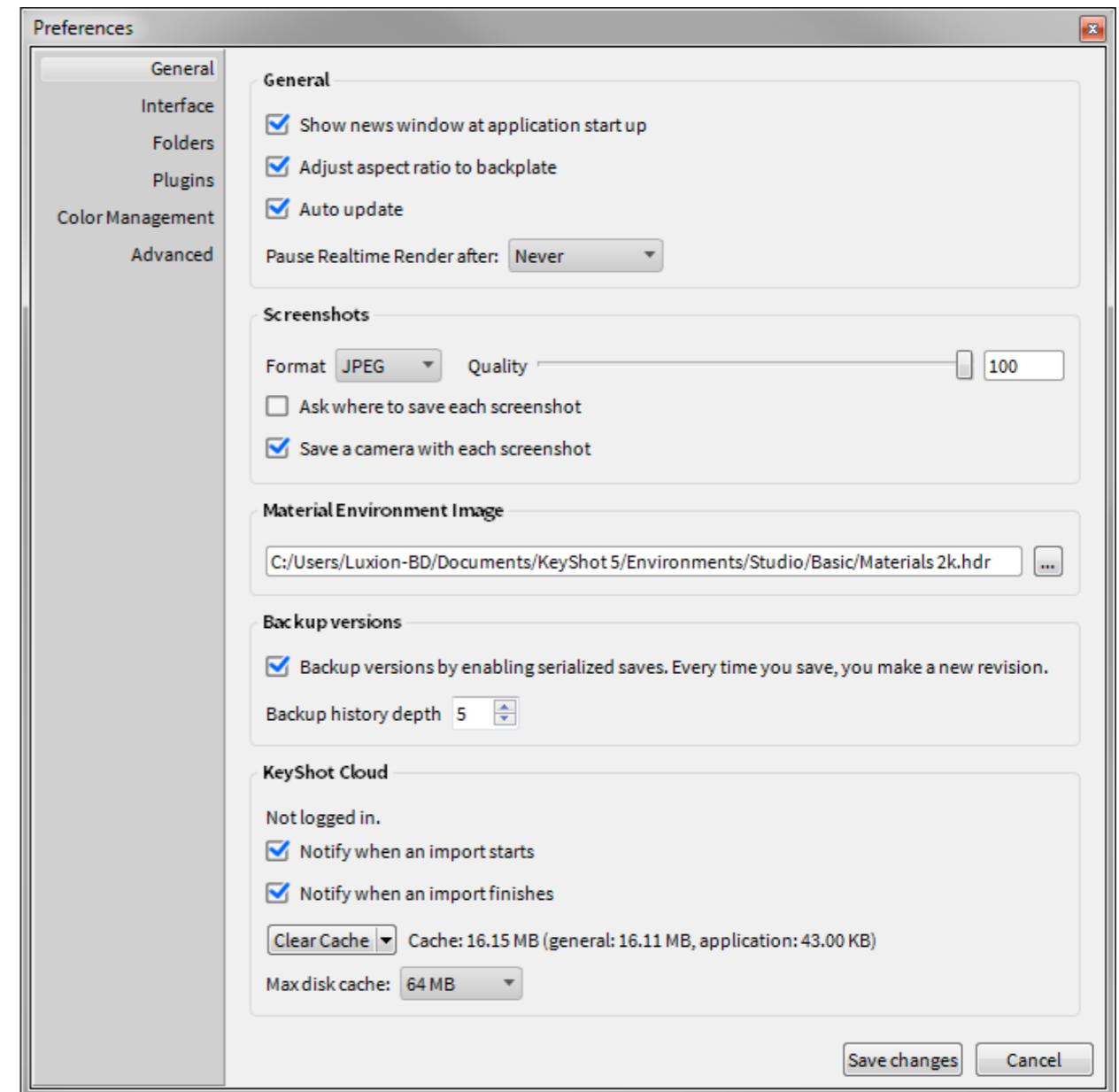Select an amount of time from the menu to automatically pause the rendering and stop the usage of your CPU.

Screenshots

Ask where to save each screenshot
KeyShot will prompt the user to specify a location when saving a screenshot from the realtime window. You can also select file format and quality each screenshot is saved.

Save a camera with each screenshot
When checked, KeyShot will save a camera view for every screenshot that is saved out. These views can be accessed from the camera tab in the project window.

Preferences

General
Interface
Folders
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Advanced

General
- ☑ Show news window at application start up
- ☑ Adjust aspect ratio to backplate
- ☑ Auto update
- Pause Realtime Render after: Never

Screenshots
- Format JPEG Quality 100
- ☐ Ask where to save each screenshot
- ☑ Save a camera with each screenshot

Material Environment Image
C:/Users/Luxion-BD/Documents/KeyShot 5/Environments/Studio/Basic/Materials 2k.hdr ...

Backup versions
- ☑ Backup versions by enabling serialized saves. Every time you save, you make a new revision.
- Backup history depth 5

KeyShot Cloud
Not logged in.
- ☑ Notify when an import starts
- ☑ Notify when an import finishes
- Clear Cache Cache: 16.15 MB (general: 16.11 MB, application: 43.00 KB)
- Max disk cache: 64 MB

Save changes Cancel

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Material Environment Image

This is the path to the environment that renders the materials inside the library. Changing the path will render the materials ball in the library with the environment that was chosen.

Back Up Versions

Enables iterative back up saves.

KeyShot Cloud
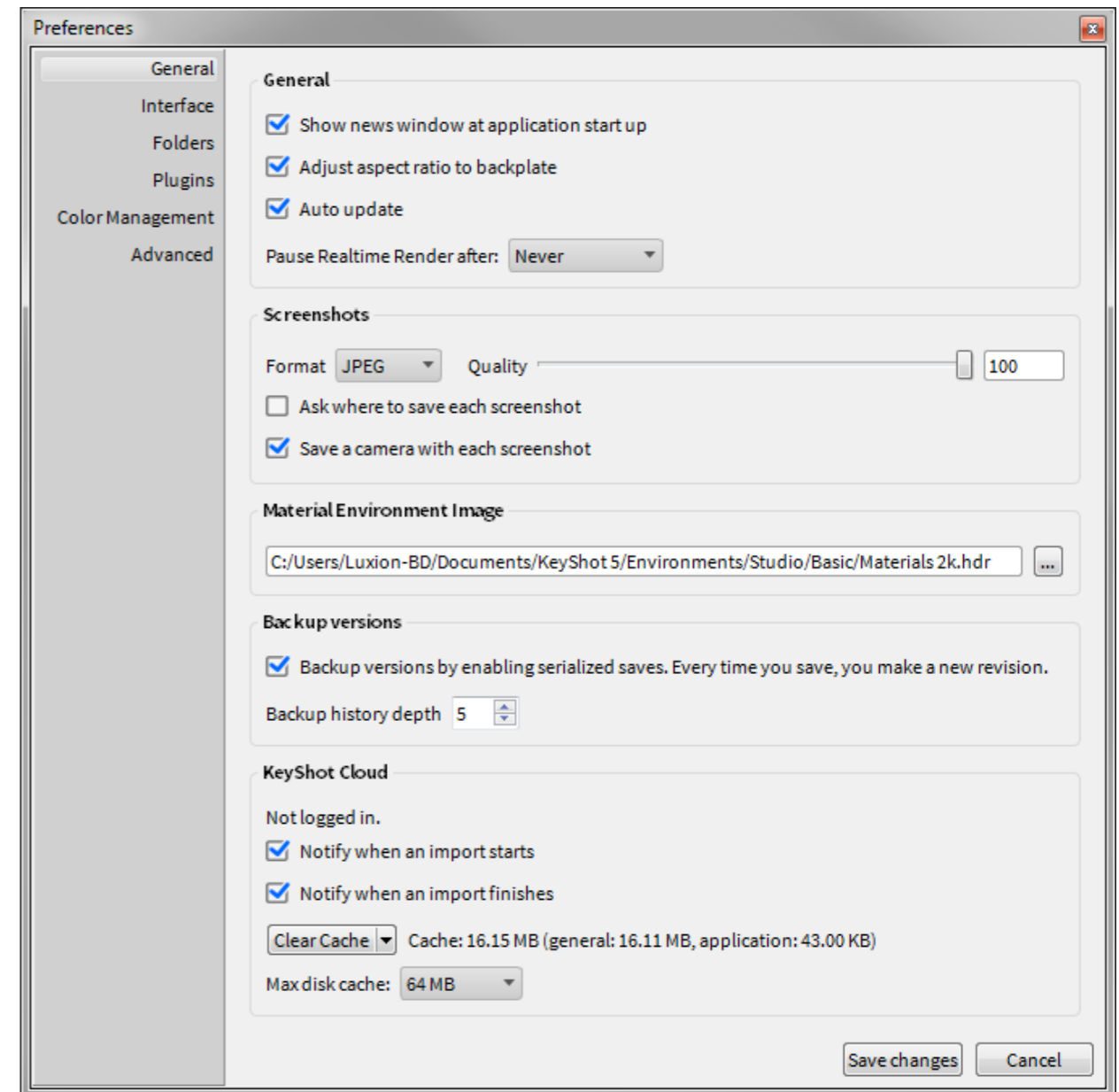
Displays login status.

Notify When an Import Starts

KeyShot will display a message every time an import is started.

Notify When an Import Finishes

KeyShot will display a message when an import finishes uploading.

Clear Cache

Clears temporary files used for KeyShot Cloud.

Interface

Language
Select the desired language in the menu.

Theme
Select desired color for the KeyShot UI

Background Brightness
Change the background of the realtime view.

Selection Outlines
Displays an orange outline around selected parts.

Use CPU for Selection Outlines
Enable this if selection outlines are unstable on GPU

KeyShot 2 Style Material Paste/Link
Use KeyShot 2 legacy paste/link hotkeys.

Include Camera Movements in Undo Stack
This will include all camera movements in the undo stack.

Reverse Camera Distance Scrolling
Reverse the scrolling on the camera when dollying the camera.

Enable Flyouts in Right Click menu
Additional options will be available on right click Menus.

Show Project Materials View in Material Edit Tab
All in-project materials will be displayed.

Preferences

| General |
| Interface |
| Folders |
| Plugins |
| Color Management |
| Advanced |

Interface

Language English
Theme Light
Background brightness Normal
☑ Selection Outlines
☐ Use CPU for selection outlines
☐ KeyShot 2 style material paste/link
☐ Include camera movements in the undo stack
☐ Reverse camera distance scrolling
☐ Enable sub menus in the realtime view
☑ Show in-project material list under Material properties tab
☐ Experimental features

3Dconnexion Settings

3D mouse sensitivity   Low ———————— High
☑ Restrict to dominant axis
☐ Invert Axis

Save changes   Cancel

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3D Mouse Sensitivity:

Control the sensitivity of a 3Dconnexion mouse.

Restrict to Dominant Axis:

Limit the range of motion on the 3D mouse to one dominant axis. For example, if a user is moving the mouse both forward and sideways, the camera will move in the more dominant direction - not both at the same time.

Invert Axis

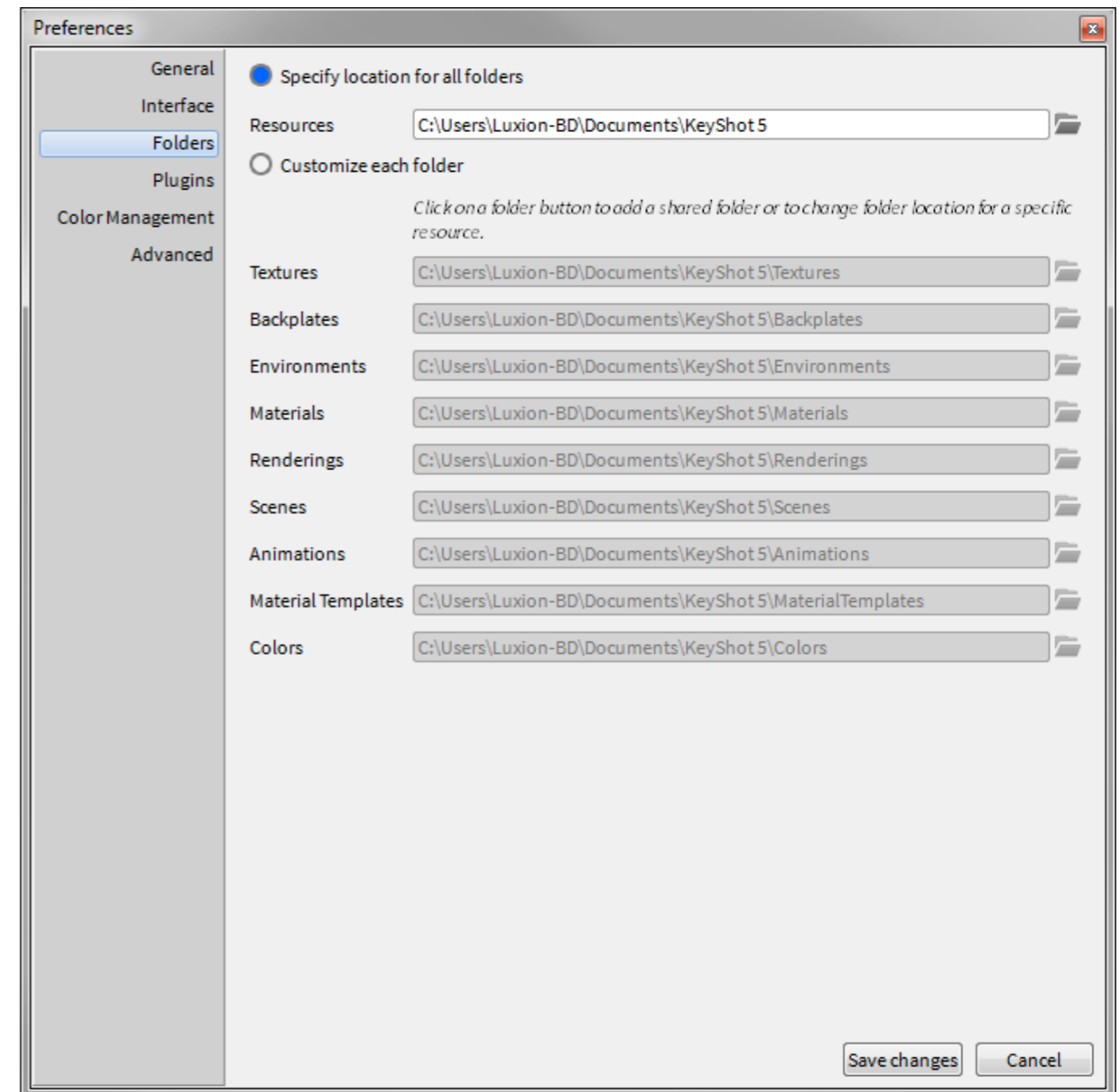Invert Axis will simulate moving the model as opposed to the camera moving around the model.

Preferences

General
Interface
Folders
Plugins
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Advanced

Interface

Language English

Theme Light

Background brightness Normal

☑ Selection Outlines
☐ Use CPU for selection outlines
☐ KeyShot 2 style material paste/link
☐ Include camera movements in the undo stack
☐ Reverse camera distance scrolling
☐ Enable sub menus in the realtime view
☑ Show in-project material list under Material properties tab
☐ Experimental features

3Dconnexion Settings

3D mouse sensitivity   Low ———●——— High
☑ Restrict to dominant axis
☐ Invert Axis

Save changes   Cancel

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Folders

The folders tab will allow you to specify your KeyShot Resources as well as set up shared folders.

Shared folders will allow you to point KeyShot to folder that is shared on a server or local computer to access the files. To use shared folders you will need to select "customize each folder" and click the folder icon on the right. The Configure Folders dialog will open as seen. From their you can select the (+) button to add a new folder path. Selecting a folder and clicking 'Edit' will allow you to edit that folder and change the path or changing to a default folder. You will need one default folder at all times.

All shared folders will show inside of the library.

Plugins

All plugins that are installed for KeyShot to use will be displayed here.

Preferences	
General	**Plugins**
Interface	☑ Luxion KeyShot GrabCAD Integration
Folders	☑ HDRI Editor
Plugins	☑ HDR Light Studio
Color Management	☑ Luxion KeyShot Leap Motion Controller
Advanced	

Save changes   Cancel
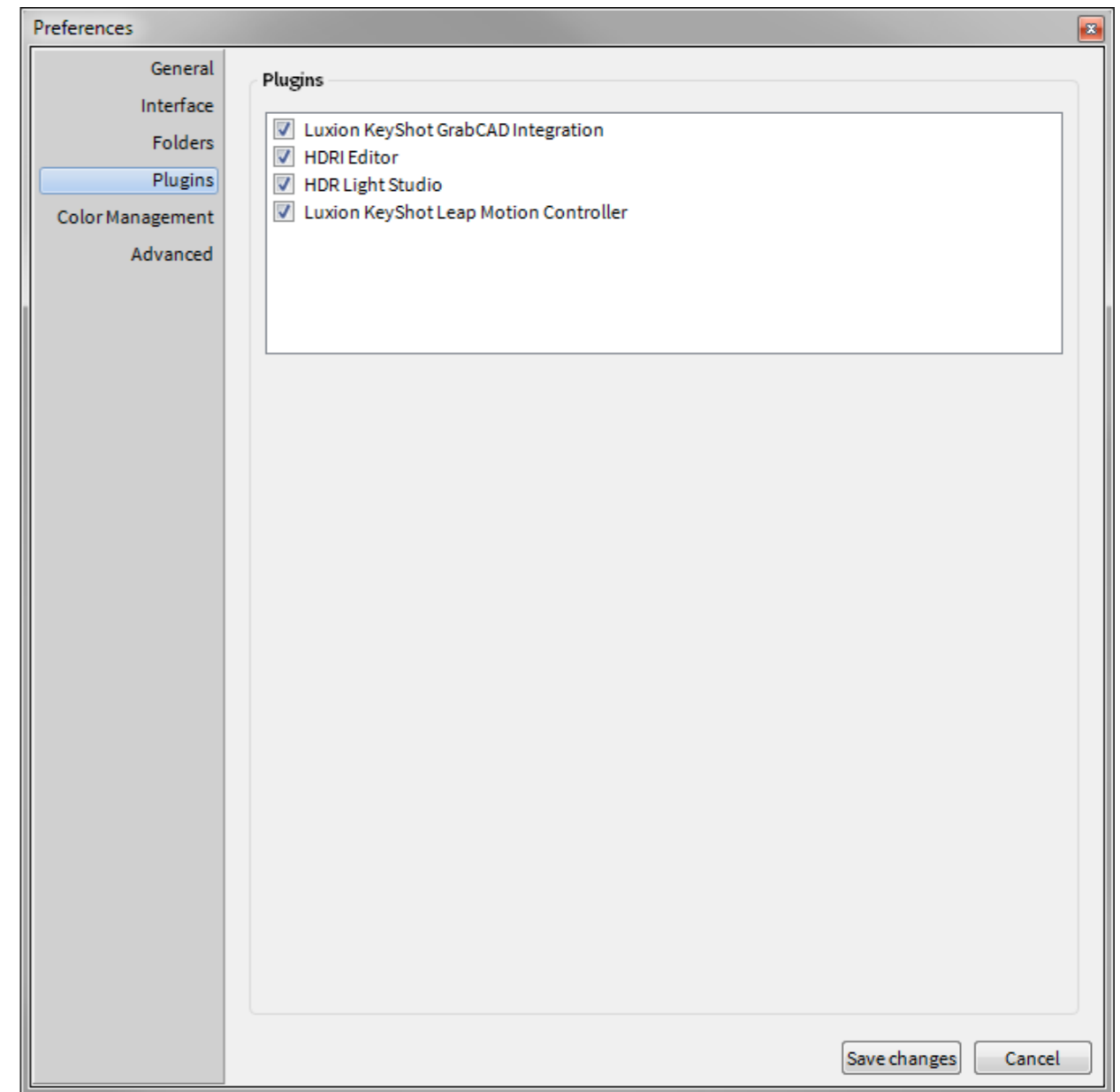
Color Management

Gamma Correct Color Dialog Selection

Gamma corrects color values when selecting them manually in the color picker.

Gamma correct color library:

Enable to allow for gamma correct colors to be shown in the library.
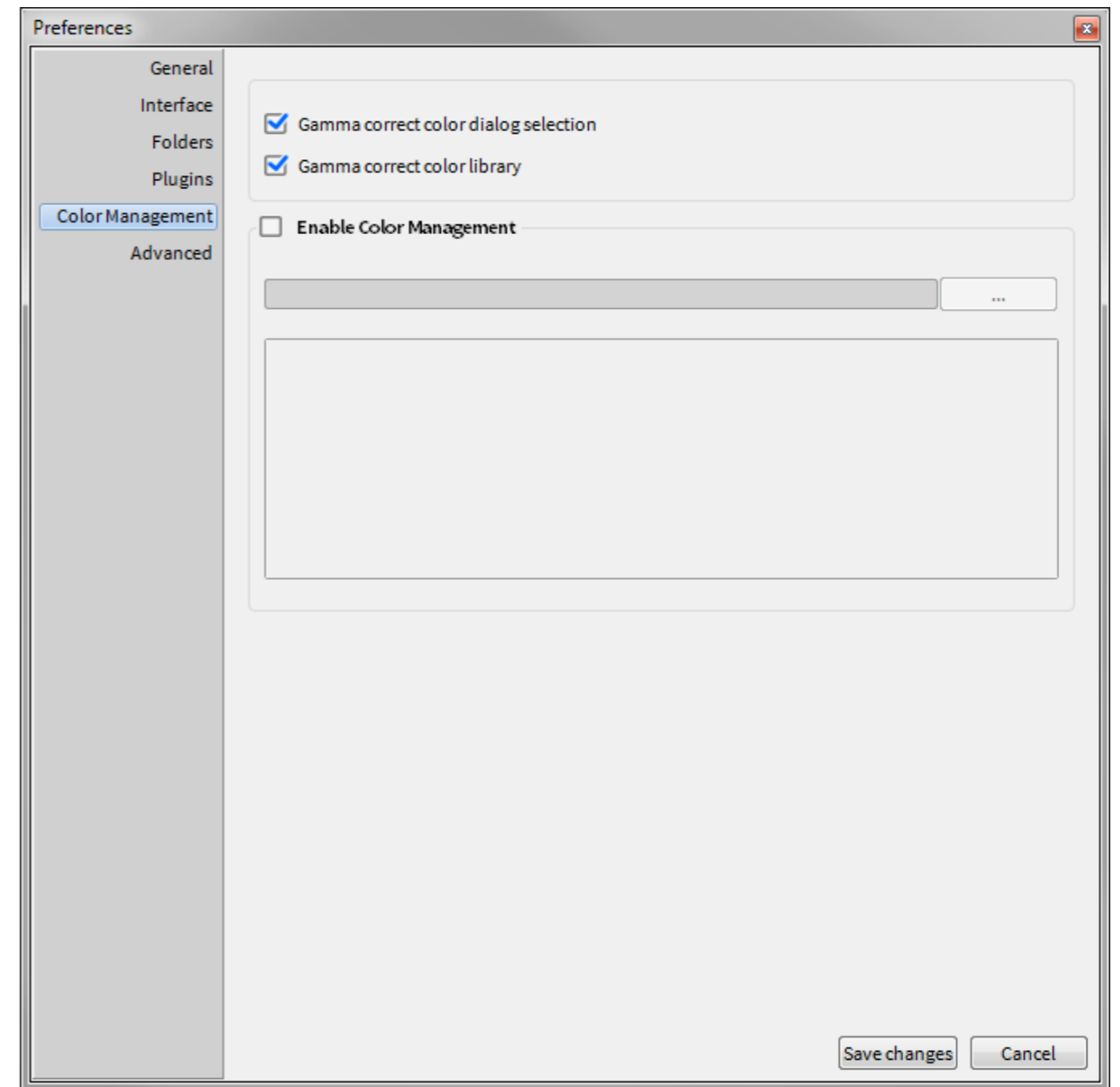
Advanced

Fast realtime Updates
Enable smooth camera moves while navigating your scene.

Graphics Effects
Allow access the Bloom and Vignetting effects.

Use Gloss Instead of Roughness for Materials
This will change all parameters for roughness to gloss. Restarting KeyShot is required to take affect.

Link Materials of Duplicate Parts
When enabled, parts that are duplicated will have materials linked.

Respect Animation Ordering
When enabled, the next animation origin follows the previous animation origin.

Output Window Memory Limit
This controls the amount of memory reserved for the image buffer in the output window. If the rendered image takes up more memory than this limit, it will be downscaled until below the limit. This is useful if you are rendering gigapixel images and your scene takes up a lot of memory as well. It does *not* affect the output image itself (as specified in the render settings), but *does* affect images saved directly from the output window.
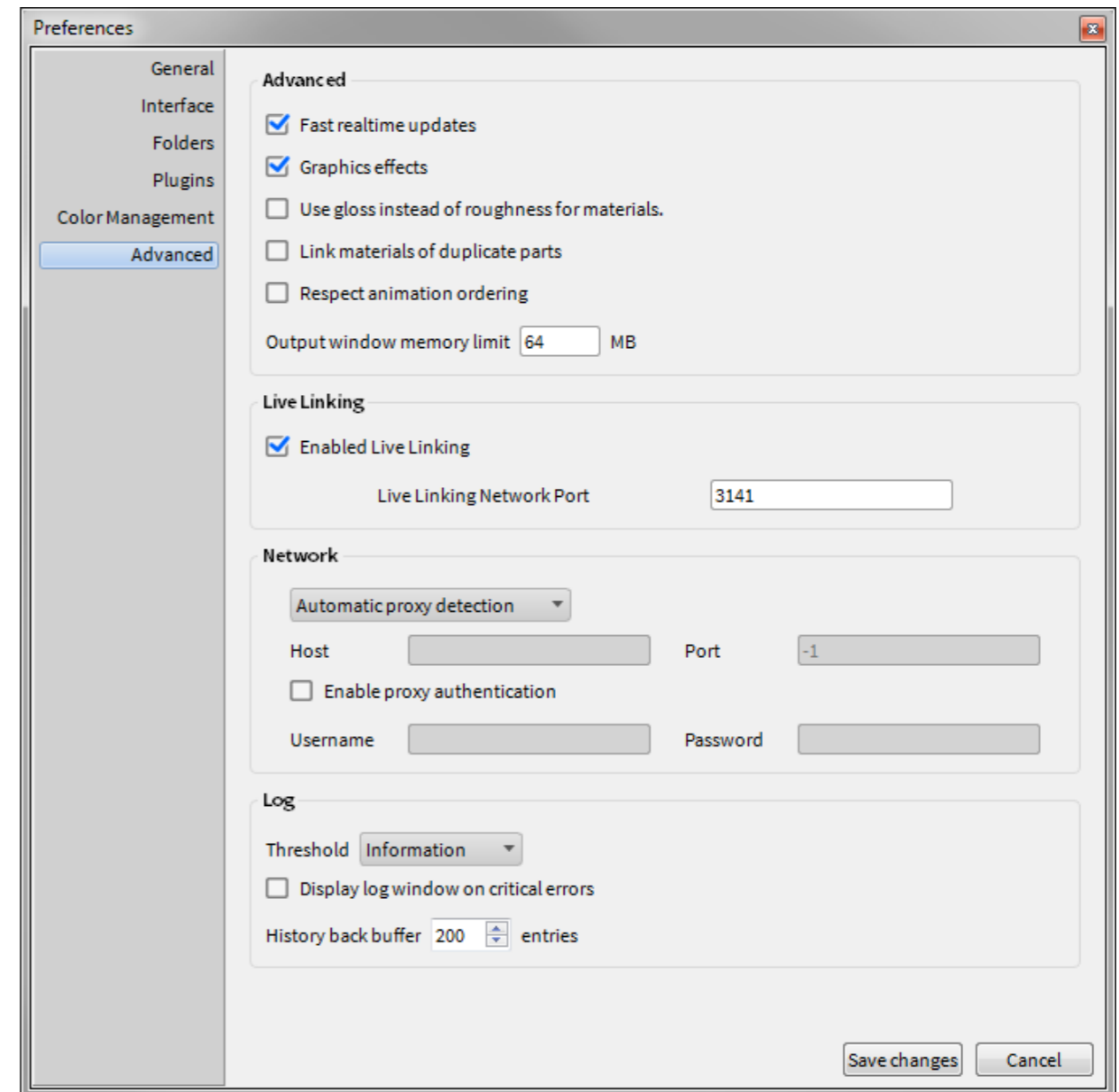
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Advanced

Live Linking

Live Linking allows installed plugins to establish a link between your 3D modeling software and KeyShot. This keeps the software separate, allowing you to continue working and refining your model, then send all changes over to KeyShot with the click of a button. All without losing any views, materials, textures or animations already applied. Leave the live linking network port at default unless you are having problems with live linking capabilities. Contact support@luxion.com for more information.

Network

If you are behind a proxy server, you can fill in the server information here to allow KeyShot to connect to the Internet to activate the software and to automatically be informed of updates.

Log

This is an optional log that can be displayed to help with debugging. It will display different types of information that can help the KeyShot development and support teams troubleshoot issues that may arise.
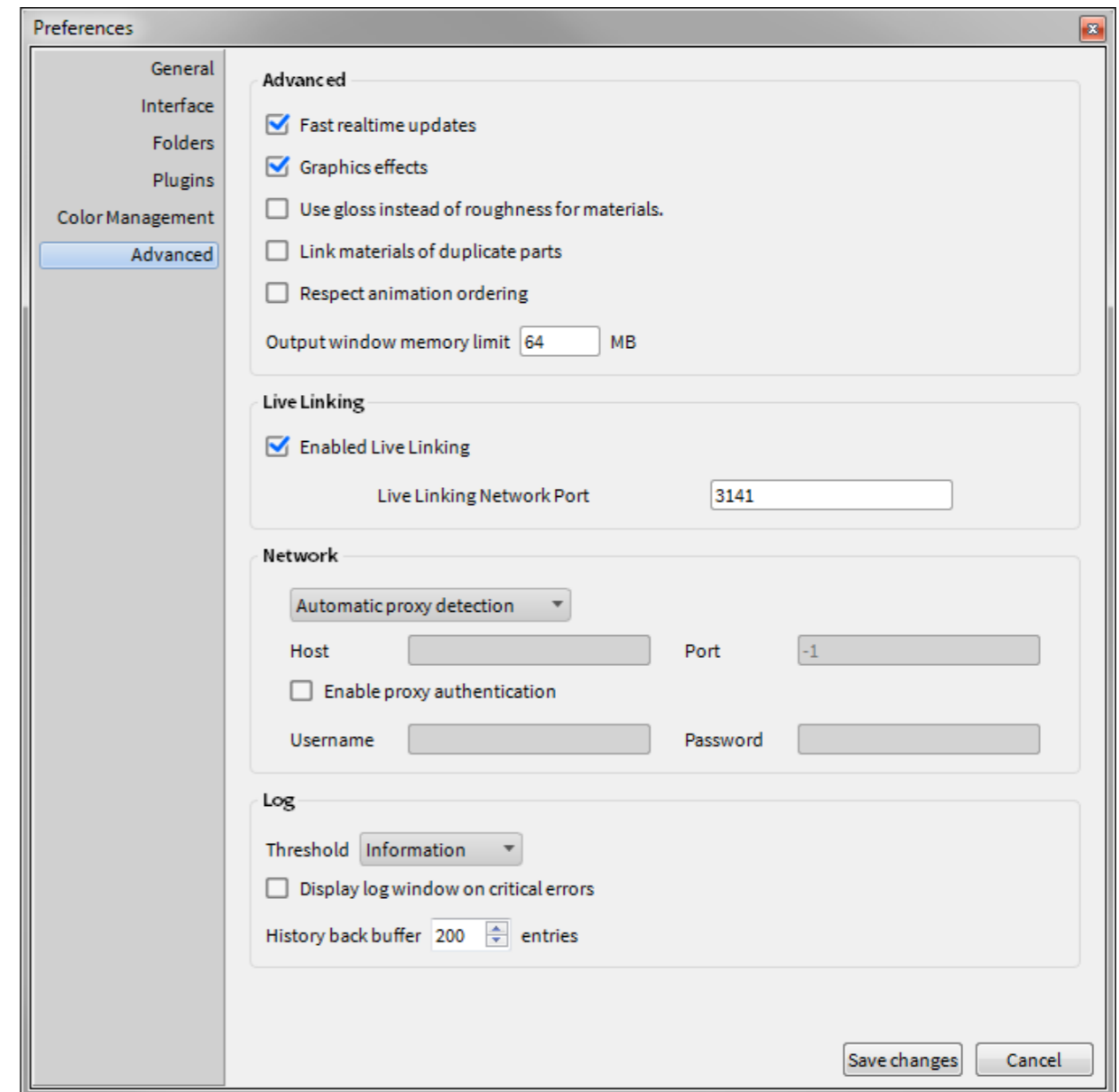
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Realtime View

1. This is the realtime view. All realtime rendering of your 3D model will occur here. You can interactively move around your model by using the camera controls. You can adjust realtime render settings and performance by going into the settings tab in the project window. Models can be multi-select by hold SHIFT + LMB and dragging.

2. This is your main toolbar and will guide you through the process of creating images and/or animations. The icons are arranged in the chronological order, from importing your data, assigning materials, choosing lighting, setting up animations and finally rendering. The toolbar icons can be displayed in different sizes and you can choose to hide the text by right clicking on the toolbar and setting your options.

The toolbar can also be torn away from the bottom of the realtime view by hovering over the handle on the far left side and left click and dragging to move the toolbar freely. It can be snapped to the left side of the interface by dragging and hovering the toolbar over the left edge of the realtime view.

3. This is the ribbon which contains quick access to common tools used in KeyShot
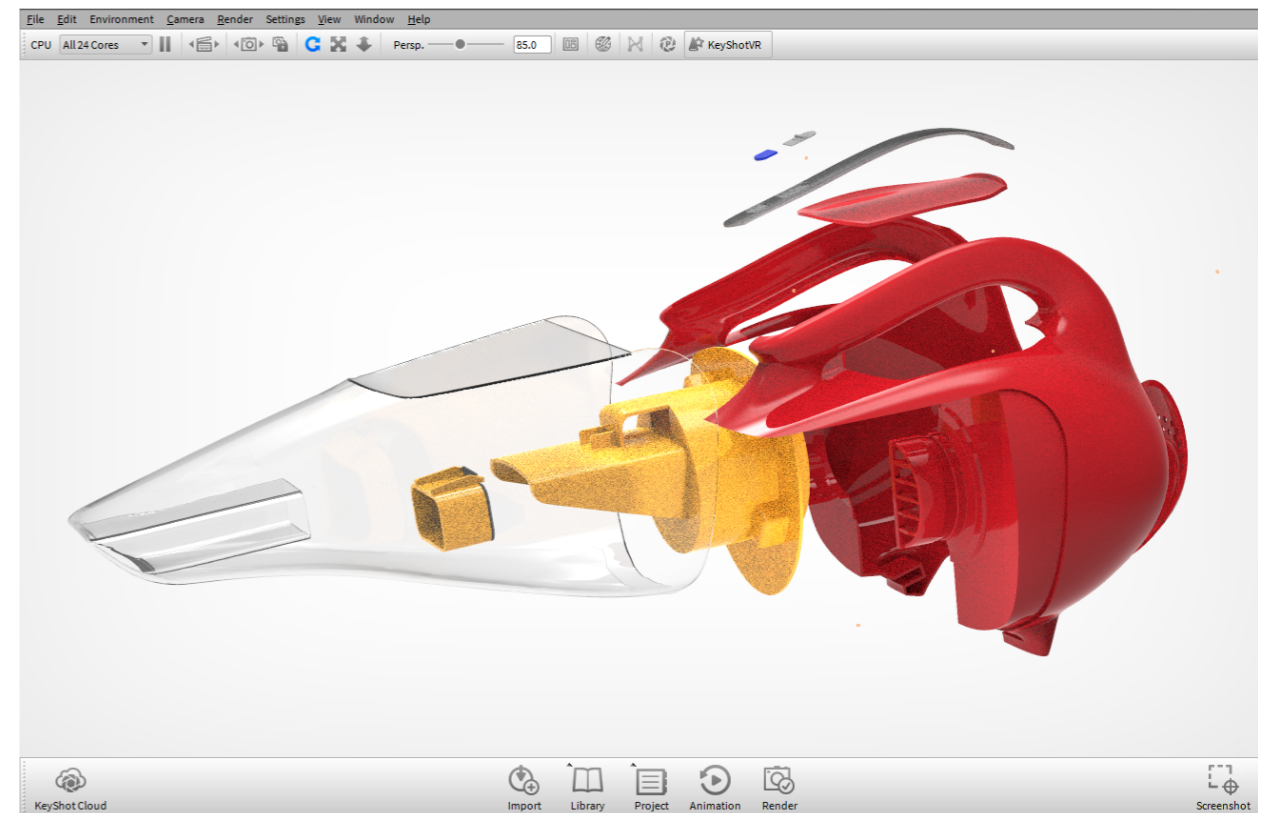
Realtime View

Docking windows can be activated by simply dragging the library,
KeyShot Cloud, project or animation timeline near the edge of the
realtime view. You are able to dock all windows at once by going to
"View" - > "Dock Windows".
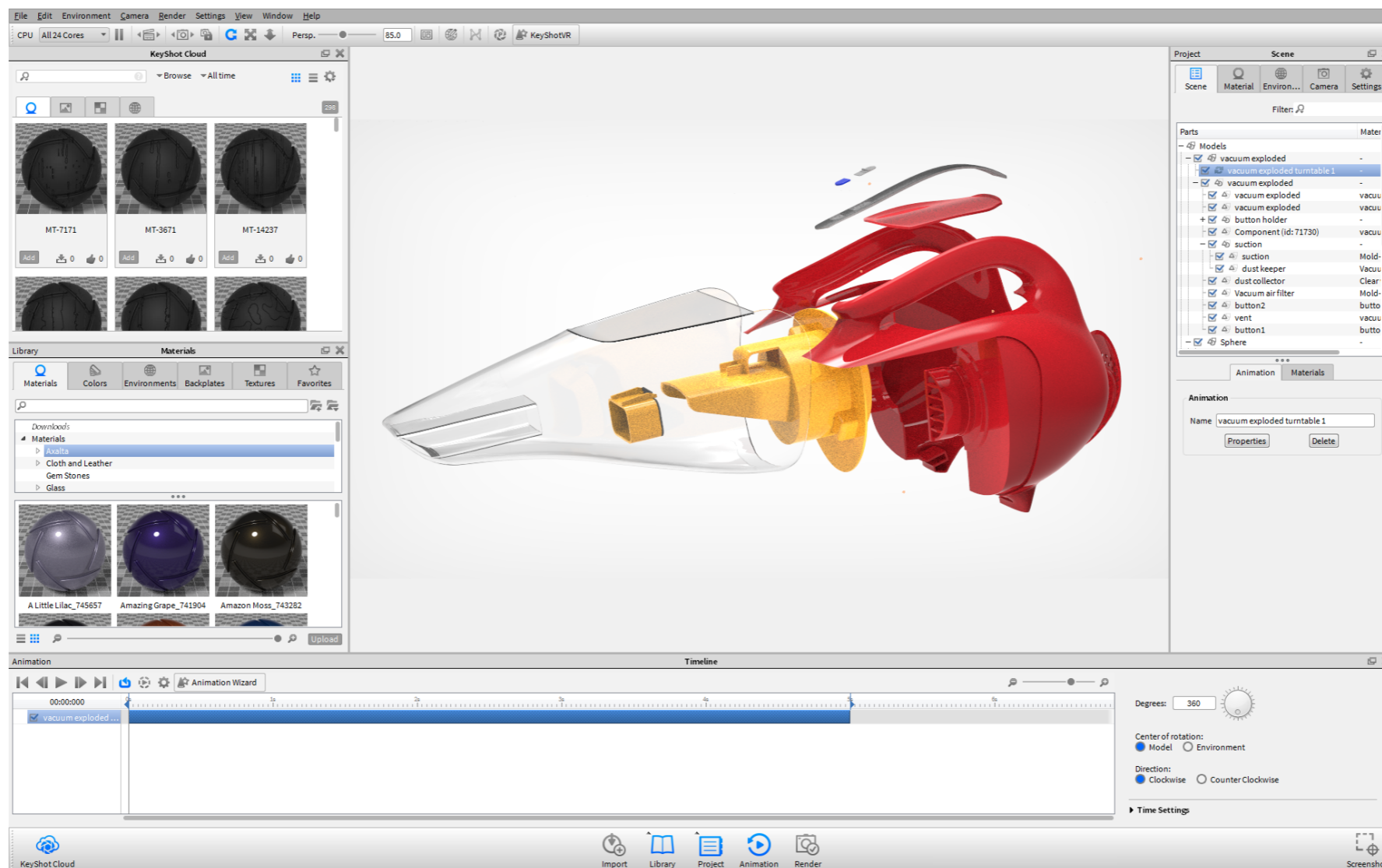
Tool Bar

KeyShot Cloud

Opens the KeyShot Cloud panel. See KeyShot Cloud section of the manual for more details.

Import

Opens import panel to import scenes and 3D data into Keyshot. See Importing, and Working With Data section for more detail.

Library

Opens the Library panel. See Library section for more details.

Project

Opens the Project panel. See Project Window section for more details.

Animation

Opens the Animation Panel. See Animation section for more details.

Render

Opens the Render Options panel. See Render Options section for more details

Screenshot

Takes a screenshot of the current state of your realtime render window. A camera will be automatically saved in your camera list. The screenshot will be saved in your renders folder.
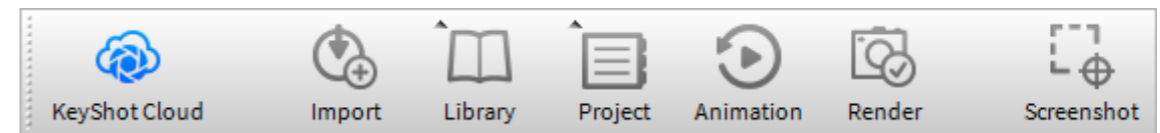
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Ribbon

CPU Cores

Select the amount of cores used for the realtime render window.

Pause

Pauses realtime rendering.

Previous/Next Scene Set

Switches to previous or next saved scene set.

Previous/Next Camera

Switches to previous or next saved camera.

Lock Camera
Tumble, Pan, Dolly Camera

Use these controls to isolate the movement of your camera. Useful for workstations that use a mouse without a scroll wheel.

Perspective Slider

Quick access to perspective slider. For more details see Camera section.

Move Tool

Select model or part and activate tool button. For more details see Moving Models section.

HDRI Editor (Pro)

Opens HDRI Editor window. Also accessible via the environments tab. For more details see HDRI Editor section

NURBS Mode

Enables Nurbs Data to be rendered in the realtime rendering window.

Performance Mode

Enable to lower realtime render settings for faster performance. When enabled, an icon will display on the top right. Also accessible via the settings tab, as well as the hotkey

KeyShotVR Wizard

Opens the KeyShot VR wizard. For more details see KeyShotVR section.

KeyShot® Manual

KeyShot Cloud is an on-library where you can share your own custom materials and resources, as well as have access to resources uploaded by other KeyShot users. The KeyShot Cloud is fully integrated into the KeyShot workflow to make downloading and uploading your resources as easy as it is to use them.

- **User Interface**

- **Creating an Account**

- **Searching**

- **Uploading/Downloading Resources**

KeyShot® Manual

User Interface

KeyShot Cloud is an on-library where you can share your own custom materials and resources, as well as have access to resources uploaded by other KeyShot users. The KeyShot Cloud is fully integrated into the KeyShot workflow to make downloading and uploading your resources as easy as it is to use them.

1. Search field

2. Thumbnails / list view toggle

3. Category Tabs

4. Search result counter

5. Search results

6. Details

7. "Like" Button

8. Add to Library
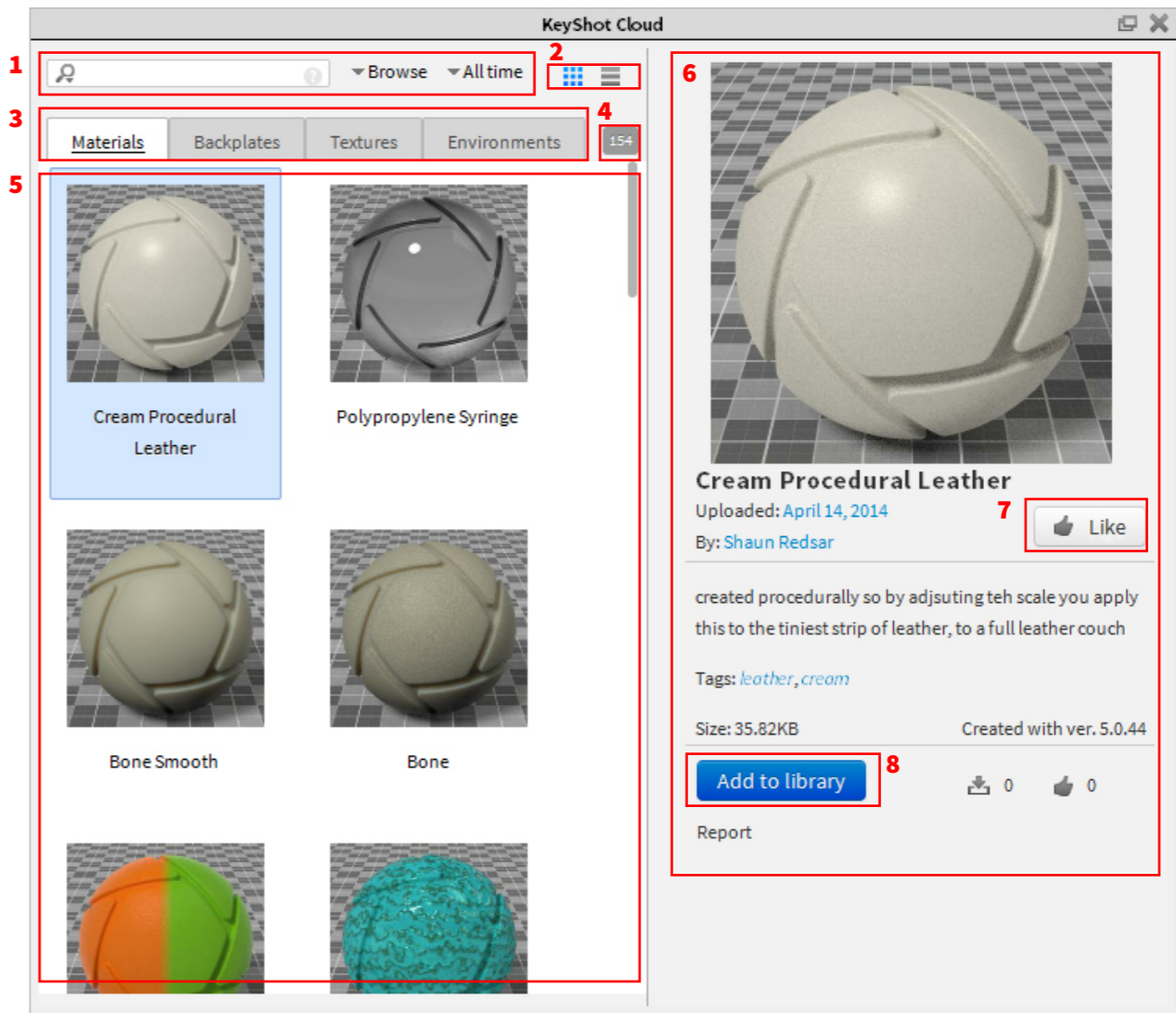
KeyShot® Manual

Creating an Account

Before you have access to the KeyShot Cloud, KeyShot will prompt the user to login with an existing account or to create a new one. You can also log in with an existing KeyShot Form login.

KeyShot will automatically log in the user after logging in. To manually log out of the KeyShot Cloud, click Edit>Preferences>General>Logout.
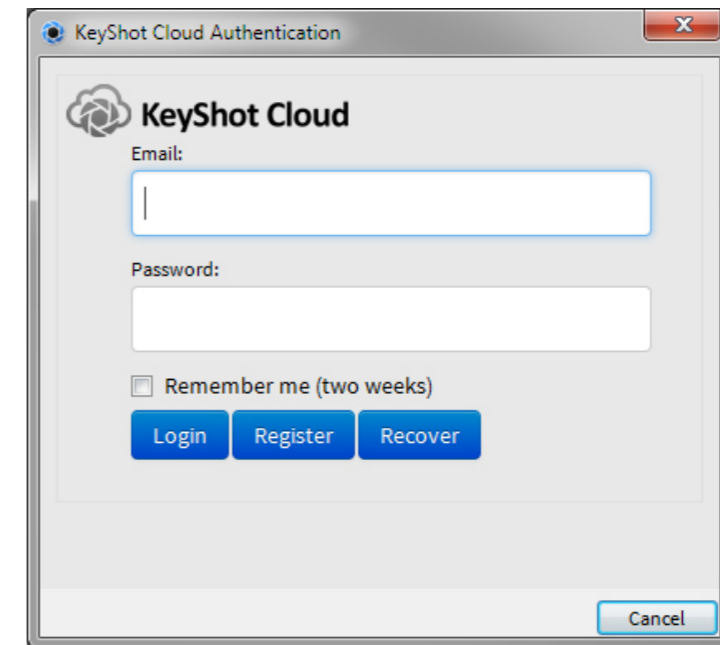
Searching

KeyShot Cloud has a robust search feature. You can type any keywords, as well as using the syntax of "@<user name" to search for resources created by a specific user.

The search results can be organized by the "Order By" and the "Results Since" pulldowns.

Click on a resource entry to bring up the details of that specific resource such as the creators name, size, description, clickable tags, and more. The details section will also contain the "download" button to Download the resource to your library, as well as a "Report" button to flag the resource for offensive material.

Uploading Resources

To upload your custom resources to the KeyShot Cloud Click the "Upload" button on the bottom right of the KeyShot library panel.

You will be prompted to edit the name if you would like to change the name, as well as add a description and tags to help other users search for your resource. If you don't know what tags to use, you can click "suggestions" and KeyShot will auto generate tags for you.

After clicking next, a confirmation of resources to be uploaded will be displayed. Click "Upload" to send your resource to the cloud for other users to have access to.

Downloading Resources

To download a resource on the Cloud, click the "Add to Library" button on the resource you would like to download. The resource will be automatically downloaded to your downloads folder in the appropriate tab that you can move to an existing or custom folder.
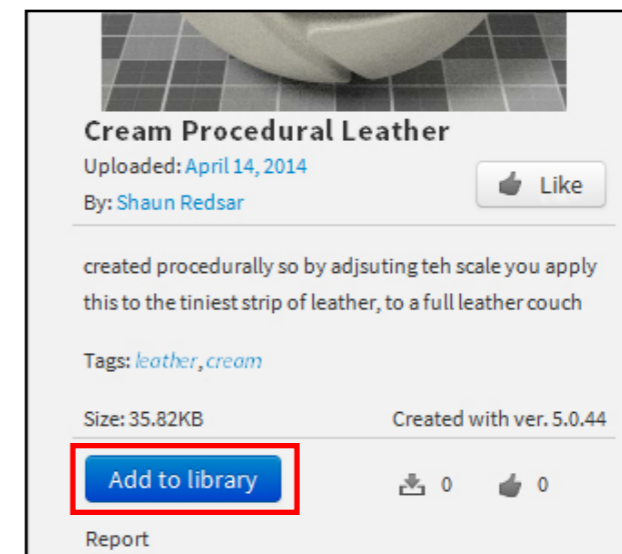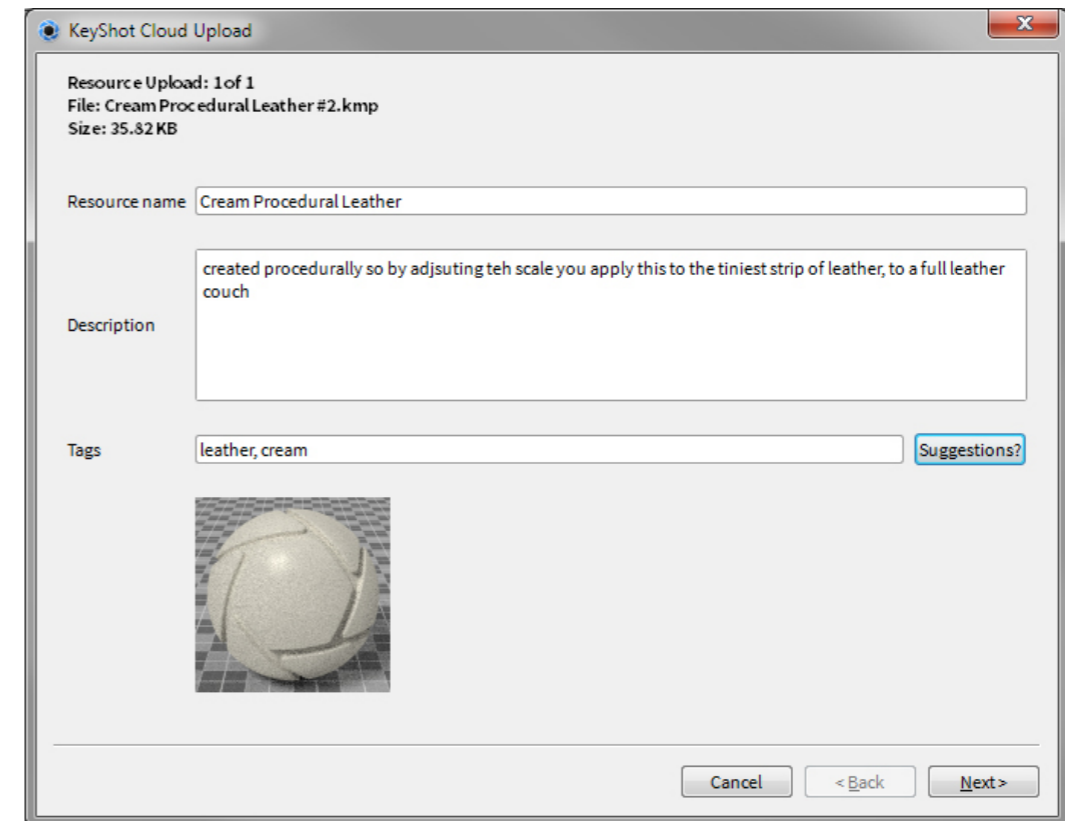
KeyShot® Manual

- [Overview](#)

- [Materials Tab](#)

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- [Backplates Tab](#)

- [Textures Tab](#)

- [Favorites Tab](#)

Library

This is where default assets such as materials, colors, environments, backplates and textures are stored. Any content displayed here is sourced from the locations set for KeyShot resources in the folders preferences. The different assets can be displayed by clicking on any of the upper tabs.

The library is setup to work like a file browser in an operating system. Folders can be added by manually placing them in the KeyShot resources folder through your OS, or they can be added by clicking the add folder button . Content can be refreshed by clicking the refresh button and content can be imported or exported by clicking either the import or export buttons. The library can also be searched by typing in the search field in the upper right corner.

The library is split horizontally into two view panes. The top pane shows the folder structure and the bottom pane shows the content of the currently highlighted folder as thumbnails. The thumbnail sizes can be scaled up or down by using the scale slider on the bottom of the library window.

You can drag and drop content from the library by clicking and dragging any item from the lower pane into the realtime window.

Any shared folders will also be shown below Shared Folders.

Folders with a lock sign on the folder, are set to read only. Permissions can be edited inside of the shared folders.
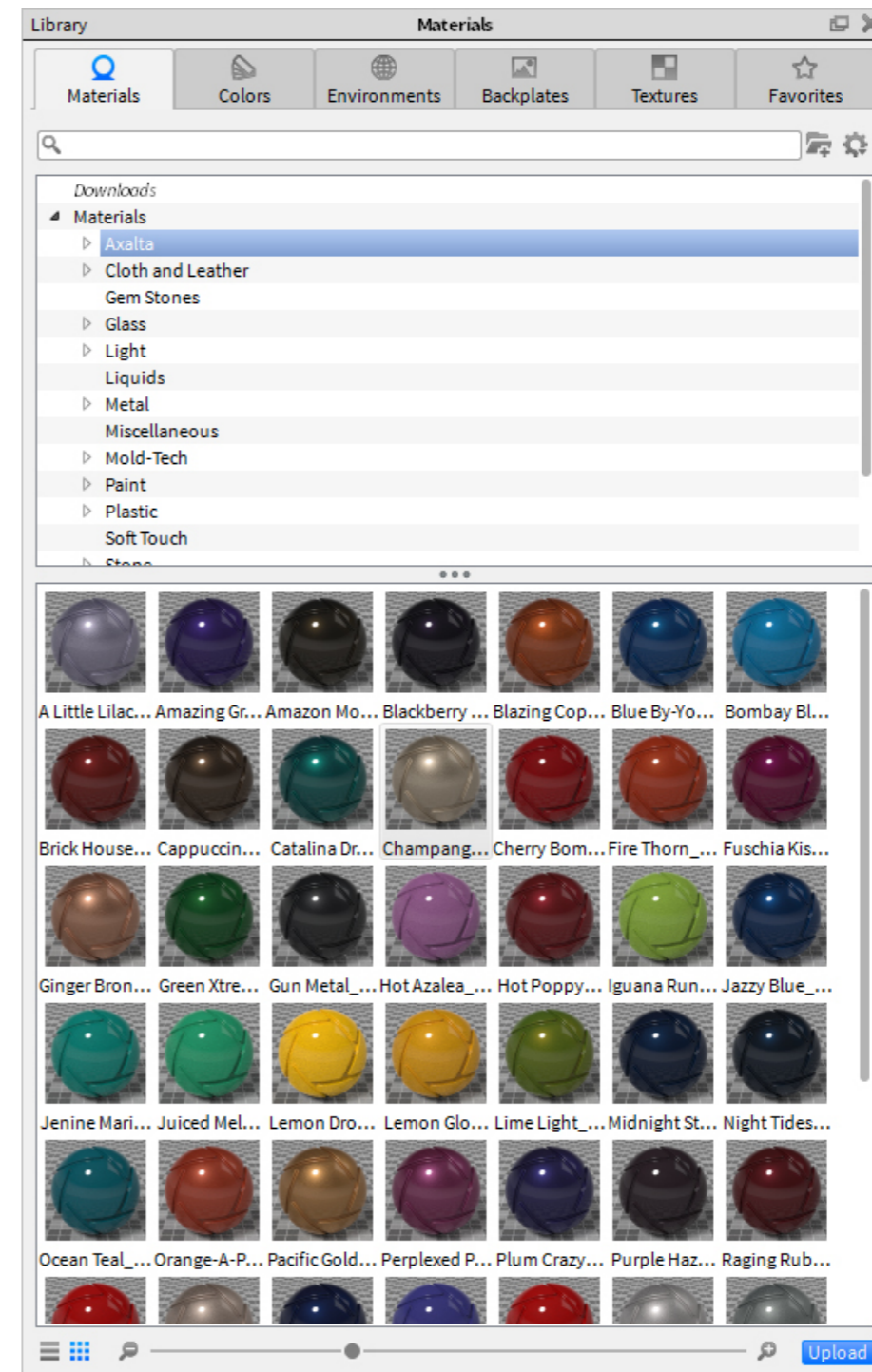
KeyShot® Manual

Materials

The materials tab contains all your saved materials in your library.

Search

Type in any keyword to search for a material by name.

Add Folder

Click this button to add custom material folders.

Settings

Contains:

    Refresh- Refresh material list if any changes were made.

    Import - Import a .KMP material file.

    Export - Export a .KMP material file.

Folder Tree

Contains the folder structure of the material folders.

Material Thumbnails

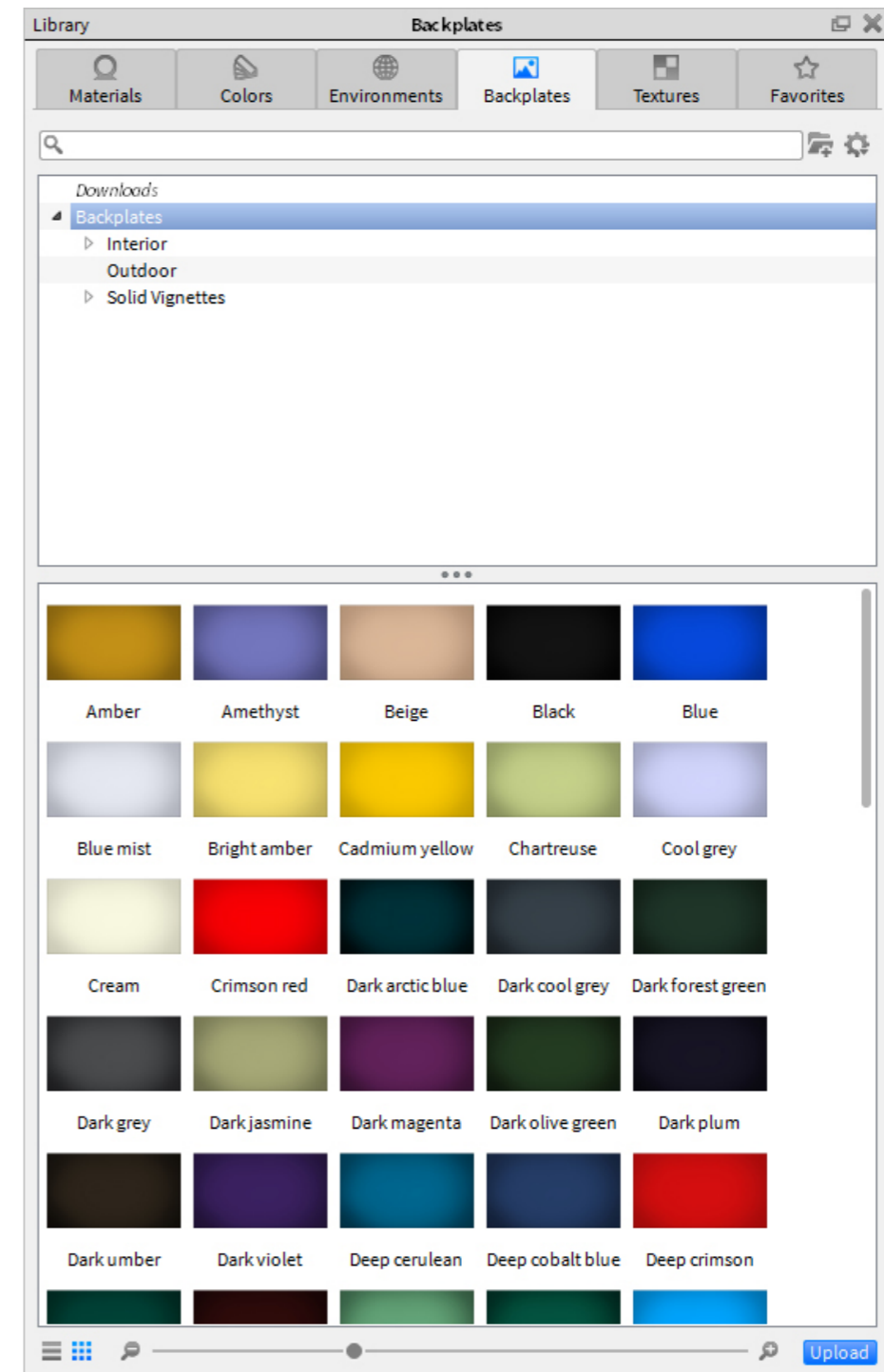Mat ball swatches of materials within the selected folder.

List/Thumbnail Toggle

Switch between displaying the materials with thumbnails, or a list view.

Zoom Slider

Slide to change the size of the thumbnails use +/- to change in steps.

Upload to KeyShot Cloud

Click this button to upload a custom material to the KeyShot Cloud.
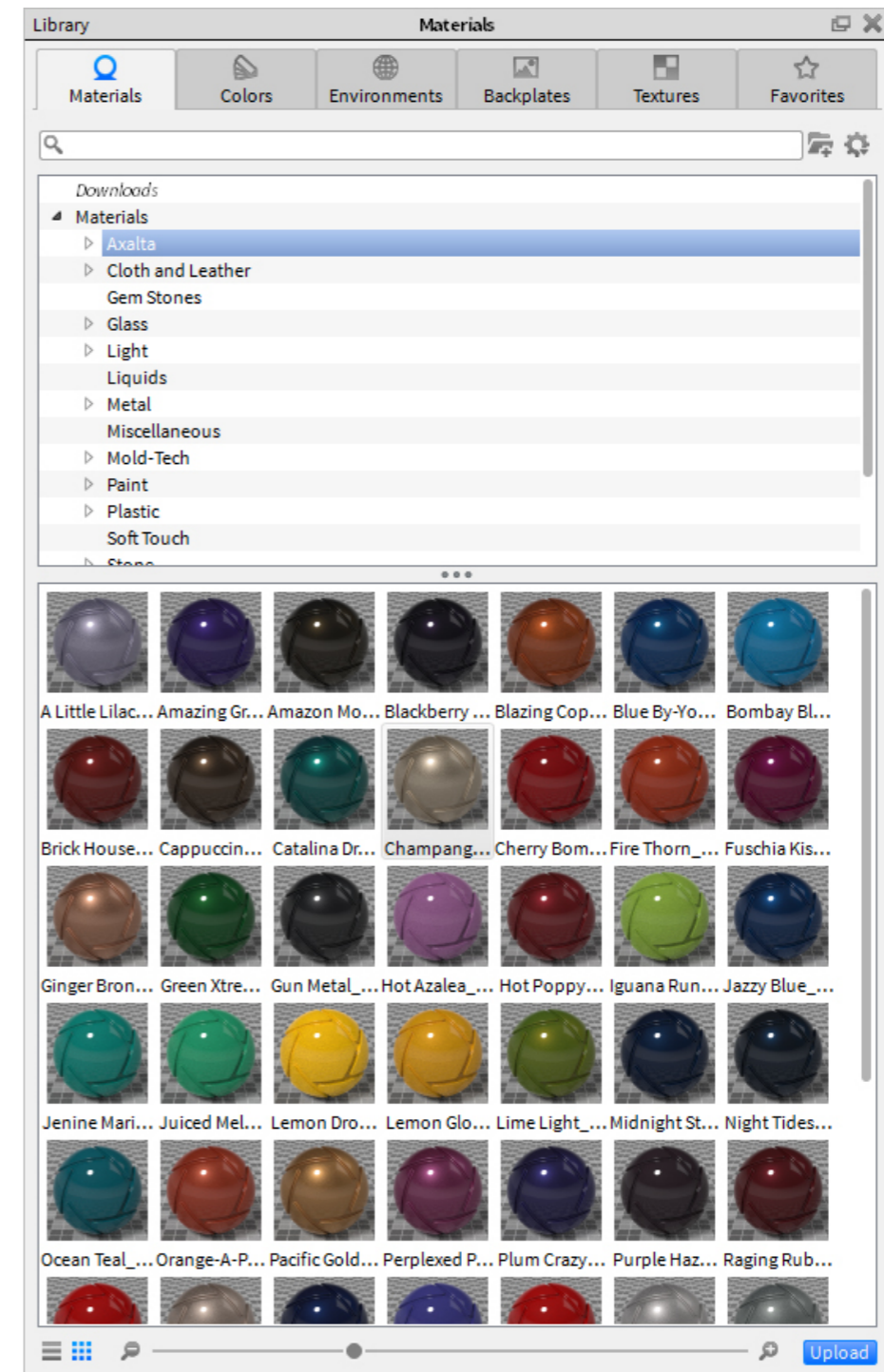
Colors Tab

The colors tab contains all your saved colors in your library.

Search

Type in any keyword to search for a color by name.

Add Folder

Click this button to add custom color folders.

Settings

Contains:

    Refresh- Refresh color list if any changes were made.

    Import - Import a .KCP or .CSV color file.

    Export - Export a .KCP color file.

Color Search

Opens color picker panel to search by closest color match.

Folder Tree

Contains the folder structure of the color folders. Contains folders for RAL and Pantone Color Libraries.

Color Swatches

Displays color swatches within the selected folder.

List/Thumbnail Toggle

Switch between displaying the color with thumbnails, or a list view

Zoom Slider

Slide to change the size of the thumbnails use +/- to change in steps

KeyShot® Manual

Environments Tab

The environments tab contains all your saved environments in your library.

Search

Type in any keyword to search for an environment by name.

Add Folder

Click this button to add custom environments folders.

Settings

Contains:

      Refresh- Refresh environments list if any changes were made.

      Import - Import a .HDR, .HDZ, .EXR, .DDS file.

      Export - Export environment file.

Folder Tree

Contains the folder structure of the environment folders.

Environment Thumbnails

Thumbnails of environments within the selected folder.

List/Thumbnail Toggle

Switch between displaying the environments with thumbnails, or a list view.

Zoom Slider

Slide to change the size of the thumbnails use +/- to change in steps.

Upload to KeyShot Cloud

Click this button to upload a custom environment to the KeyShot Cloud.
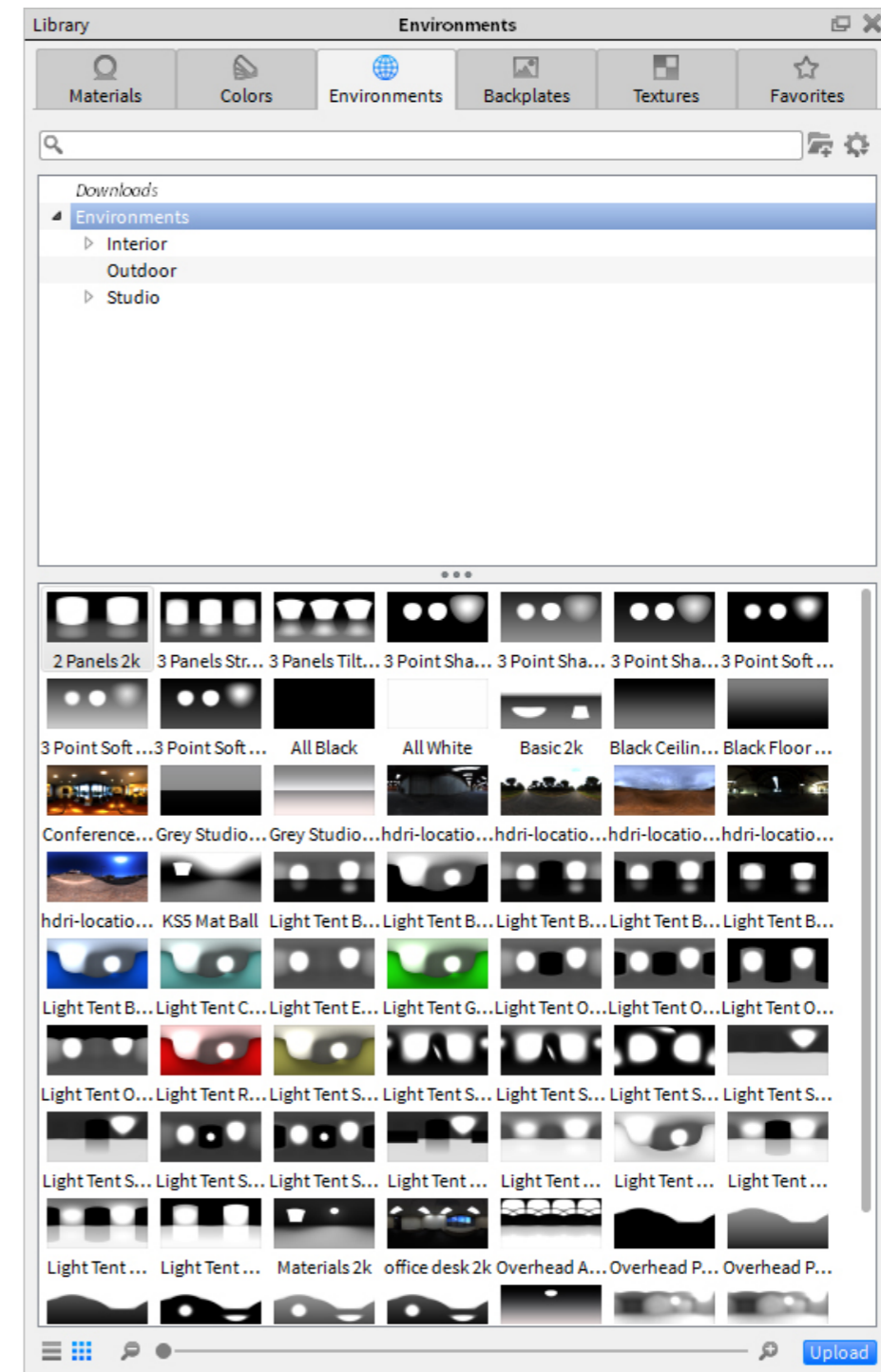
KeyShot® Manual

Backplates Tab

The backplates tab contains all your saved materials in your library.

Search

Type in any keyword to search for a backplate by name.

Add Folder

Click this button to add custom backplate folders.

Settings

Contains:

       Refresh- Refresh backplate list if any changes were made.

       Import - Import an image file.

       Export - Export an image file.

Folder Tree

Contains the folder structure of the backplate folders.

Backplate Thumbnails

Thumbnails of backplates within the selected folder.

List/Thumbnail Toggle

Switch between displaying the backplates with thumbnails,
or a list view

Zoom Slider

Slide to change the size of the thumbnails use +/- to change in steps.

Upload to KeyShot Cloud

Click this button to upload a custom backplate to the KeyShot Cloud.

Textures Tab

The textures tab contains all your saved textures in your library.

Search

Type in any keyword to search for a texture by name.

Add Folder

Click this button to add custom texture folders.

Settings

Contains:

       Refresh- Refresh texture list if any changes were made.

       Import - Import an image file.

       Export - Export an image file.

Folder Tree

Contains the folder structure of the texture folders.

Texture Thumbnails

Thumbnails of textures within the selected folder.

List/Thumbnail Toggle

Switch between displaying the textures with thumbnails, or a list view.

Zoom Slider

Slide to change the size of the thumbnails use +/- to change in steps.

Upload to KeyShot Cloud

Click this button to upload a custom texture to the KeyShot Cloud.
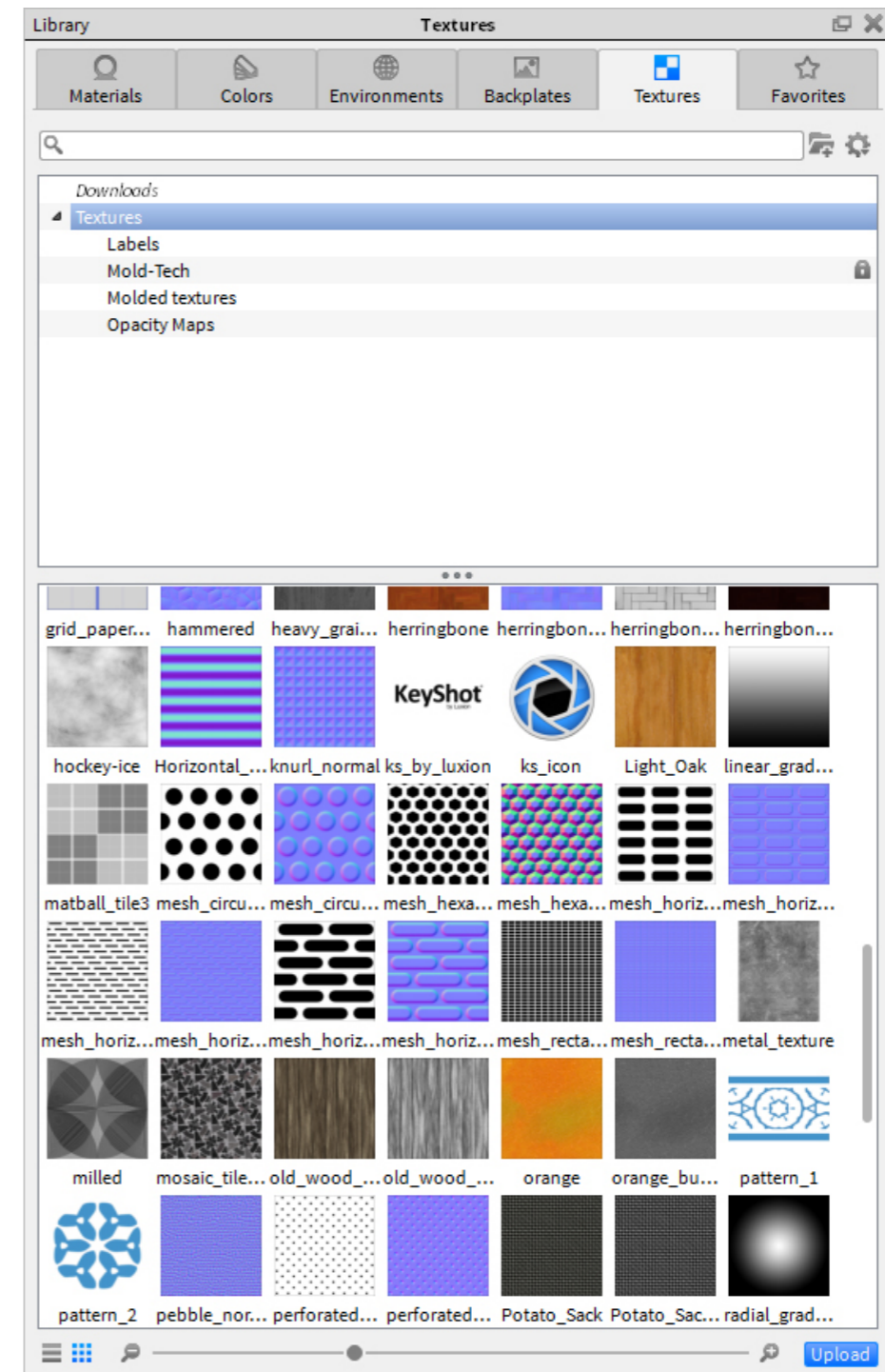
Favorites Tab

The favorites tab allows you to organize commonly used resources into groups for a faster workflow. Right click a resource in your library, and select add to favorites, and then select the folder you would like to add the resource to.

Search
Type in any keyword to search for a resource by name.

Add Folder
Click this button to add a favorites folders.

Settings
> Refresh- Refresh favorites list if any changes were made.
> Import - Import favorites.
> Export - Export Favorites.

Folder Tree

Contains the folder structure of the favorites folders. Each favorites folder contains categories for backplates, colors, environments, materials, and textures.

Favorites Thumbnails
Thumbnails of resources within the selected folder.

List/Thumbnail Toggle
Switch between displaying the favorites with thumbnails, or a list view.

Zoom Slider
Slide to change the size of the thumbnails use +/- to change in steps.
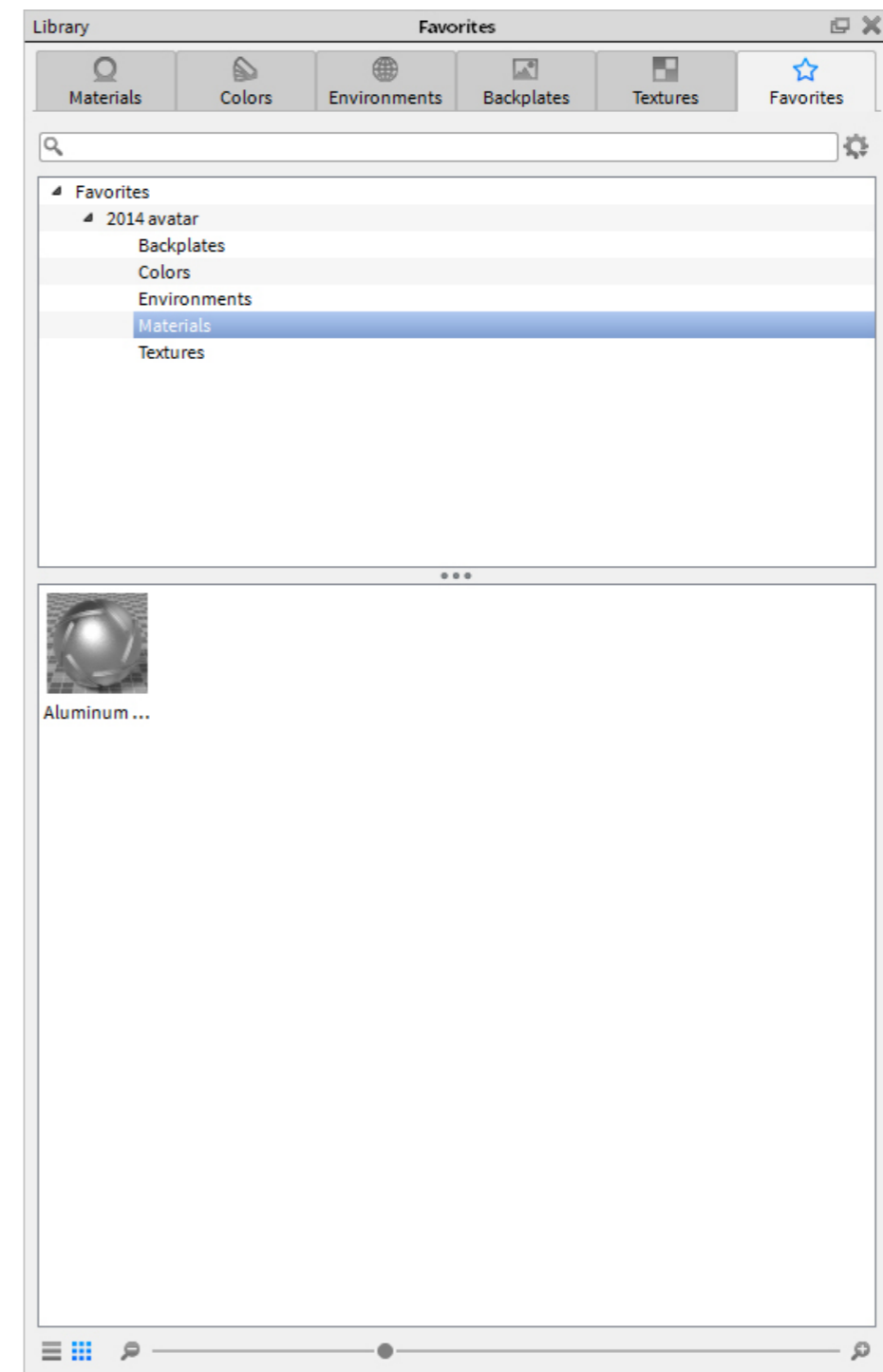
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    - [Backplate Overview](#)
    - [Backplate Settings](#)

- [Camera Tab](#)

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Project Window

The project window can be thought of as the central location for making any changes to KeyShot scenes. It is accessed by selecting the project button shown on the main toolbar. It can also be accessed by pressing spacebar, as well as in the menu bar under window.

If a user needs to duplicate models, delete parts, edit materials, adjust lighting, change cameras or anything involving editing, it will be done through the project window.

KeyShot® Manual

Scene Tab

This will show any models, cameras and animations that you have in your scene. Animations can also be added through here.

Models

Models imported from a CAD system will retain any hierarchy that has been setup and will be the top item displayed in the scene tree. The hierarchy of a model can be expanded by clicking the sign. Any model or part that is selected will highlight in the realtime view if this option is set in your general preferences. Models or parts can be hidden and unhidden by selecting the check. Models or parts can be renamed or deleted by right clicking on the part and selecting either option.

Cameras

The currently active camera will be represented by a blue icon. Other cameras can be made active by right clicking on the camera and selecting 'set as active camera' as shown on the left. Cameras can be renamed or deleted as well through the right click menu.

Scene Sets

Scene sets allows the user to save the current state of their scene, and to choose which camera to save it with. To create a scene set, right click "Scene Sets" in your scene tree and click "Add Scene Set." The user can make changes to the scene with the ability to go back to the saved scene set by double clicking the scene set, or by right clicking and clicking "Make Scene Set Active." The user can also rename and delete a scene set via the right click menu.
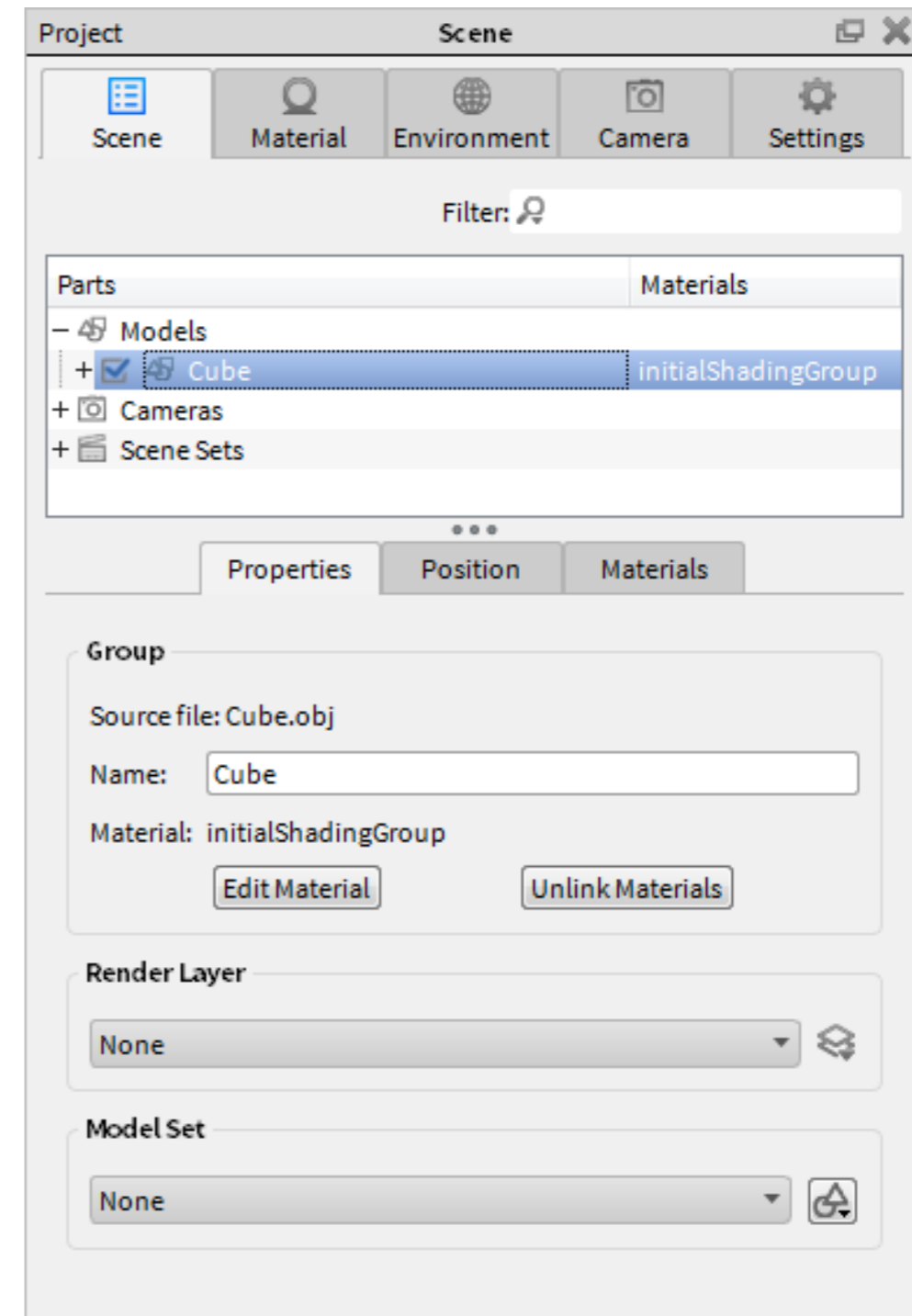
KeyShot® Manual

Scene Tab

Properties

Contains the name of the part, model or camera, and buttons to quickly unlink materials and edit the material applied to the part. These actions are also available on the right click menu.

Render Layers (Pro)

Allow placement of a model or part on a layer to be rendered. Select/ multi-select the parts/models and select the render layer from the drop down. This will apply your selection to the render layer. When rendering you will need to enable render layers on the passes output tab.

Rounded Edges

Rounded edges can be applied to any part within your model. This will apply a fillet to the part giving it a rounded look. For the best results, keep a radius under 1.
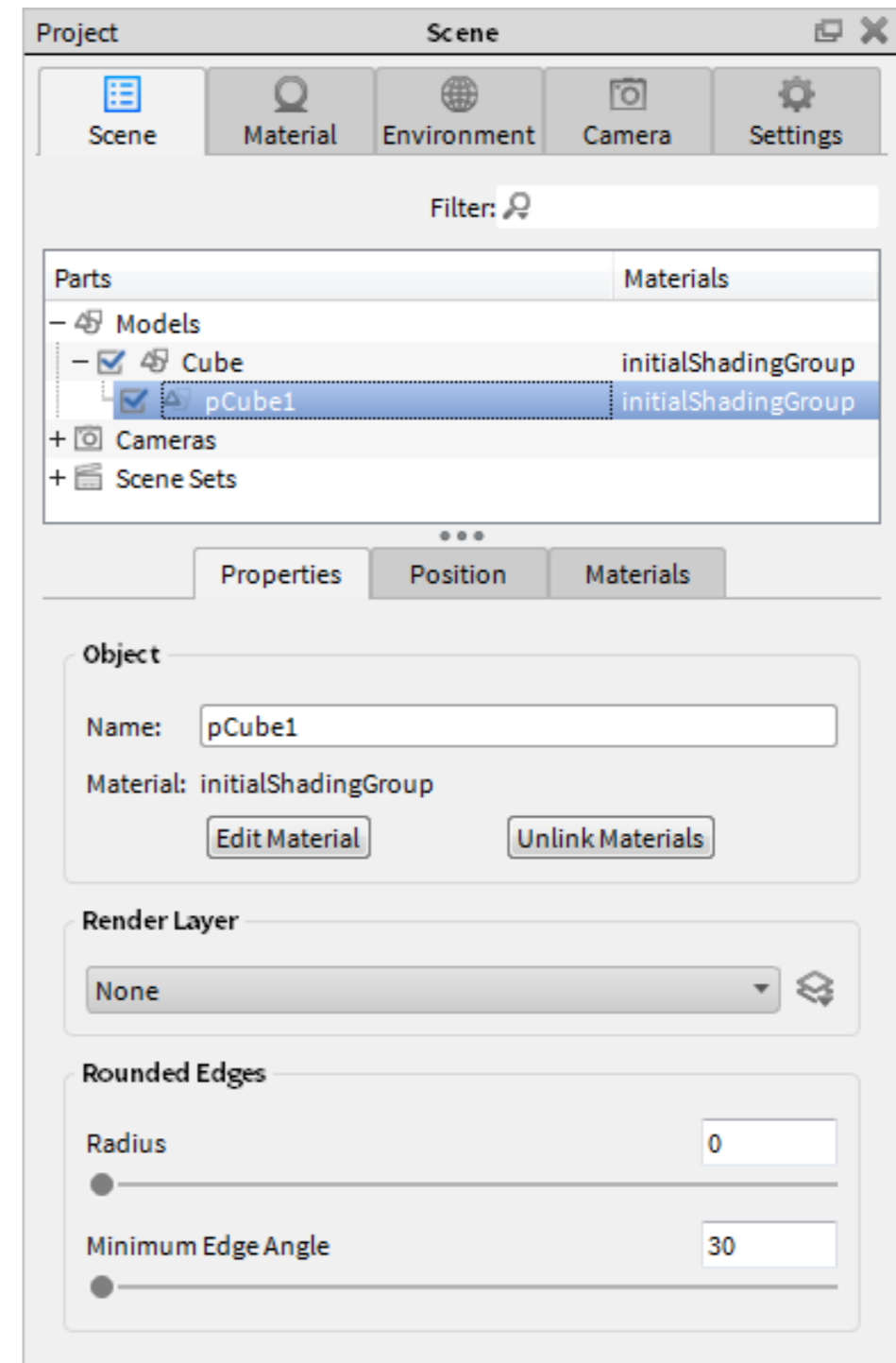
KeyShot® Manual

Scene Tab

Position

When a model or part is selected the position tab becomes available. This tab contains the move tool, which enables the move tool widget. You can also transform the model or part numerically in the corresponding fields within this tab.

Materials

The materials tab within the project window is a list of all active materials within your scene. This is an invaluable tool as you can link similar materials, select parts that have linked materials, or unlink materials from parts from this tab.
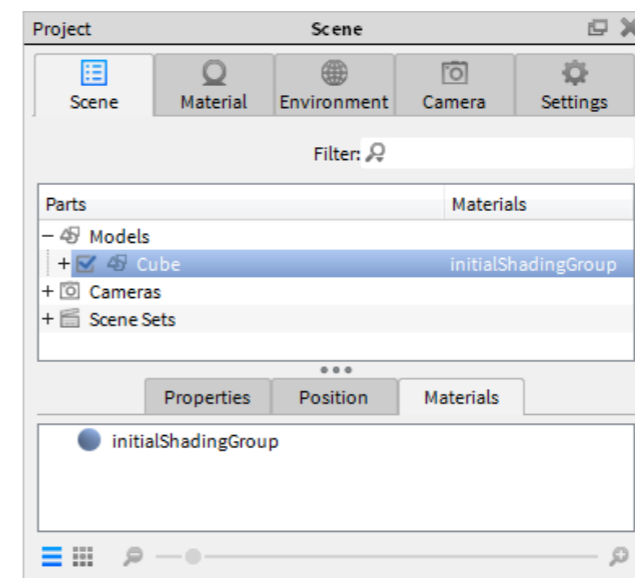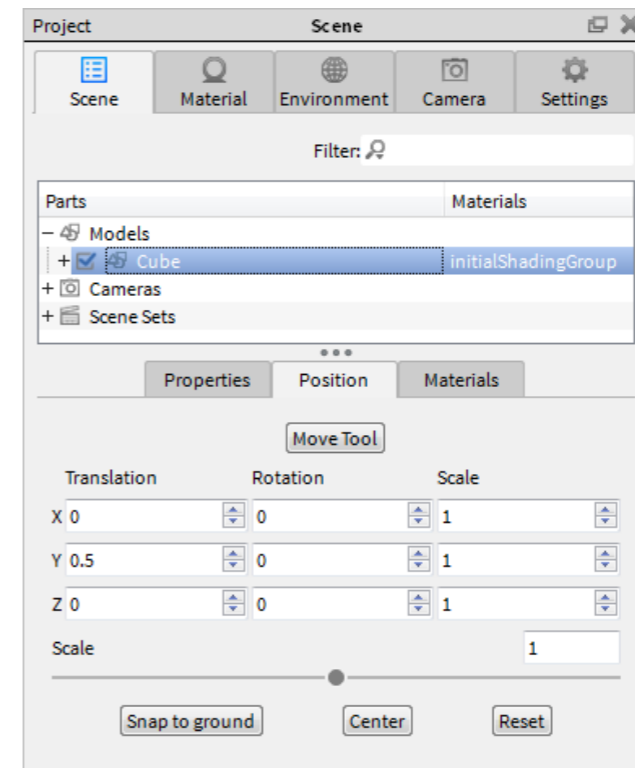
KeyShot® Manual

Scene Tab

Right Click Menu
Right clicking on items in the scene tree brings up the right click menu which has many features not available elsewhere.

Animation
Add an animation to the part selected. Choose from translation, rotation, and fade from the flyout.

Material
Link and unlink materials to parts, as well as the ability to change the materials type. This is useful at the model if you want to change the material globally.

Visibility
Options to show all, show only selected, hide selected, and unhide selected. Visibility can also be toggled with the check icon within the scene tree panel.

Move
Open the move widget tool on the selected model/part.

Duplicate
Creates a copy of the 3D data in the scene.

Pattern (Model only)
Create instanced copies of your model in pattern formation. Since these copies are instanced, patterned geometry will not decrease performance or add to file size.
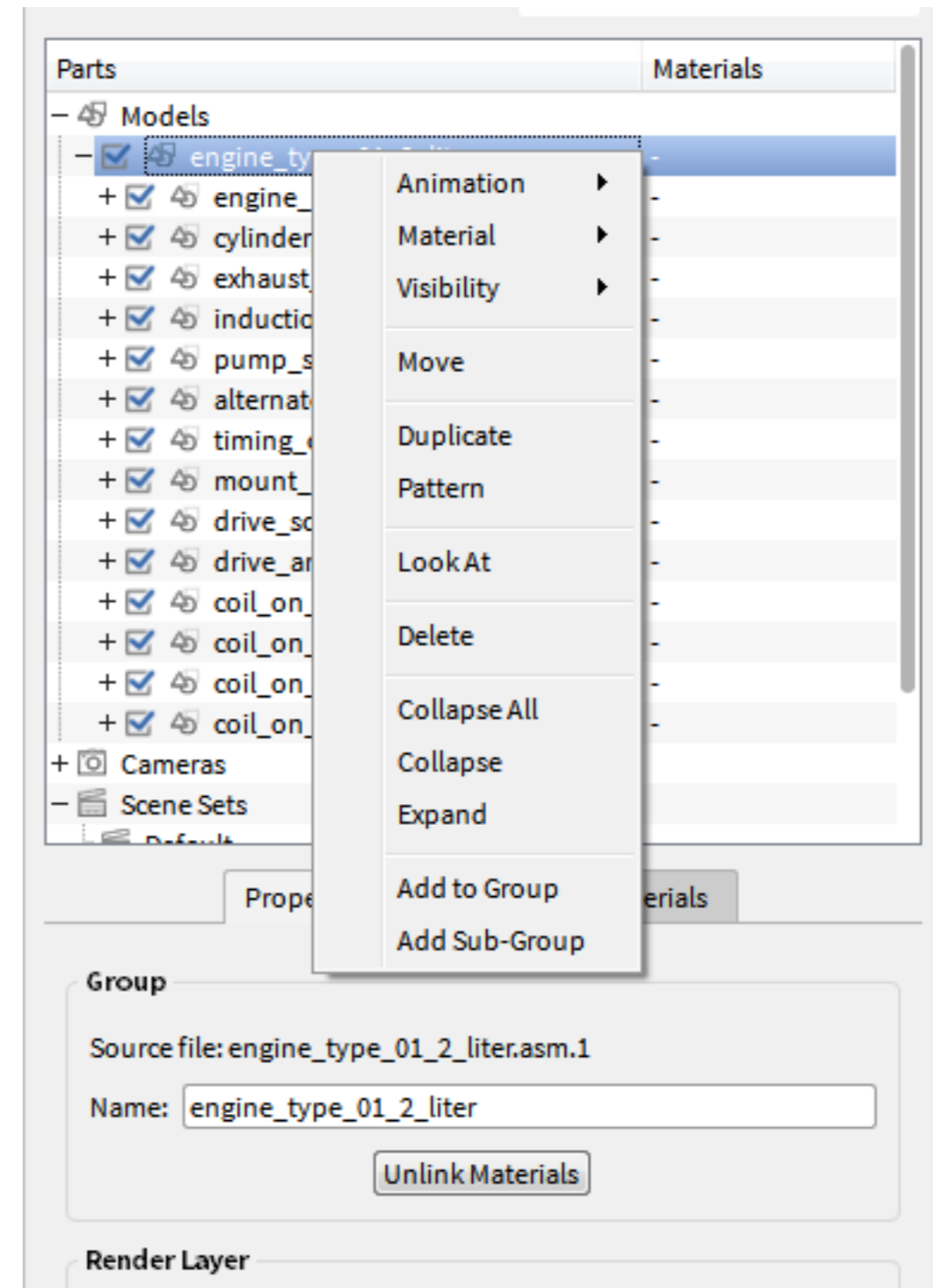
Scene Tab

Look At
Changes the point around the camera centers on.

Delete
Delete the model part from the scene.

Collapse All
Collapses to all root entries in the scene tree

Collapse
Collapse selected to root

Expand
Expand all entries within a model/part

Add to Group
Change where the part is located in the scene tree to better organize the 3D data in your scene. WARNING: Changing groups can affect tools and effects that are Dependant on existing scene tree structure.

Add to Sub-Group
Move the part to a subgroup within a part. WARNING: Changing groups can affect tools and effects that are dependent on existing scene tree structure.
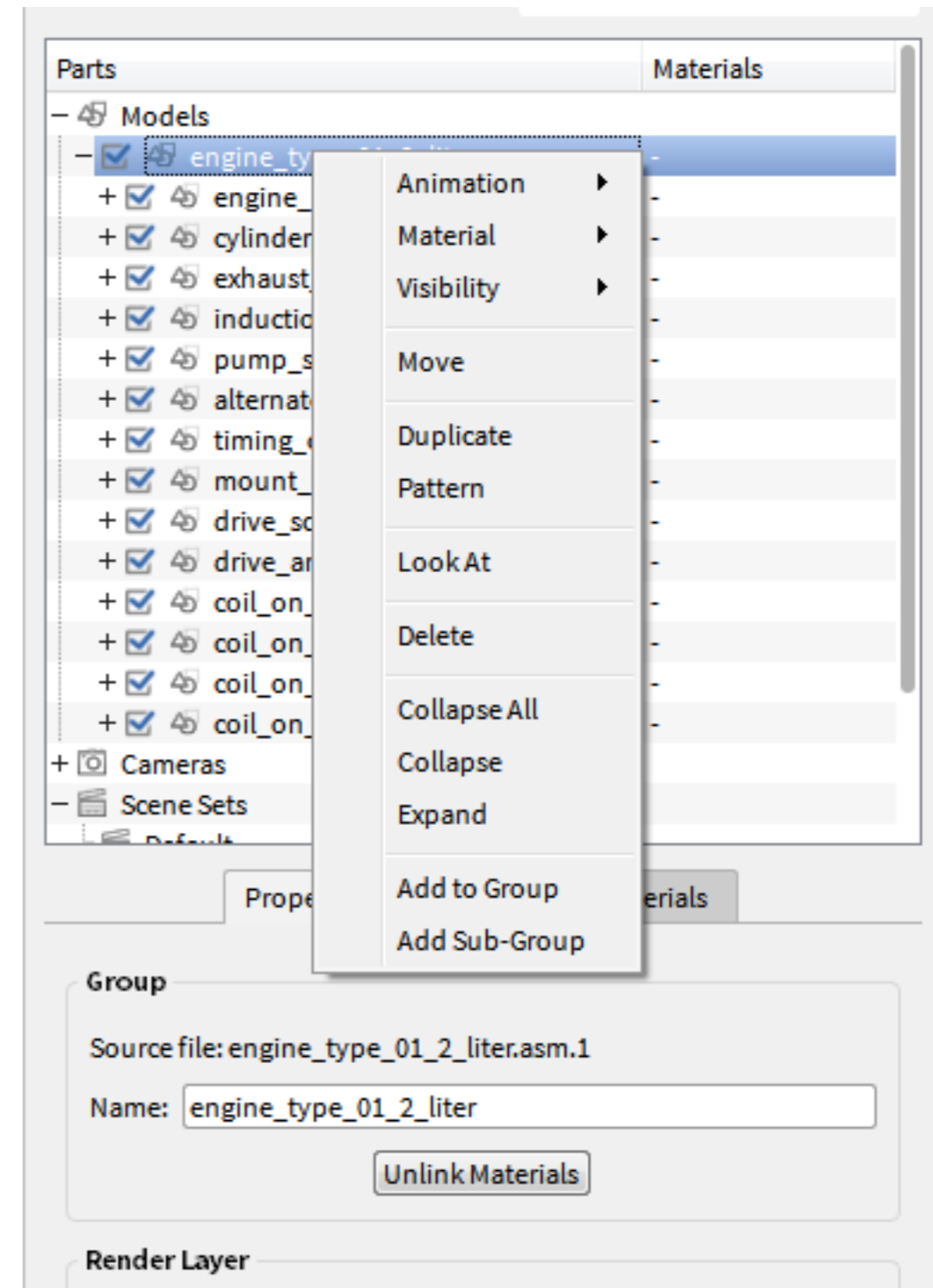
Materials Tab

When a material is selected the properties are displayed under the materials tab in the project window. Selected materials can be renamed in the 'Name' field and can be saved to the material library by click the save material button the "Save to library" button.

Material types can be changed by selecting a type from the 'Type' drop down menu. All material types contain only the parameters needed to create that specific type of material.

Properties

The properties tab will display the properties for the currently selected material type. By default only basic properties are shown. If additional properties are available, they can be accessed by clicking the button next to the basic property.

Textures

Textures such as color maps, specular maps and opacity maps are added to the material in this tab. See the section in the manual that covers texturing for more specific information.

Labels

Labels can be added to the material in this tab. See the section on the manual that covers labeling for more specific information.
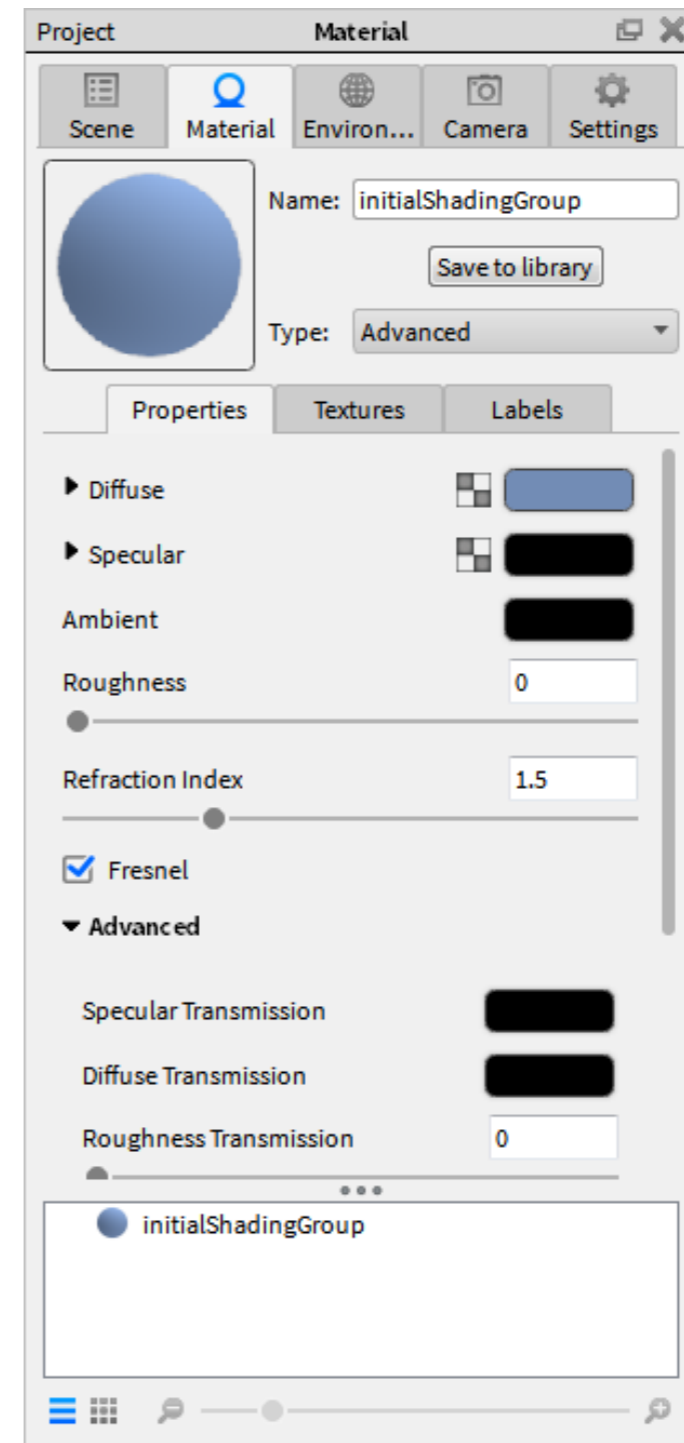
Environment Tab

Environment File

Lists the name of the currently loaded environment image. The supported formats are .hdr and .hdz (KeyShot proprietary format). Clicking the thumbnail opens the HDRI editor (Pro). Click on "Load Environment" to open an HDRI or HDZ. Click "Refresh" if changes were made to the HDRI externally.

HDRI Settings

Contrast

Adjust the contrast on the environment which can sharpen and soften the shadows. It will also increase the intensity of the light and dark areas which can negatively affect the realism of the lighting.

Brightness

Control the amount of light emitted into the scene from the environment HDRI.

Size

Control the size of the environment that is lighting the model. This is a method of tuning the reflections and lighting in your scene

Height

Shift the height of the environment up and down which is a method of tuning the reflections and lighting in the scene

Rotation

Rotate the Environment for optimal lighting, shadows and reflections.

KeyShot® Manual

Environment Tab

Background

Lighting Environment

The background will render with the environment used.

Color

Background will be replaced with a solid color. Click the color swatch to choose a color.

Backplate Image

Use an Image file for the rendered background. Aspect ratio of render window will automatically lock to the aspect ration of the image used. This can be turned off in preferences under "General"

Adjust Brightness

Enabling this allows "brightness" and "gamma" adjustments made in the settings tab to affect the backplate.

Match Perspective

Align perspective guides to reference points in your backplate for accurate camera focal length and twist to match scene with your backplates perspective.

Refer to coordinate legend to match coordinate directions.

Environment Tab

Ground Shadows

Enable the ground shadows in the scene. When enabled, there is an invisible ground plane that shadows from models are projected on.

Ground Reflections

Reflections of any 3D geometry will be show on the same invisible ground plane that ground shadows are projected on.

Shadow color

Click the color swatch to choose a shadow color.

Flatten ground

Flatten the ground of the environment. It is only visible when the "lighting environment" is set in the background option listed above.

Ground size

This will increase or decrease the size of the ground plane that shadows and reflections are cast on. The best approach is to reduce the ground size as much as possible without clipping shadows or reflections.

KeyShot® Manual

Backplates

Backplates are images that can be placed behind a 3D model and used as a background image. This allows a model to be interactively positioned into a photo. The lighting is not affected when a backplate is used. If there are transparent materials on the model, the backplate will be visible through them. KeyShot comes with matching HDRI and backplate sets. However, you can use any common image file format as a backplate.
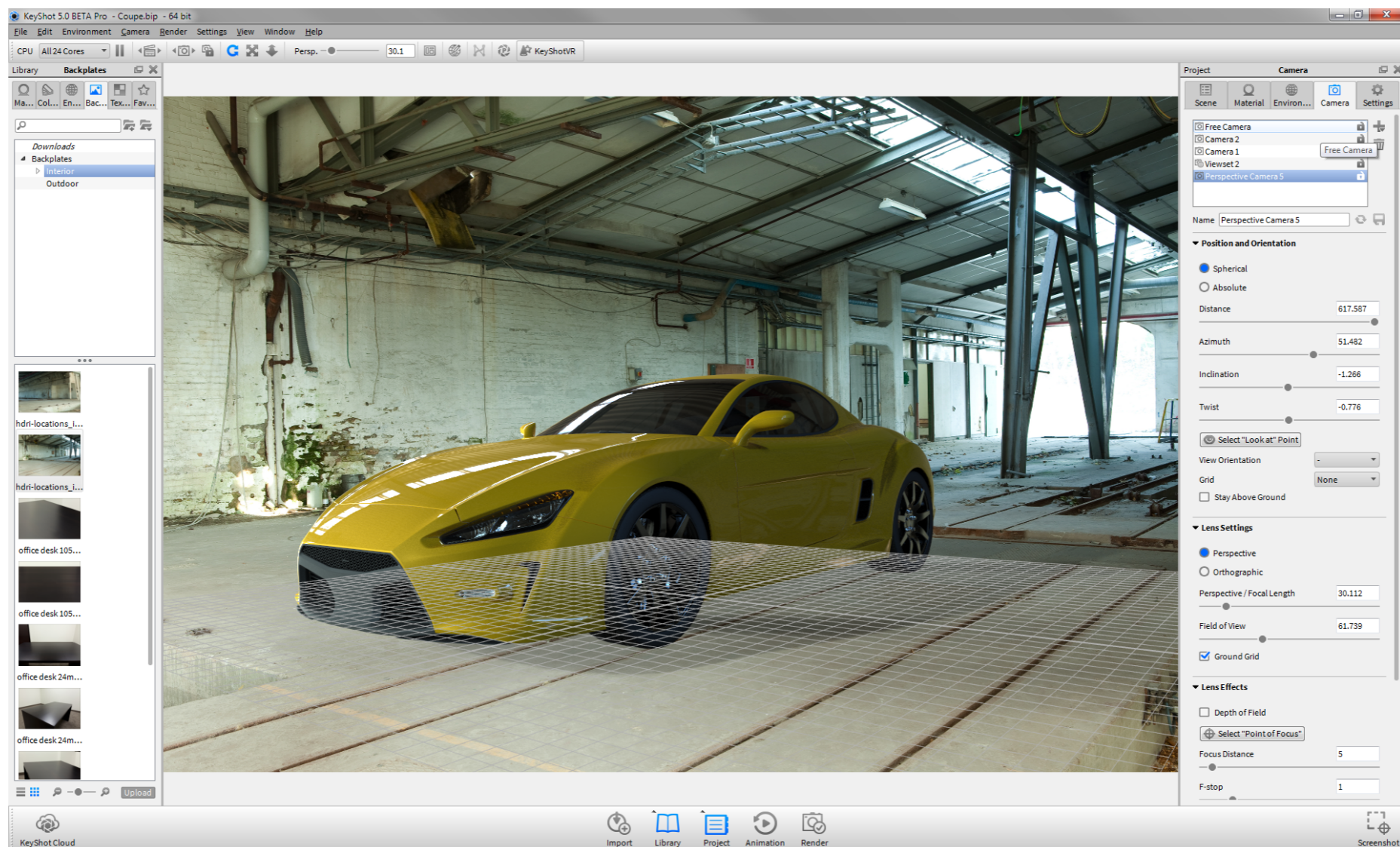
KeyShot® Manual

User Interface > Project Window > Enviro. Tab > Backplates > Settings

Adjust Brightness

When adjust brightness is enabled in backplate settings in the environment tab, the backplate will be affected by the brightness and gamma setting in the realtime settings.

Adjust Aspect Ratio to Backplate

Enabling adjust aspect ratio to backplate in preferences will cause the realtime view to snap to the same width to height ratio of any backplate that is loaded.

Match Perspective

The Match Perspective tool is a quick and easy way to match the perspective of your backplate for a seamless integration.

To use, align the arrows along reference points in the backplate. Choose 2 point perspective for 2 pairs of arrows, or 3 point perspective for 3 pairs of arrows to match.

Lock Rotation locks the azimuth parameter in your camera settings so your model stays at the center of your scene.

The colors of the arrows correspond to the colors of your X, Y and Z arrows in your coordinate legend. Use that as your guide as well when lining up the arrows with your reference points.

If you want to start over, click reset lines to bring the perspective lines back to default.

Match Perspective works best with backplates with parallel lines that can be referenced.

KeyShot® Manual

Camera Tab

Cameras in KeyShot have some of the same settings that real world cameras have. These can be used to create similar effects that are used in photography. In addition, views can be saved and easily viewed to help explain features of a design.

Camera List

List of all saved cameras. When the realtime view is moved, the selected camera will display the (unsaved) state, and the revert icon will be available next to the name field below the list. The user can either click the revert icon to return to the last saved state, or click the save icon to save the new camera state.

Unlocked/locked buttons

Lock and unlock the currently selected camera. If the camera is locked all parameters will be grayed out and cannot be changed.

Add Button

Add Camera

Add a new saved camera to your camera list. After making changes, click the save icon to save the changes to the camera.

Add Viewset (Pro)

Viewsets save your camera, environment, and backplate settings. After making changes, click the save icon to save the changes to the viewset.
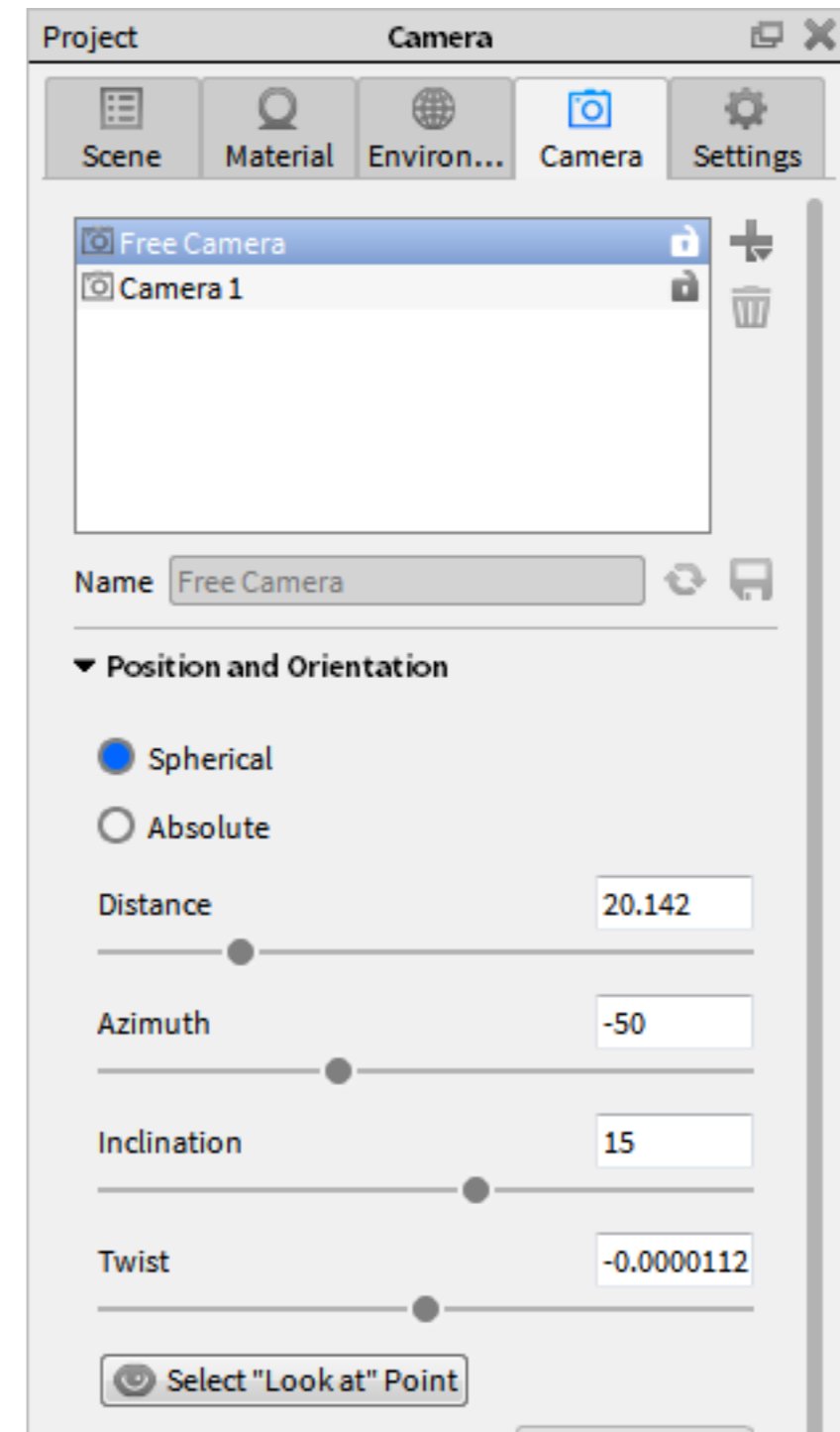
KeyShot® Manual

Camera Tab

Position and Settings

Spherical/Absolute

Spherical settings pertain to the location and angle of the camera in relation to the scene. Absolute controls the camera in relation to the XYZ coordinates.

Distance (Spherical)

Dolly the camera in and out. The larger the number, the further away from the center the camera will be.

Azimuth (Spherical)

Controls the orbit of the camera 360° around the look at point.

Inclination (Spherical)

This will control the vertical inclination of the camera or"elevation", allowing cameras to look directly down or directly underneath objects.

Twist (Spherical)

This will twist the camera which will tilt the horizon line and allow the creation of "Dutch angles".

Look At Point

 Click and select a point in realtime view to orient around that point. Now when camera dolly is used, it will dolly in to that point. "Look at" can also be selected, by right clicking a part on the model and selecting "look at"
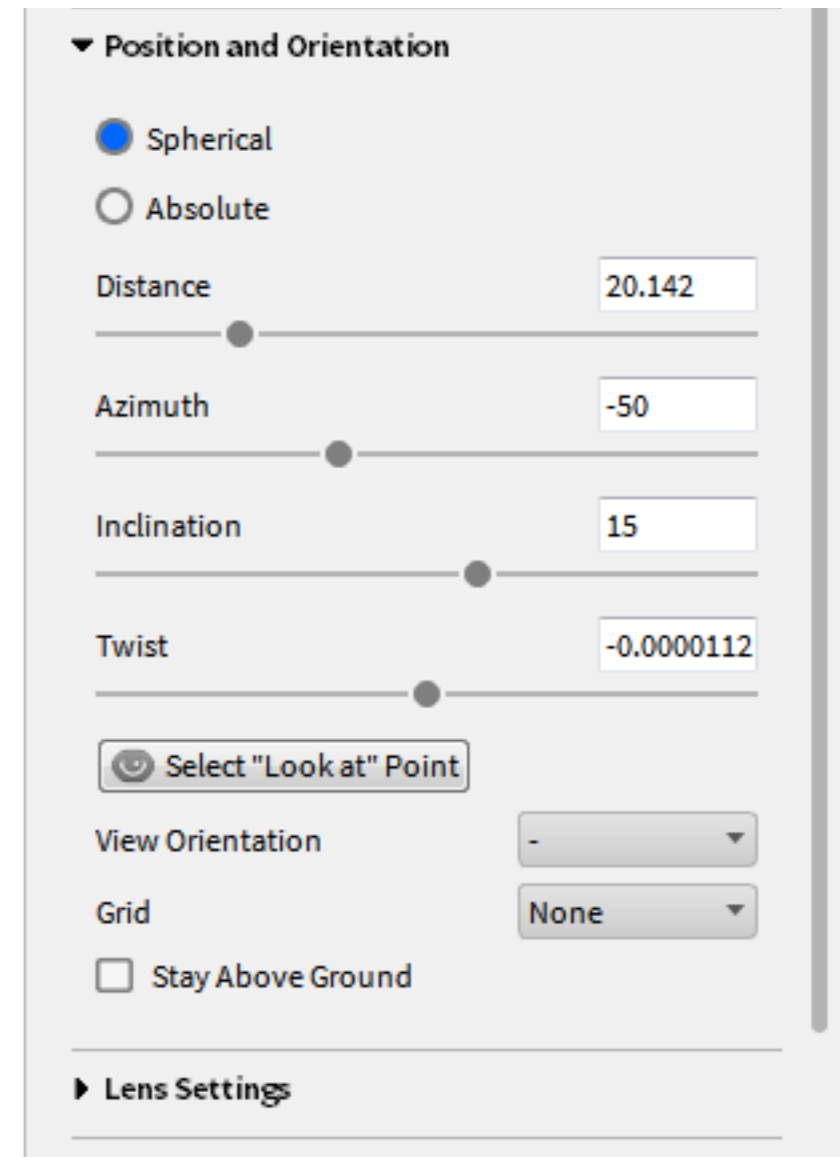
Camera Tab

Position and Settings

View Orientation

Presets for front, back, left, right, top and bottom views. Selecting any of these will move the currently selected camera to that position.

Stay Above Ground

Locks the camera to stay above the ground plane.

Lens Settings

Perspective/Orthographic

Perspective mode enables vanishing points and is used for realistic renderings. Orthographic removes perspective and is used primarily for technical renderings.

Perspective/Focal Length

This will allow different focal lengths to be set the same way they are used in actual photography. Lower values simulate wide angle lenses and higher values simulate zoom lenses.

Field of View

This will be the cameras angle of view directly in front of it. A wide angle lens may have a 180 degree field of view, whereas a zoom lens may have a 20 degree field of view.

Ground Grid

Displays a ground grid to help match perspective with a backplate.
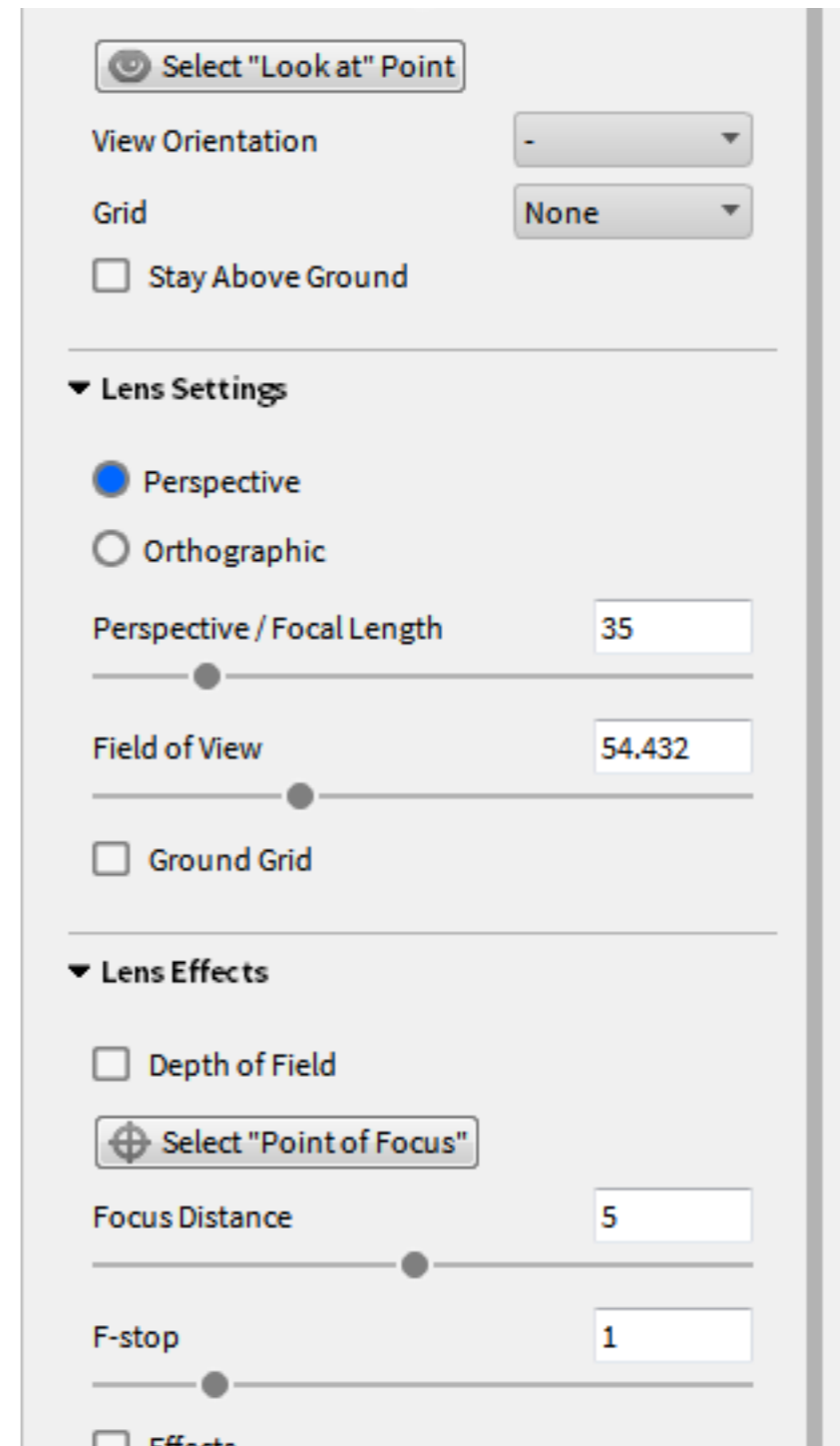
KeyShot® Manual

Camera Tab

Lens Effects

Depth of Field

This is a technique that is used in photography to help focus a viewer's eye where the photographer would like it to go. This is accomplished by blurring areas of the image while other areas remain in focus.

Select Point of Focus

This tool automatically finds the focus distance to the where you clicked on the model. Simply click the button, and click on your model where you would like the scene to stay in focus. Click the check to accept the changes

Focus Distance

Manually control where the point of focus will be. Best used as refinement of focus distance after using "Select Point of Focus."

F-Stop

Use real world camera settings to adjust the range of what is in focus.

Bloom Intensity

Bloom will add glow around emissive materials and add an overall softening to the image. Increase the slider to create a brighter glow.

Bloom Radius

Affects how far a bloom extends from the edges.

Vignetting Strength

Darken the corners and edges of your frame.
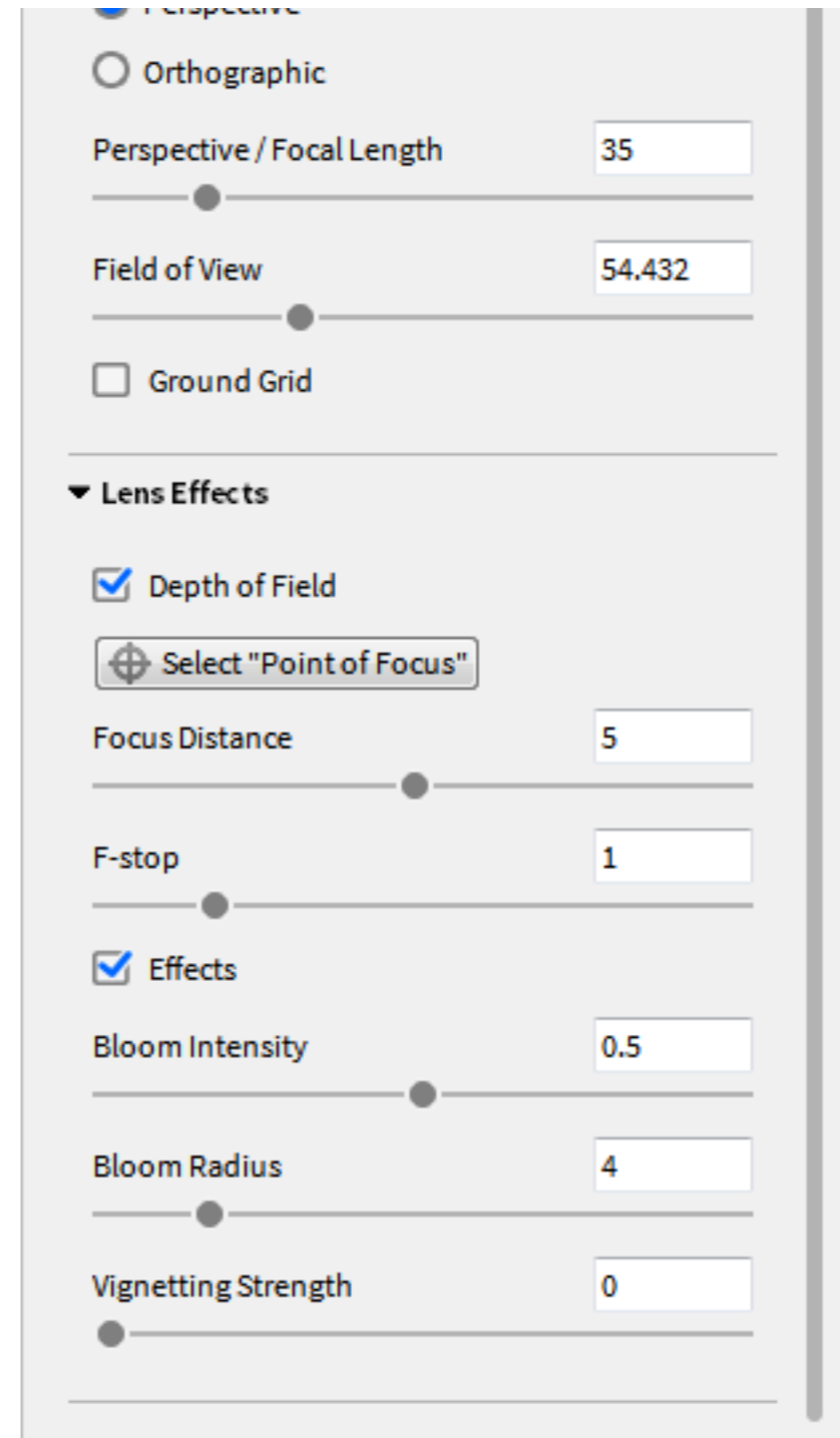
KeyShot® Manual

Settings

Resolution

Set the resolution dimensions of your realtime render window. Click on presets to choose from common sizes used in various media. Enable "lock Aspect" to keep the aspect ratio constant when you resize the window. Enable "Lock Resolution" to lock and changes to the size of the realtime render window.

Adjustments

Brightness

Control the brightness on the rendered image in the realtime view. It is applied as a post process (similar to adjusting brightness on an image in Photoshop) so the image does not have to be recalculated when adjusted as it does when environment brightness is changed.

Gamma

Gamma compensates the way colors are displayed for optimal color range for human vision. Lower values will increase contrast and higher values will decrease contrast. It is recommended for realistic renders to leave this value at the default. It is a very sensitive slider and can cause unrealistic results if adjusted too much in either direction.
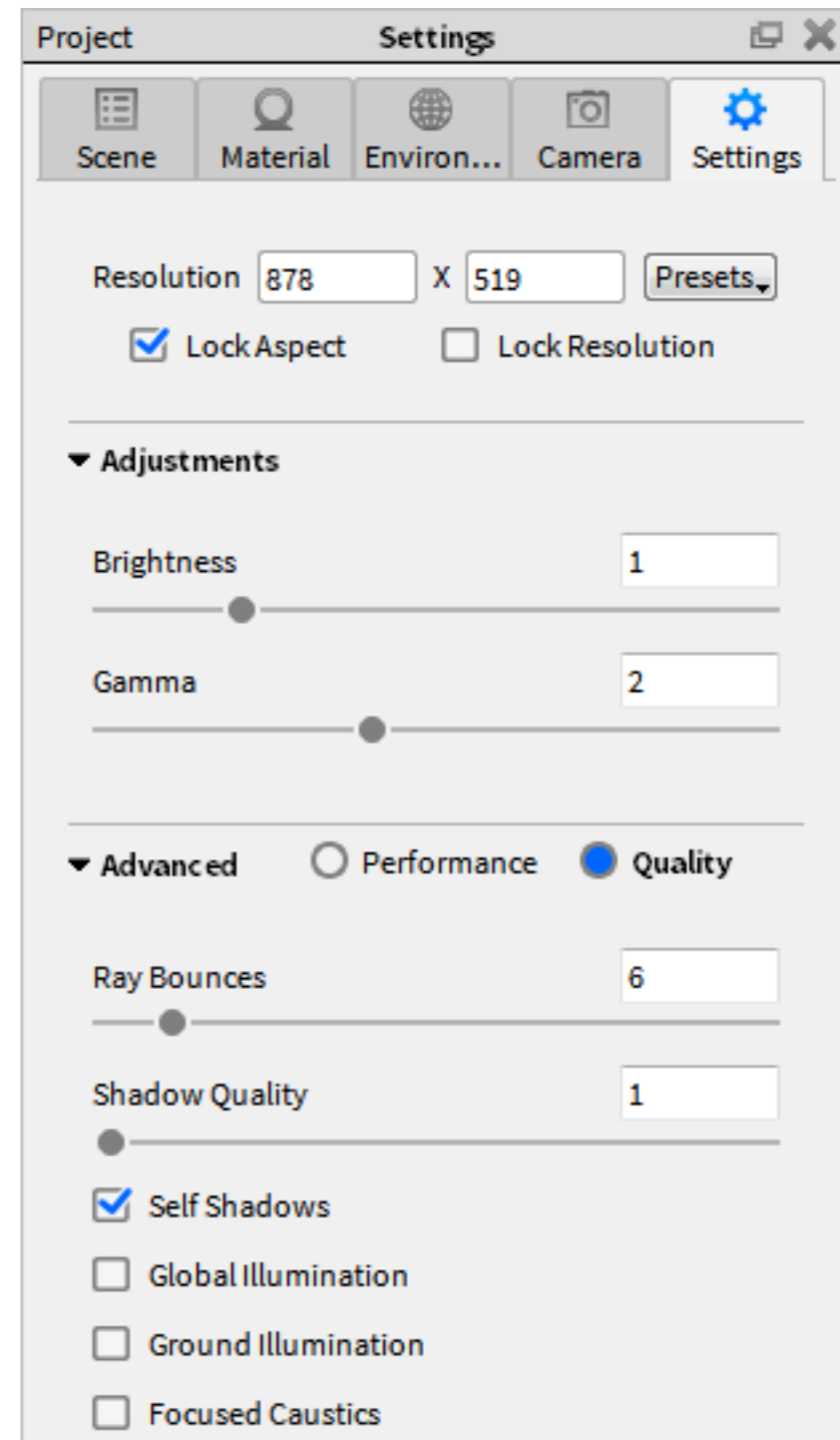
KeyShot® Manual

Settings

Advanced

Performance/Quality Toggle

This toggle switches the realtime render mode from "Performance" which renders faster but at a lower, quality, or "Quality" which renders slower but at a higher quality.

Ray Bounces

Increase or decrease the amount of times a ray of light is bounced around a scene. It is very important for calculating reflective and refractive materials. For more information on ray bounces see the section that covers ray bounces in realtime settings.

Shadow Quality

Increase the number of sub-divisions in the ground plane. This will give the ground shadow a higher resolution when rendering.

Self Shadows

Controls shadows being able to cast on the model.

Global Illumination

Allows indirect light bouncing between 3D geometry and allows other geometry to be illuminated when under transparent materials.

Ground Illumination

Allows indirect light bouncing from 3D geometry onto the ground.
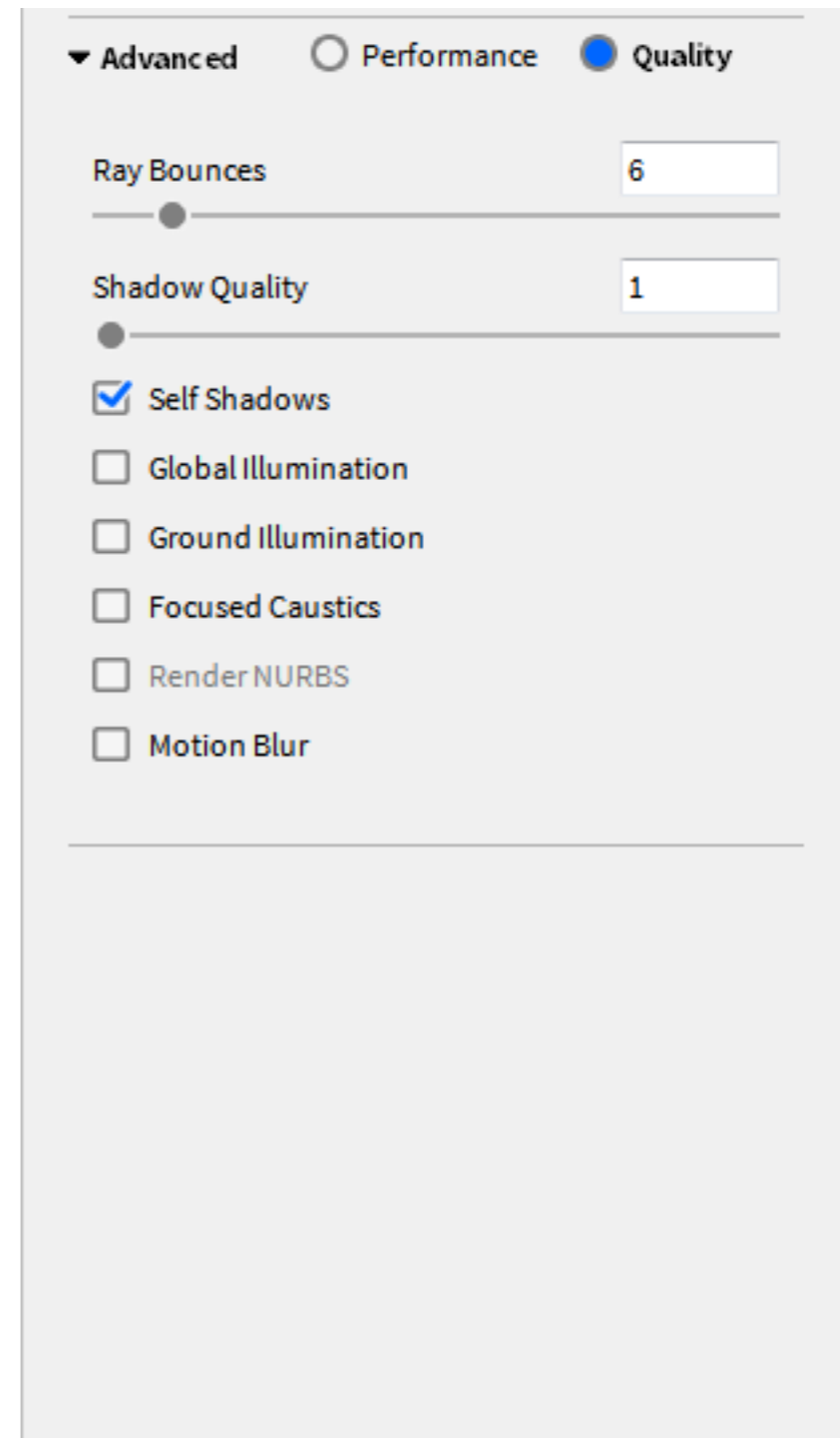
KeyShot® Manual

Settings

Advanced

Focused Caustics

This will concentrate the light being shined through an object. A common example of a caustics is when light shines through a drinking glass, and produces the curved region of bright light.

Render NURBs

NURBS ray-tracing allow the rendering of imported NURBS data within KeyShot. NURBS geometry imported from your favorite modeling system delivers accurate geometry with smoother edges over data imported as polygonal triangles that is made up of and displays straight lines on close detail shots. NURBS import is currently available for Creo, CATIA, Inventor, SolidWorks, NX, STEP, IGES, Parasolid and ALIAS.

Motion Blur

Enable this to see motion blur effects in your rendering. This effect will only be visible with an animation applied to a part of camera within the scene.
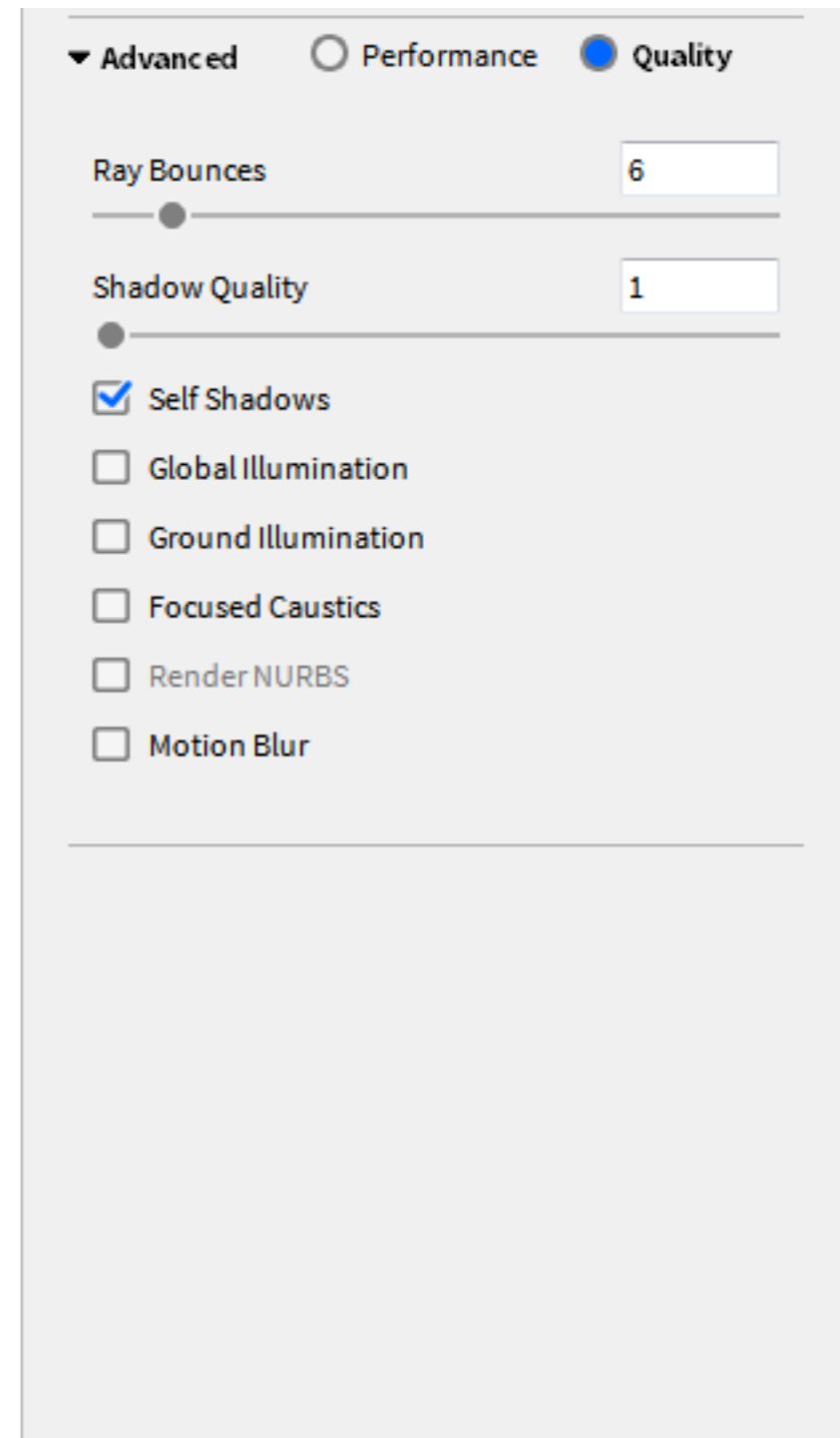
KeyShot® Manual

- **Overview**

- **Saving Screenshots**

- **Output**

- **Quality**

- **Render Queue**

- **Region Render**

- **Passes (Pro)**

- **Image Editor**

- **Export OBJ**

- **Publish to GrabCAD**

KeyShot® Manual

Rendering and Output

After a scene in KeyShot has been setup, the next step is to output either an image or an animation. There are multiple methods of accomplishing this. In addition, there are different render settings that come into play depending on what is being rendered. If these values are set too high, they can increase render time without any added gain. Understanding what the settings are and how to tune them will save time when rendering scenes. This section will cover these topics.
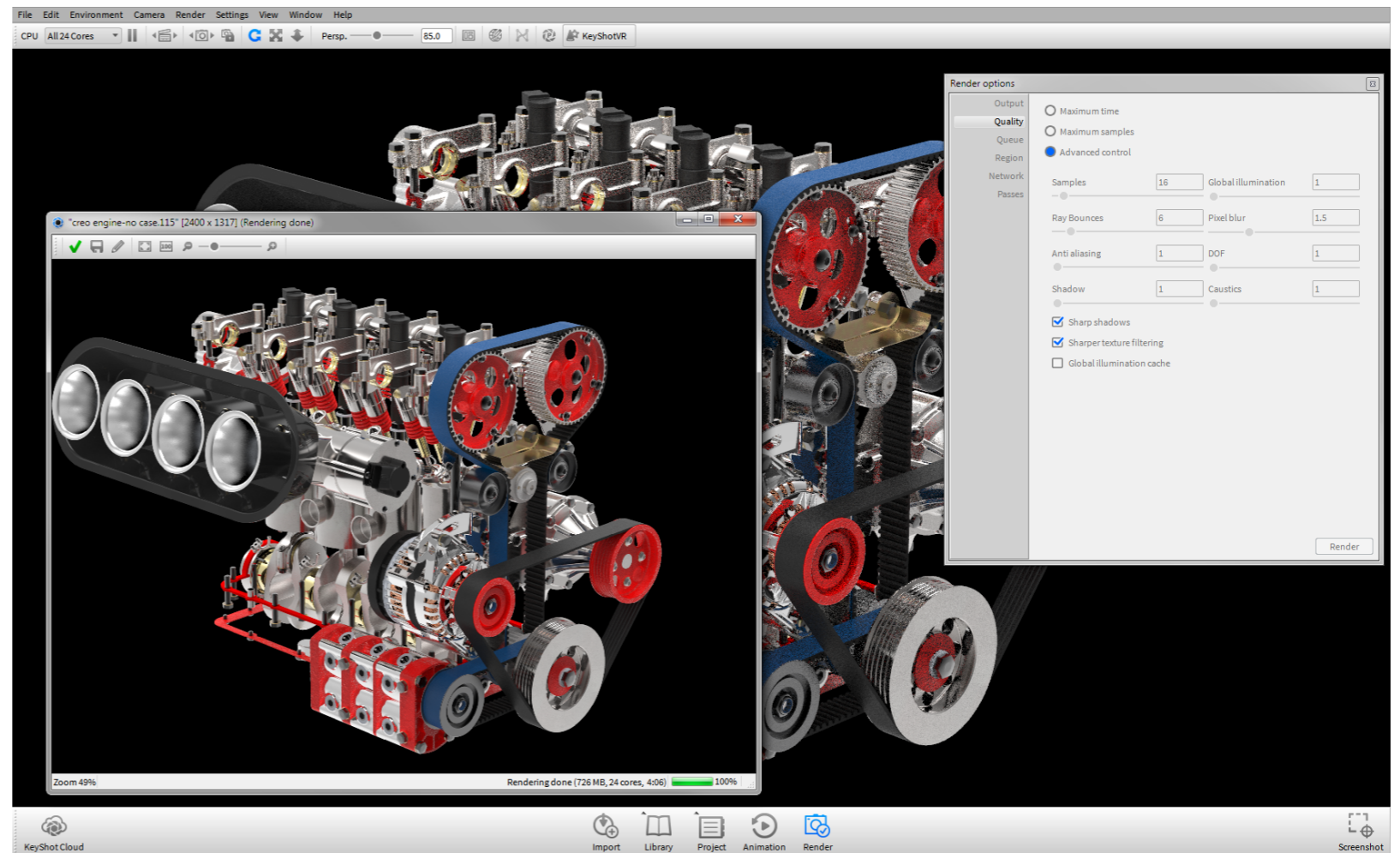
Saving Screenshots

A screenshot of the realtime view can be saved out at anytime using two different methods. The first method is by pressing the "p" key. The next method is by pressing the screenshot button found in the main toolbar shown in the image below. The screenshots will be saved to the renderings folder that is designated in KeyShot resources. Camera views can be saved with every screenshot if this option is enabled in preferences.
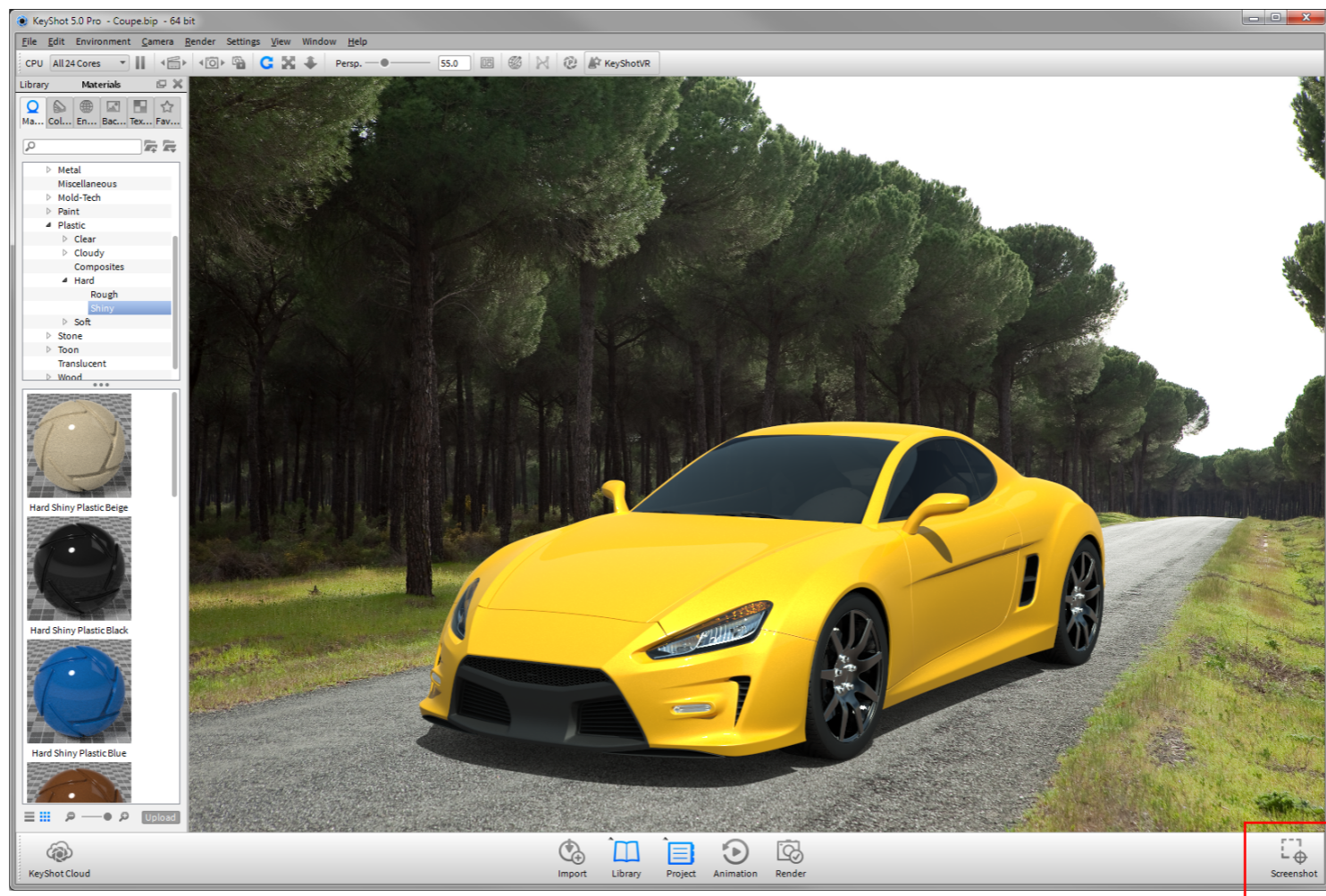
screenshot button

KeyShot® Manual

Output

Still Image
Default rendering mode. Enable to render still images.

Animation
This option is only available if there are animations in the scene.

KeyShotVR
This option is only available if there is a KeyShotVR in the scene.

Still Image

Name
Set the file name of the render. If one is not entered, default name will be the scene name with in incremental suffix

Folder
Choose where the render will be saved. Unless a specific folder is chosen, it will be saved in your KeyShot 5 renders folder

Resolution
Set the resolution of the output render. Type in, or select from presets.

Print Size
If final output is for print quality, enter in the dimensions of the print size as well as the desired DPI. After size has been set, the resolution will update with the correct dimensions.
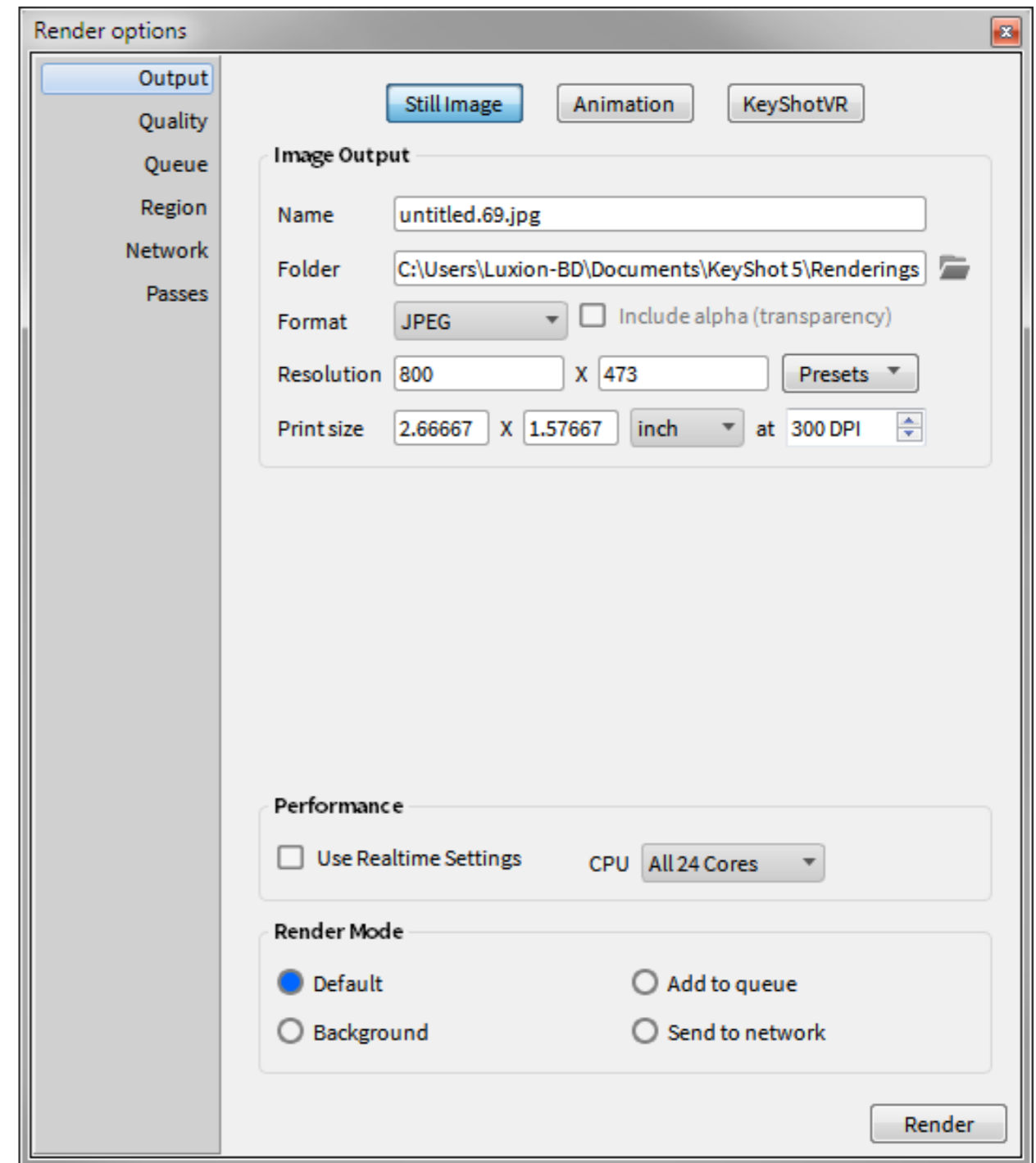
Image Output - Still Image

Performance

Choose the amount of cores used for rendering. You can either use the amount set for your realtime render, or you can set a different amount.

Render Mode

Choose a method to render your image. Default opens the render output window and begins rendering immediately. "Background" allows you to continue working in KeyShot while the render continues in the background. "Add to Queue" allows the user to set multiple render jobs and render them at a later time. "Send to Network" is only available if you also have "KeyShot Network Rendering installed.

Animation

Resolution

Set the resolution for the animation being rendered. Choose from the preset pulldown, or enter in your own custom dimensions.

Time Range

Specify the range of the animation to be rendered. Default is "Entire Duration." You can also set the designated work area to be rendered, as well a specific frame range. The "duration" and "frames" auto updates when time range is changed.
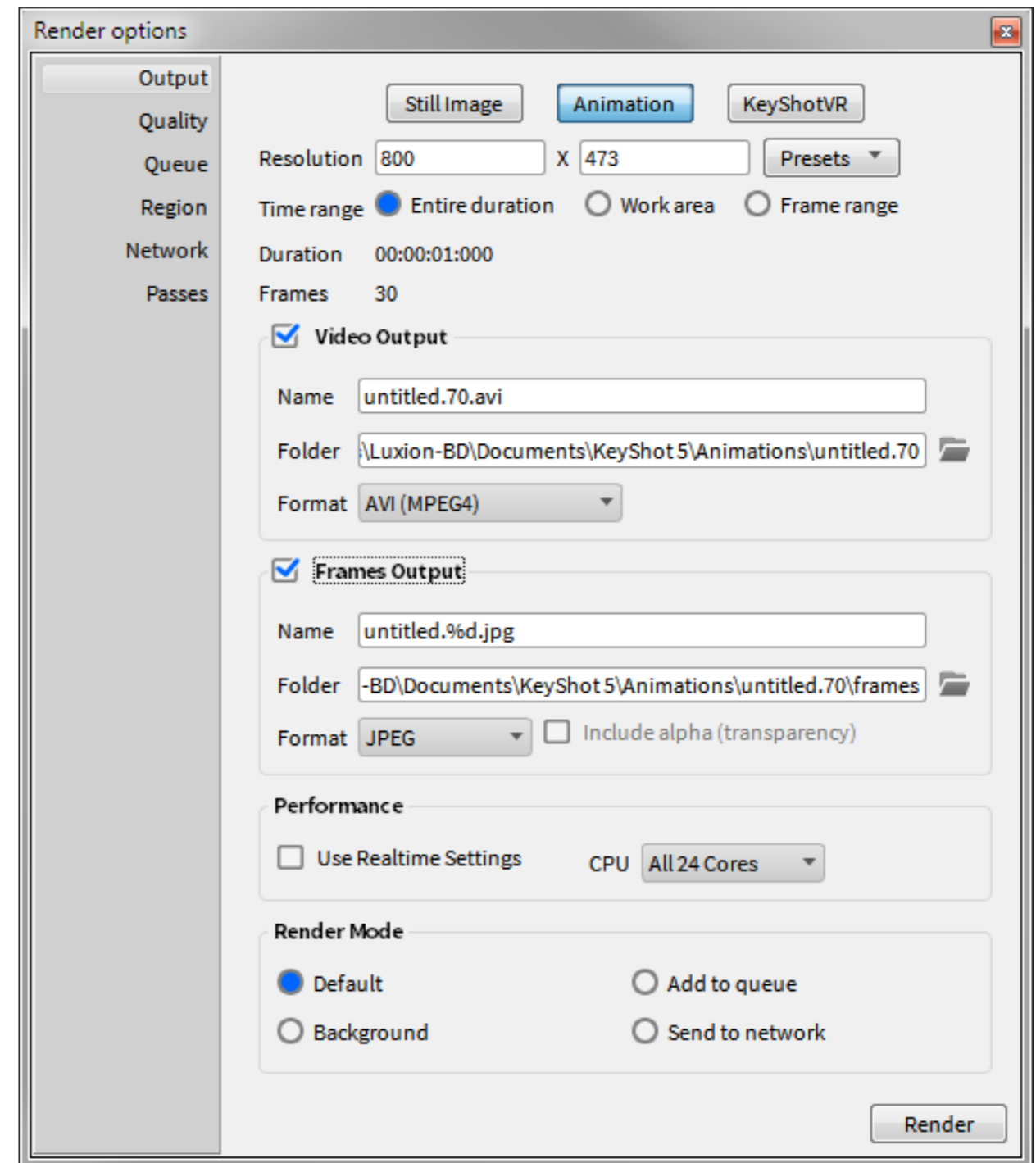
Animation

Video Output

Set the name and Folder location where the animation will be saved. Choose a file format with the pulldown.

Frame Output

Enable to output every frame used to create the animation. Designate the file name and folder where the frames will be saved. Choose a file format that the image files will be saved as. If it is a .tif or .png, the option to include the alpha channel becomes available.

Performance

Choose the amount of cores used for rendering. You can either use the amount set for your realtime render, or you can set a different amount.

Render Mode

Choose a method to render your animation. "Default" opens the render output window and begins rendering immediately. "Background" allows you to continue working in KeyShot while the render continues in the background. "Add to Queue" allows the user to set multiple render jobs and render them at a later time. "Send to Network" is only available if you also have "KeyShot Network Rendering installed.

Output - KeyShotVR

Review settings set in the KeyShotVR wizard. See section on KeyShot VR for a more detailed overview.

Render options

Output	
Quality	
Queue	
Region	
Network	
Passes	

Still Image | **Animation** | KeyShotVR

Resolution 800 X 473   Presets ▾

Time range ● Entire duration ○ Work area ○ Frame range

Duration 00:00:01:000

Frames 30

☑ Video Output

Name untitled.70.avi

Folder \Luxion-BD\Documents\KeyShot 5\Animations\untitled.70

Format AVI (MPEG4) ▾

☑ Frames Output

Name untitled.%d.jpg

Folder -BD\Documents\KeyShot 5\Animations\untitled.70\frames

Format JPEG ▾   ☐ Include alpha (transparency)

Performance

☐ Use Realtime Settings   CPU All 24 Cores ▾

Render Mode

● Default   ○ Add to queue

○ Background   ○ Send to network

Render

KeyShot® Manual

- [Advanced Control](#)

- [Maximum Time](#)

- [Maximum Samples](#)

Advanced Control

Samples

This will control the amount of rays per pixel that will be sent into the environment to gather information to determine that pixel's final shade. It is best to control this setting per material and set a value between 8 and 16 in the render settings. For information on samples and setting samples per material please see the section on roughness and glossy samples.

Ray Bounces

Ray bounces are the number of times rays of light are calculated as they bounce around a scene. For a detailed explanation and examples please see the section that covers ray bounces in the realtime settings.

Anti Aliasing

Anti aliasing is a method for smoothing out jagged edges that are created by pixels. Since pixels are made up of squares, they can produce a jagged look where edges meet. Anti aliasing smooths out these edges. In most cases the default value of 1 is sufficient.

Shadow Quality

Shadow quality will control the shadow quality for ground shadows. This can be tuned in realtime to determine what value is necessary. Please see the section on shadow quality found in the realtime settings.
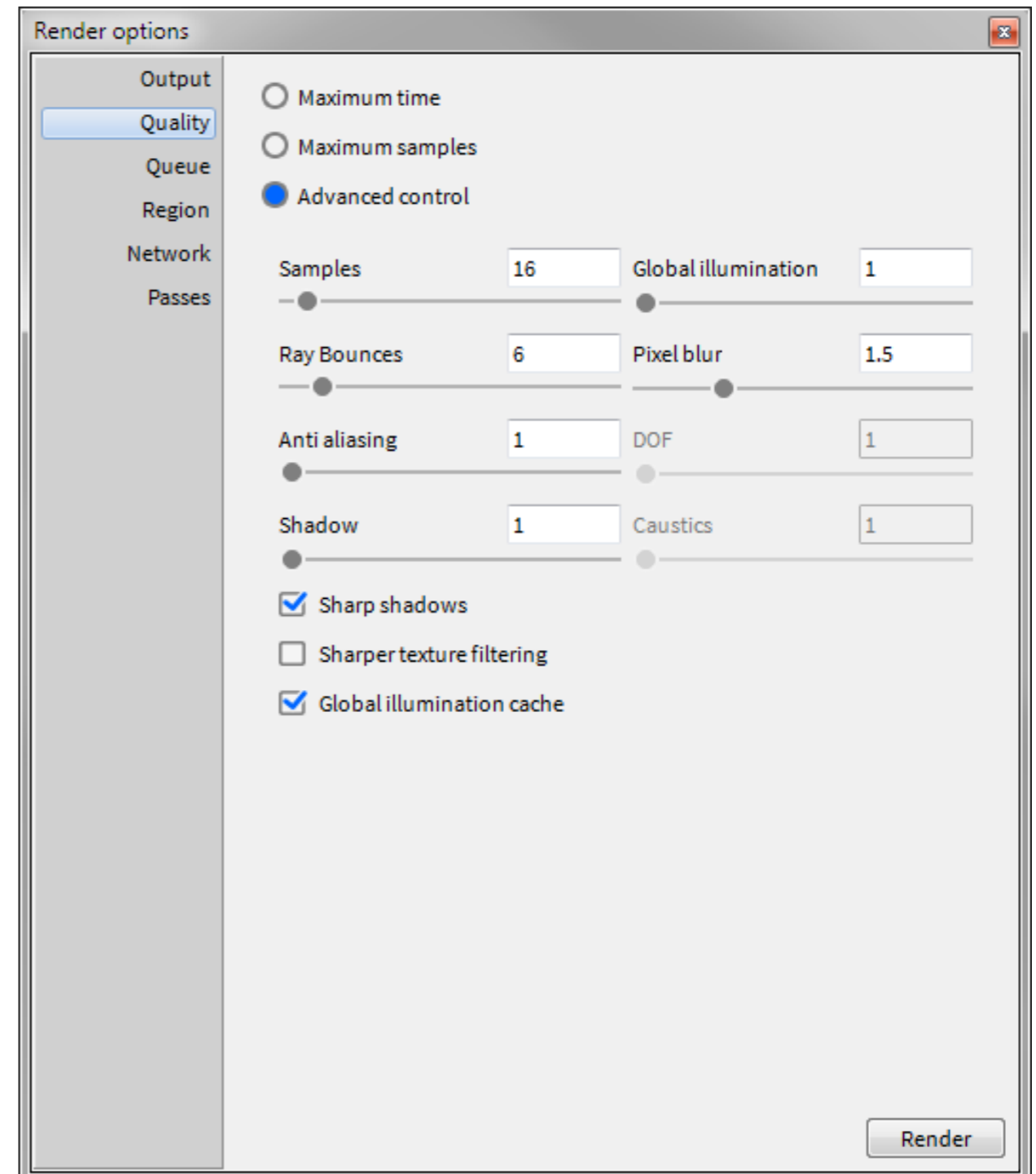
KeyShot® Manual

Advanced Control

Global Illumination Quality

This will control the quality of all indirect light bouncing. Increasing this value can dramatically increase render time. It is rarely necessary to set a value above the default value of 1. If Global Illumination is turned off, this parameter will be grayed out. For more information and examples please see the section on detailed indirect illumination in realtime settings.

Pixel Blur

This will apply a slight blur to the image to reduce the overly sharp look that computer generated images can have. Higher values will have more blur. This does not increase render time.

DOF (Depth of Field)

This will control the quality of depth of field if it is enabled in the camera tab. Increasing this value will have an effect on render time. For production quality work a value between 3 - 5 is recommended. If Depth of Field is not activated, this parameter will be grayed out. Please see the section on cameras for more information on depth of field.

Caustics

Increasing the value will improve the samples and quality of the caustics. If caustics are not enabled, this parameter will be grayed out. Please see the section on caustics for more information.
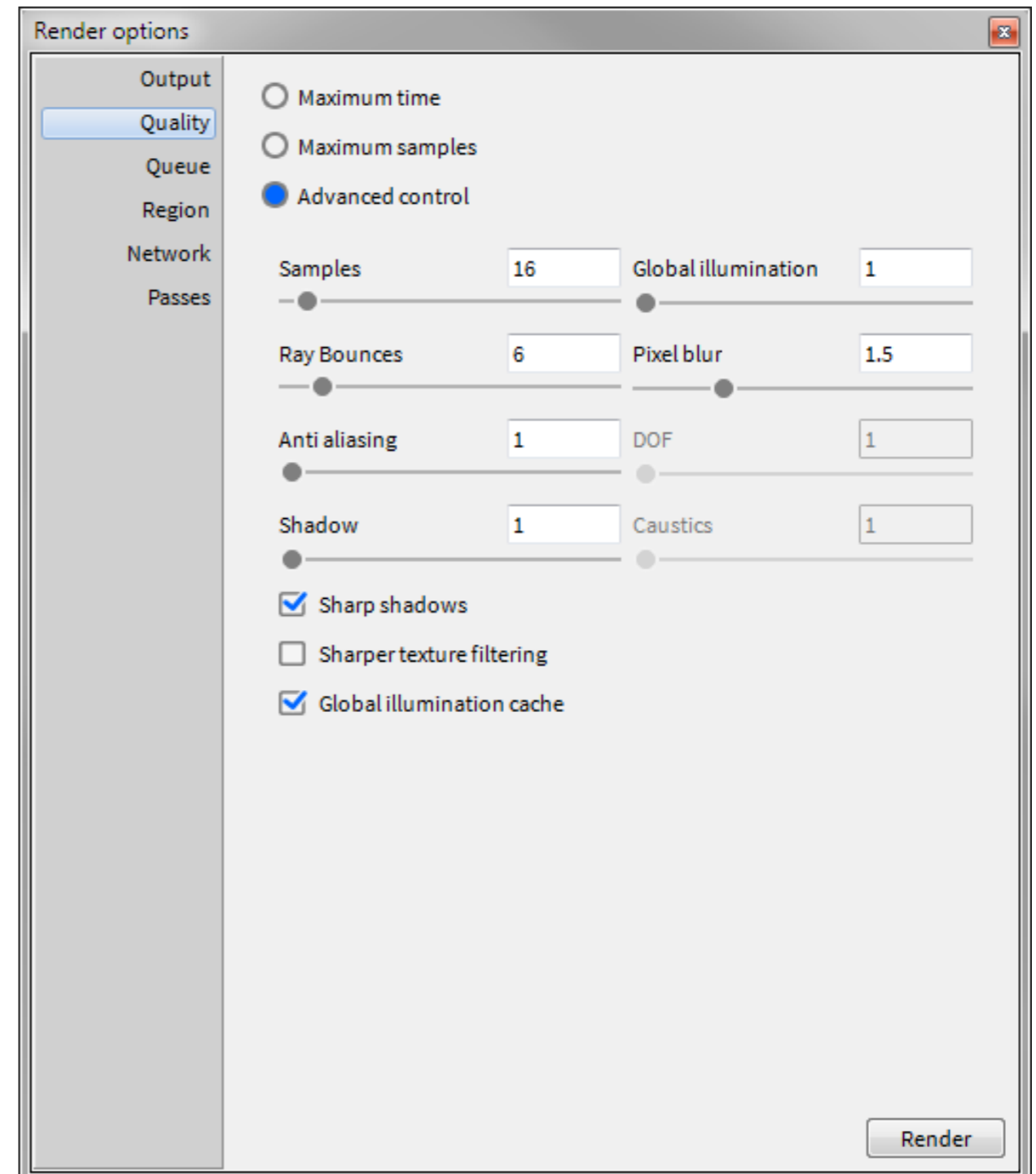
Advanced Control

Sharp Shadows

This will allow sharp shadows to be cast across 3D geometry when the lighting scenario would create a sharp shadow. It is more accurate to have this checked and it is enabled by default. It is generally recommended to leave this on.

Sharper Texture Filtering

This will attempt to preserve detail in textures when viewed at grazing angles. For example, imagine being eye level with a wood table and seeing the wood grain compress together. Detail can get lost in the compressed areas. This setting reduces the that loss of detail. This feature can increase render time so enable only when using textures with glancing angles.

Global Illumination Cache

Disabling GI Cache replaces the potential dirty shadows and black spots with noise. Increasing GI quality will reduce the noise.
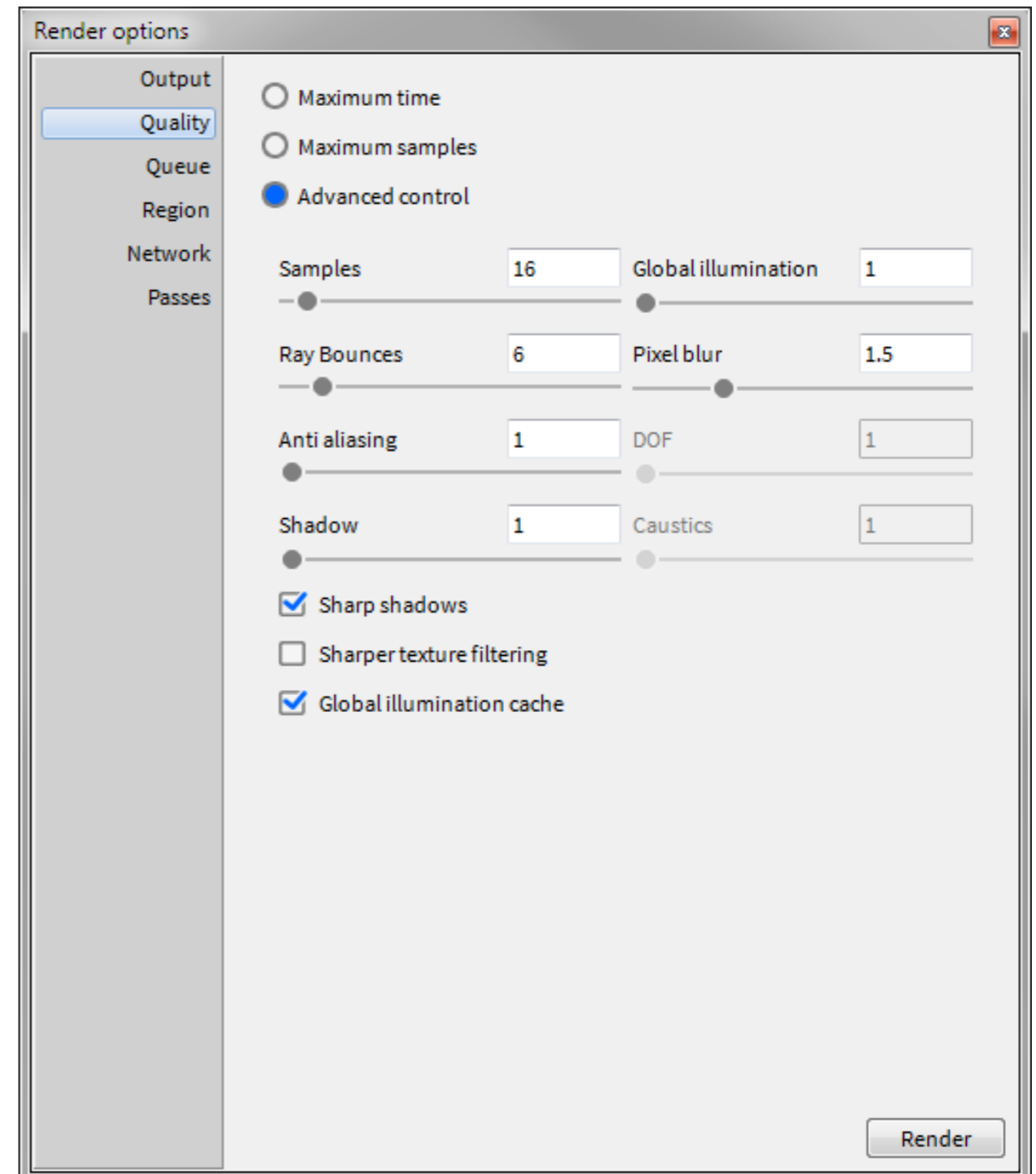
KeyShot® Manual

Maximum Time

The maximum time method of image/animation output will progressively refine the render for the amount of time set.

This mode uses the same rendering technique as what you see in the realtime view. This technique is also used in maximum samples mode, but differs from the method used in advanced control mode.

When rendering an animation, you may set the maximum time for each frame to render, or set a total duration for the entire animation.
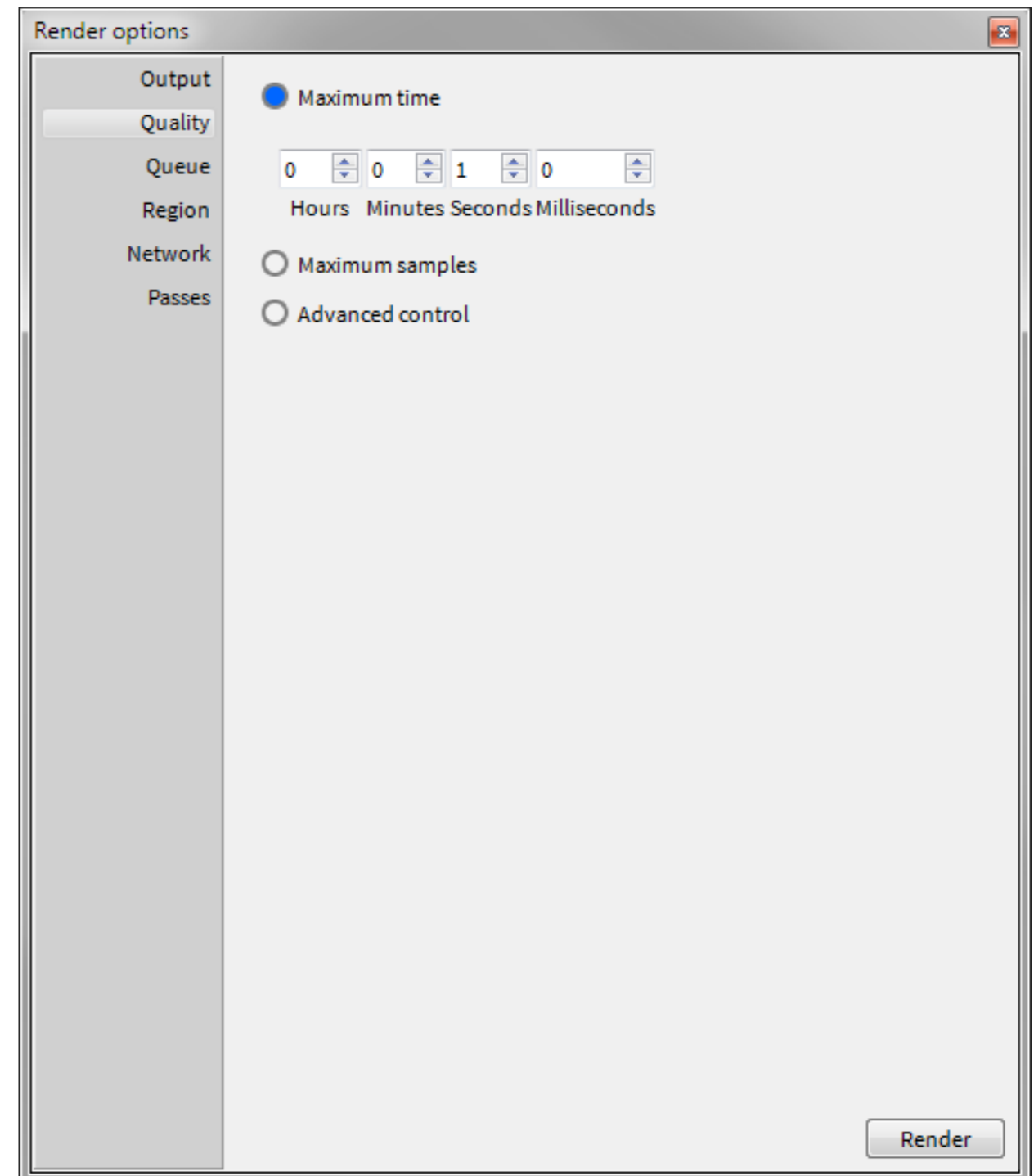
Maximum Samples

Maximum samples mode controls how many times the image or animation frame will be calculated and refined. Each additional sample will further smooth out noise/grain in the image.

This mode uses the same rendering technique as what you see in the realtime view. This technique is also used in maximum time mode, but differs from the method used in advanced control mode.

Samples
This controls how many times each of the pixels in the image being rendered will be calculated for further accuracy. Too low of a value here will result in an image that has excessive noise. However, be careful with increasing this setting too much as there will be a point where you will not perceive further benefit, but the image will take far longer to render.

Animation
The maximum samples mode is ideal for animation output as it guarantees that each frame will have been rendered to the same quality. As the animation plays through the frames you will not see changes/flickering in shadows or noise patterns on materials.

KeyShot® Manual

Maximum Samples

Tip: Samples and Resolution

A sample calculates the color of a pixel. Although, more samples does mean higher accuracy of the color of each pixel in the image, but more samples. There is a point of diminishing returns where you can increase samples past the point of added quality, and are just increasing the render time.

Something important to be aware of is that as you increase the resolution of your image or animation, each pixel covers relatively less area of the image. This means that you can use a lower samples setting when rendering at higher resolutions.

The sample shows the two models rendered with the same samples setting. On the right rendering, the resolution was twice that of the left. Notice the reduced noise on the right model.

This method is typically preferred over the time based output for animations, as some frames may require substantially more time to reach the same quality level as levels of detail and complexity change through the course of your animation. Using the time based output will lead to more noise in the more complicated frames.
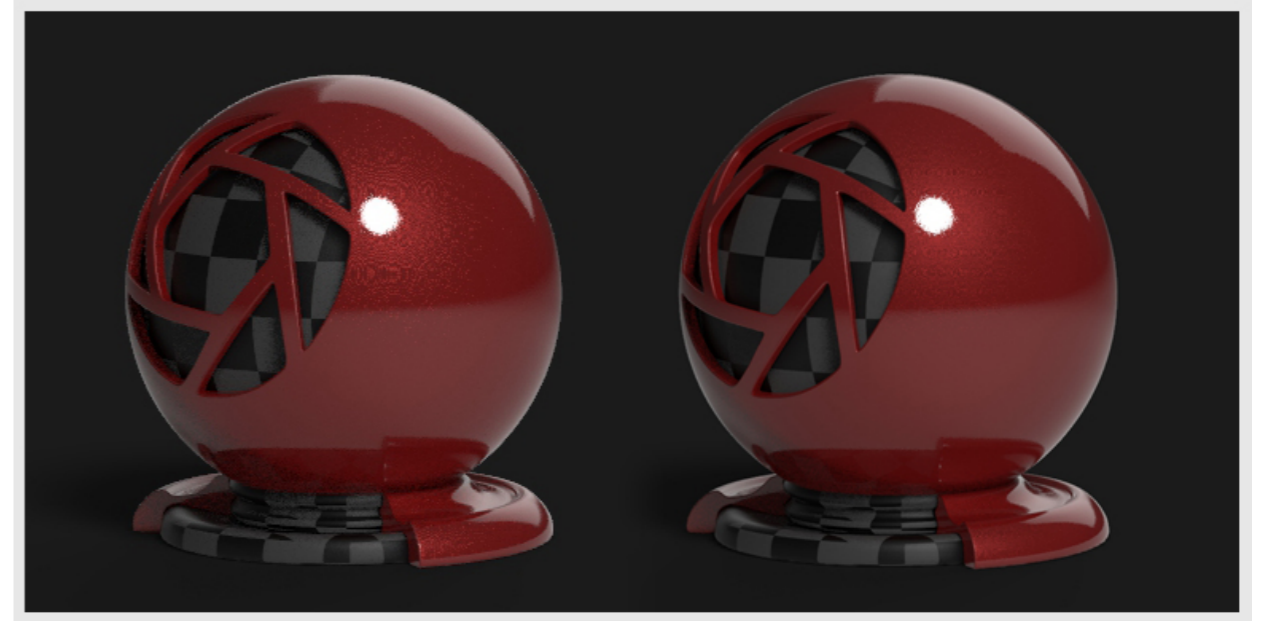
Render Queue

The render queue is used to batch process your still image and animation renderings.

Add/Delete Job
Use these buttons to add and remove jobs from the queue list. When a job is added, you are recording the exact state of your scene. This includes all render settings. Each job, therefore, can have completely unique settings.

Move Up/Down
You can select a job in the list, then click move up or down to change the order of the list. Jobs at the top render first. You can also multi-select jobs and move them together.

Other Options
You can use the check boxes next to the job to turn off that job. The job will then be skipped during processing of the queue. You can also hover your cursor over a job to see an enlarged thumbnail of the image to be rendered. When you are ready to start the queue, click the process queue button.

Send to Network
If you have KeyShot Network Rendering installed, the option to send to send to network will become available.
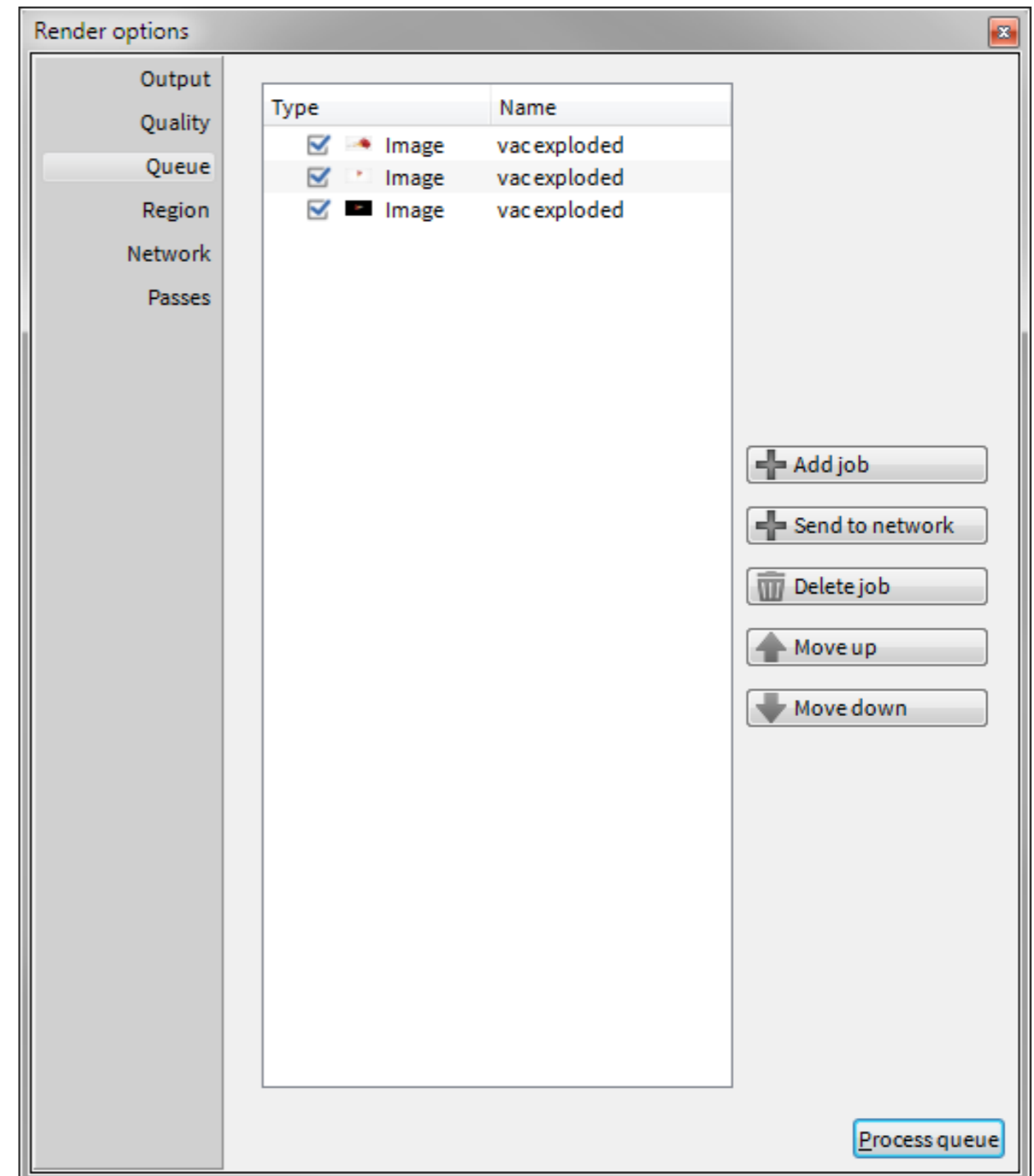
Region Render

The region render option allows you to render a smaller portion of your overall image. This is useful when only a small change to one part of a scene is needed. Rendering the smaller region saves rendering time.

Enable Region Render
Click the icon to enable, then drag to size the region box in the realtime view window or enter specific dimensions and location.
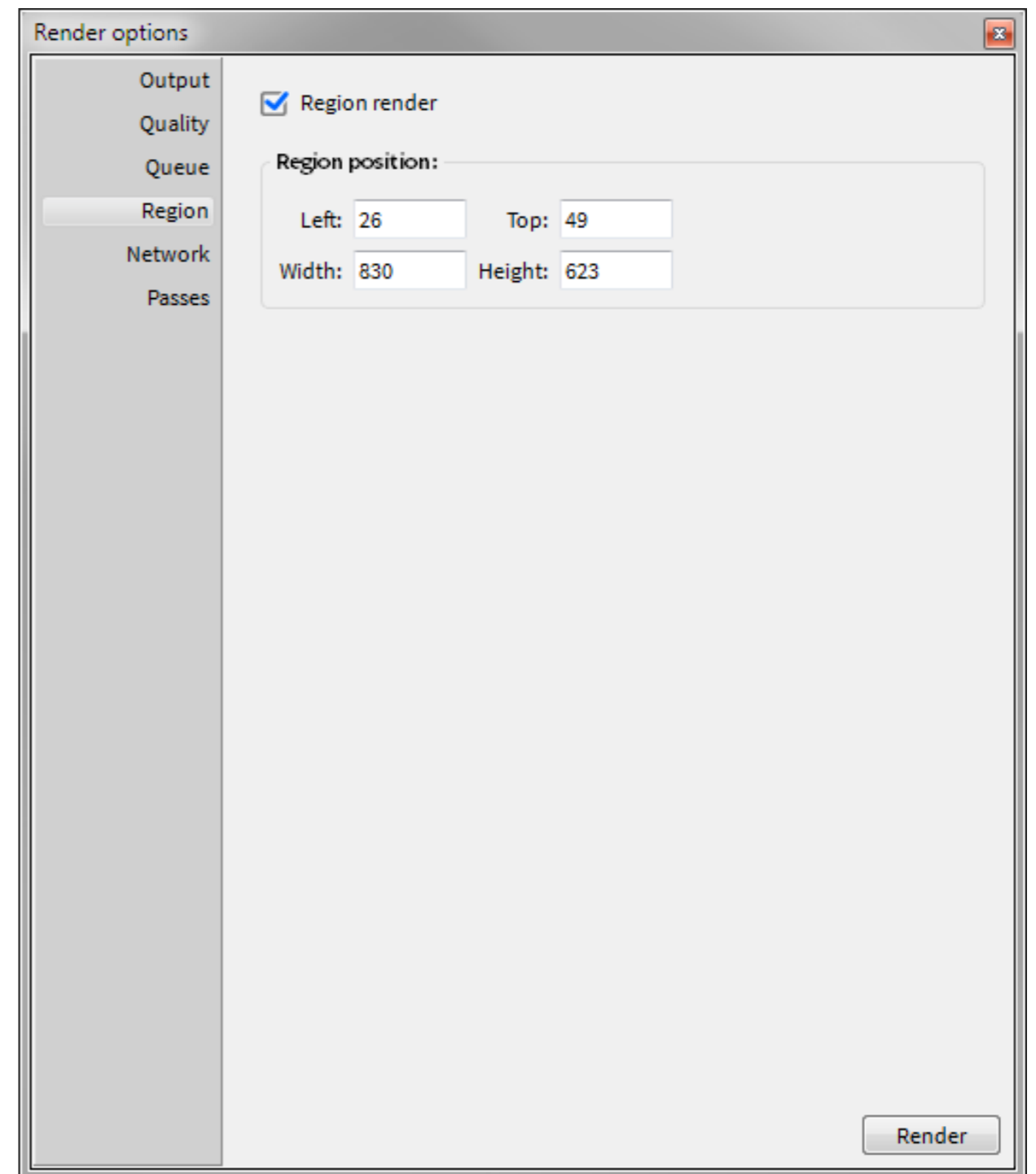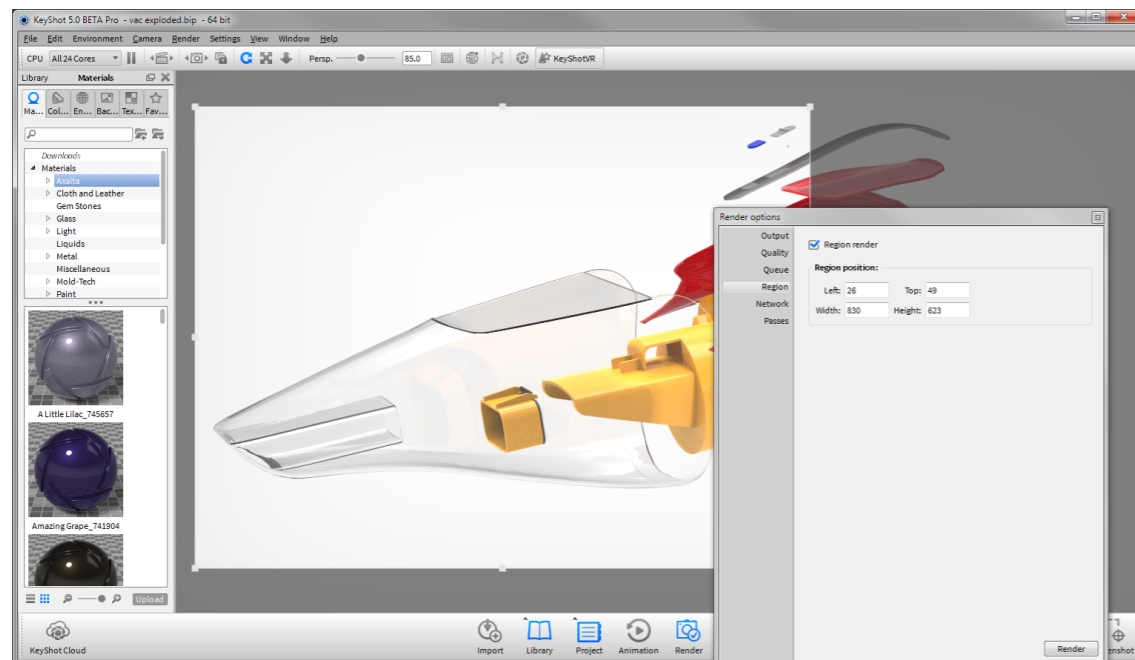
Render Passes

KeyShot supports different render passes. To enable the pass click the checkbox next to the pass you would like to enable. Doing so will render the selected pass, along with the original image format specified on the output tab.

Depth Pass

Depth pass creates a depth map which is an image that contains information relating to the distance of surfaces to the camera. Depth maps are used in other applications like Adobe Photoshop and Adobe Aftereffects to simulate effects like depth of field

Geometric Normal Pass

Create a normal map image of your scene. See section on normal maps in working with textures.

Clown Pass

Clown pass creates an image where individual parts are rendered with a flat color. This enables an easy way to create and save selections in Photoshop for post rendering work. To use a clown pass, import it to the actual image in Photoshop. This creates another layer. Use the color range tool to select each of the colors in the clown pass and create a mask for each group.

Render Layers

This option is only available if you have assigned parts and models to a render layer. This option will render each render layer with only the parts/models assigned to it.

NOTE enabling render layers will render all render layers created.

Depth Pass
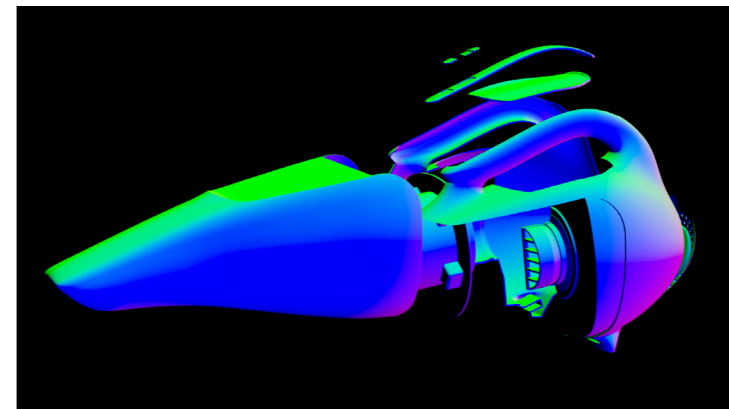
Normal Pass

Clown Pass

Image Editor

The image editor is a post process utility that allow you to make tweaks to your render while it is rendering. Click the pencil icon to open the image editor on the render output window.

Close Render

Click this to close the render output window. CAUTION: all adjustments made in the image editor will be lost. Be sure to save your render after making adjustments before closing the render output window.

Save

Saves the current state of the render. Be sure to save after completing adjustments in the image editor to save changes.

Gamma

Gamma compensates the way colors are displayed for optimal color range for human vision. Lower values will increase contrast and higher values will decrease contrast.

Brightness

Control the brightness on the rendered image.

Saturation

Increase or decrease the color intensity in the render

Hue

Shift the colors in the render. This can be a quick way to create multiple color studies from a single render.

Effects

See section on effects in the Settings Tab section for more information.
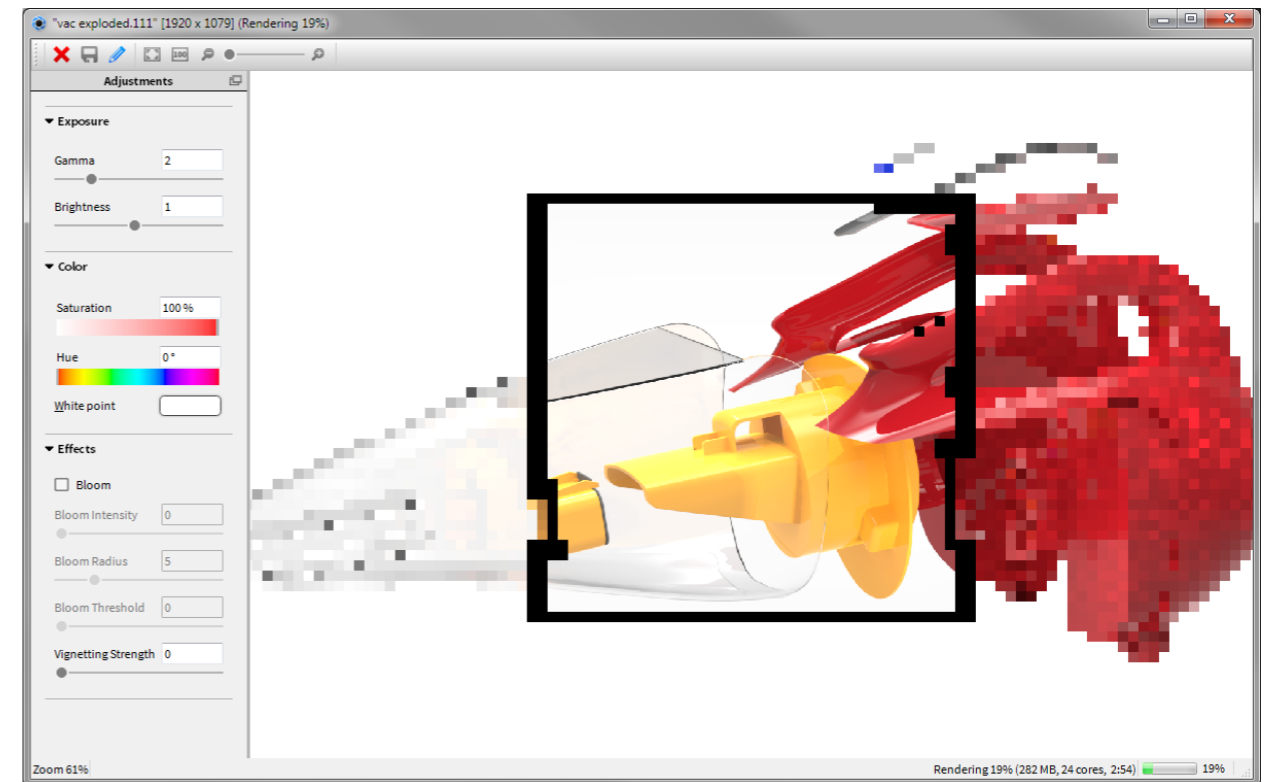
Export to OBJ

KeyShot supports exporting your 3D data from KeyShot into an *.obj file type. All individual parts and material groups will be maintained on export. Animations will not be exported, only supports geometry export.

Publish to Grab CAD

Publish to GrabCad will allow you to easily upload your rendering straight from KeyShot 4.1 to GrabCad. To do so, Under "File" in the menu bar, click "Publish to GrabCad". You will first need to authenticate your GrabCad account before you can upload.

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- [Supported Types](#)
- [Importing](#)
- [Model Units](#)
- [Navigating Your Scene](#)
- [Hiding/Showing Parts](#)
- [Regrouping Parts](#)
- [Scene Tree](#)

- [Multi-Selection](#)
- [Duplicating Models](#)
- [Pattern Tool](#)
- [Moving Models and Parts](#)
- [Live Linking](#)

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- ALIAS 2013 and prior(needs to be installed)
- AutoCAD(DWG/DXF)
- CATIA v5
- Creo 2 and prior
- Inventor 2013 and prior
- Maya 2013 and prior(needs to be licensed)
- NX 8 and prior
- Pro/ENGINEER Wildfire 2 -5
- Rhinoceros 5 and prior
- SketchUp 8 and prior
- Solid Edge ST5 and prior
- SolidWorks 2013 and prior
- IGES
- JT
- STEP AP203/214
- OBJ
- Parasolid
- FBX
- 3DS
- Collada

KeyShot® Manual

Importing Models

Supported file types can be imported into the KeyShot interface by pressing the import button from the main toolbar.

Toolbar

Files can also be imported by dragging and dropping them into the interface, or by selecting 'File -> Import' from the top menu. When a file is designated for import, the import window will be displayed on the screen.

Center Geometry
When checked, 'Center Geometry' will import the model and place it in the very center of the environment. Any original 3d coordinates for the model are removed when center geometry is selected. If this option is not selected, the model will be placed in the same position in 3D space that it was originally created.

Snap to Ground
When checked, 'Snap to Ground' will import the model and position it directly on the ground plane. This will also remove any original 3d coordinate information.

Orientation
Not all modeling applications define the up axis in the same manner. Depending on your application, you may need to set a different orientation other than the default "Y Up" setting. If your model is coming in on its side, try setting a different orientation.

Import Window

Importing

Adjust Camera to Look at Geometry

When checked, upon import the camera will center fit to the imported geometry in the scene.

Adjust Environment to Fit Geometry

When checked KeyShot will perform the calculation to fit the environment proportional to the geometry imported into the scene.

Use Material Template

If you have a saved material template, you can apply the template to the imported geometry. Use the pulldown menu to choose the saved material template you would like to use.

Import NURBS Data

When importing a model that contains NURBS geometry, enable this check to include the NURBS geometry in the scene.
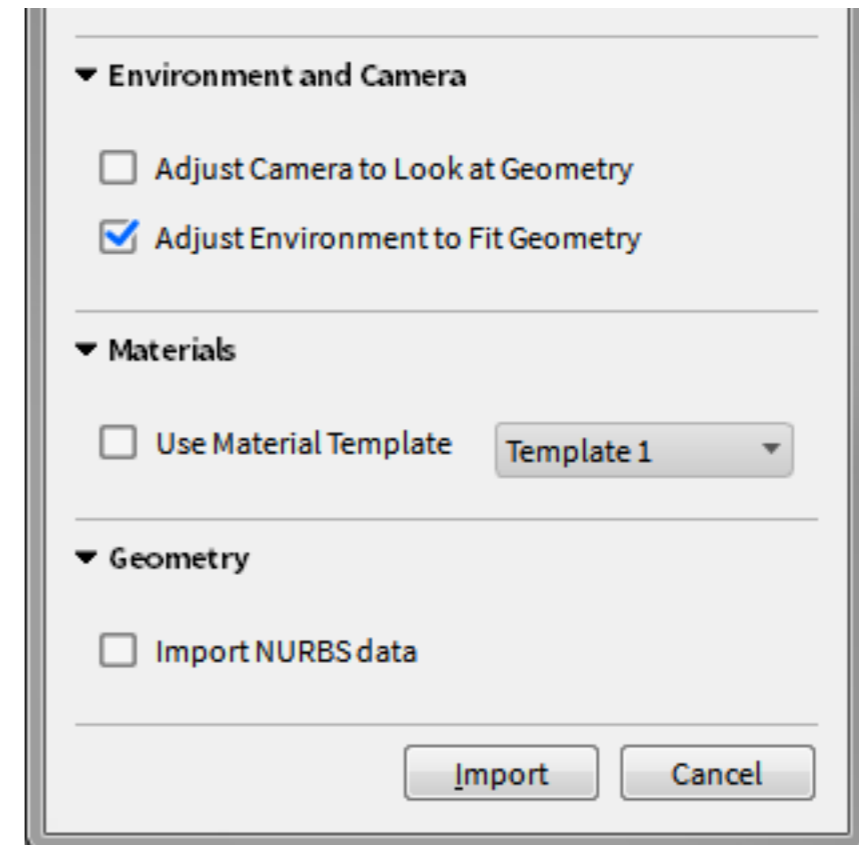
Importing

Second Import
The import dialogue parameters change slightly when a model is already loaded in a scene.

Add to Scene
When checked, this will add your model to the existing scene.

New Geometry
When checked, this will replace the geometry with the new imported geometry.

Update Geometry
With this checked the newly added geometry will update the existing geometry, if part names match. Replacing the old geometry.

Size - Automatic
This will automatically scale the imported model to the scene.

Size - From Previous Import
This feature is useful if you have already assigned materials to your model, but decide to make a change to your geometry. When you re-import your updated model, any assigned materials will be automatically reassigned on parts that have kept their original name.

Retain Materials
This feature is useful if you have already assigned materials to your model, but decide to make a change to your geometry. When you re-import your updated model, any assigned materials will be automatically reassigned on parts that have kept their original name.
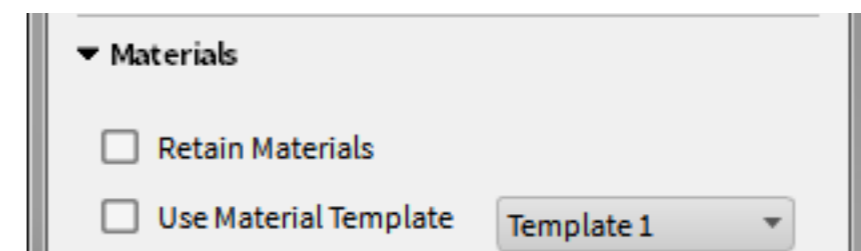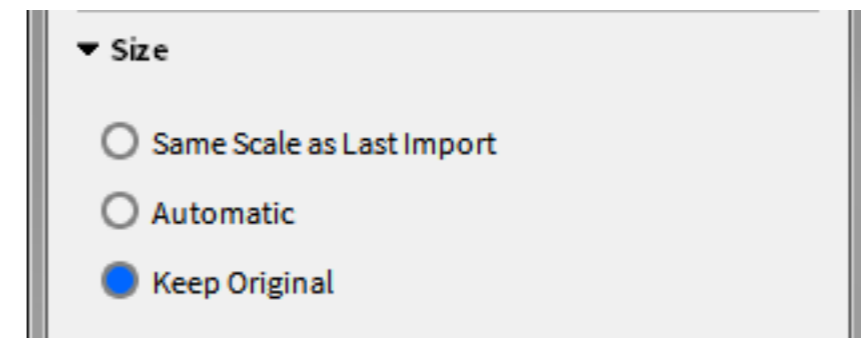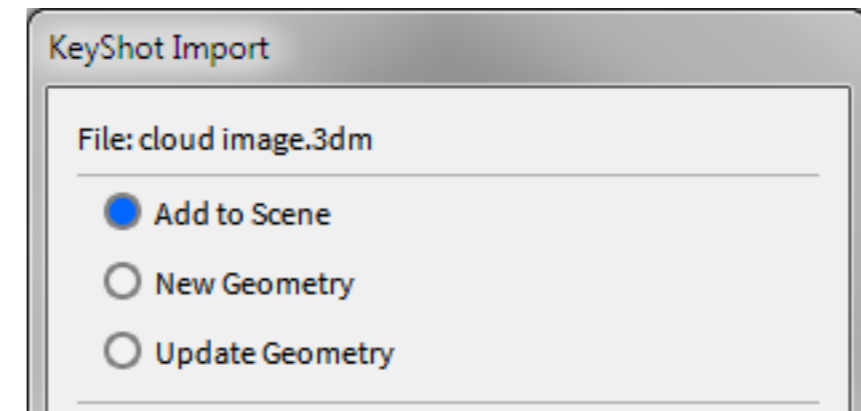
KeyShot® Manual

Model Units

The scale of models, the distance between models, the intensity of local lights, and the mapping scale of textured materials are all relative to the unit of measure: millimeters, centimeters, meters, inches, feet, etc. In KeyShot, these units of measure are introduced as the model units of the scene. Model units are listed under the scene information window.

Set units upon import: With every new scene, the first import will define the model units for the scene. Selecting an "Automatic" size upon import will apply the system default unit: None. When "Keep Original" size is enabled the magnitude and unit of the model, as established in the modeling software, is read and applied to the scene. Any subsequent imports will be scaled in relation to the set model units as long as "Keep Original" size is enabled.

Changing the Model Units: To change the model units, go to Edit > Set Model Units and make your selection. Note that changing the model units will NOT re-size the models in the scene. Instead, changing the model units via the Edit menu affect the scale of the environment, ground plane and in turn affect the physical lights and the mapping scale of certain textured materials.
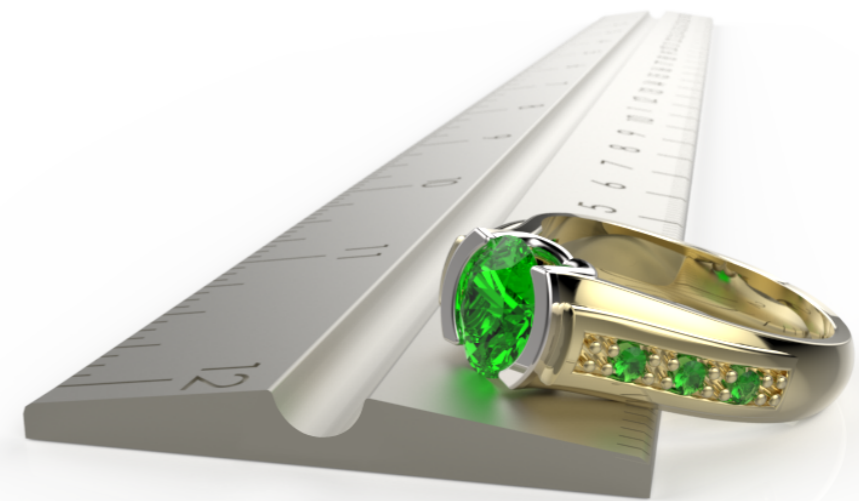
KeyShot® Manual

Navigating Your Scene

Tumbling Your Camera

To tumble your camera, press and hold the left mouse button while moving the mouse

Panning Your Camera

To pan your camera press and hold the middle mouse button while moving your mouse

Dollying Your Camera In and Out

To dolly your camera press the alt key (windows) or the option key (mac) plus the right mouse button while moving the mouse.

Tumble Camera
Left Mouse Button + Drag

Pan Camera
Middle Mouse Button + Drag

Dolly Camera
ALT(WIN)/OPTION(MAC) + Right Mouse Button

KeyShot® Manual

Hiding Parts

In some cases materials may need to be assigned to parts that are enclosed in other pieces of geometry. To hide parts, right click on the part and select 'hide part'. A single part of a model can be shown by right clicking on a part and selecting 'show only this part'. Parts can also be hidden using the scene tree.

Showing Parts

To display a hidden part right click in the interface and select 'undo hide part'. To bring back all previously hidden parts select 'show all parts'. Parts can also be shown using the scene tree.
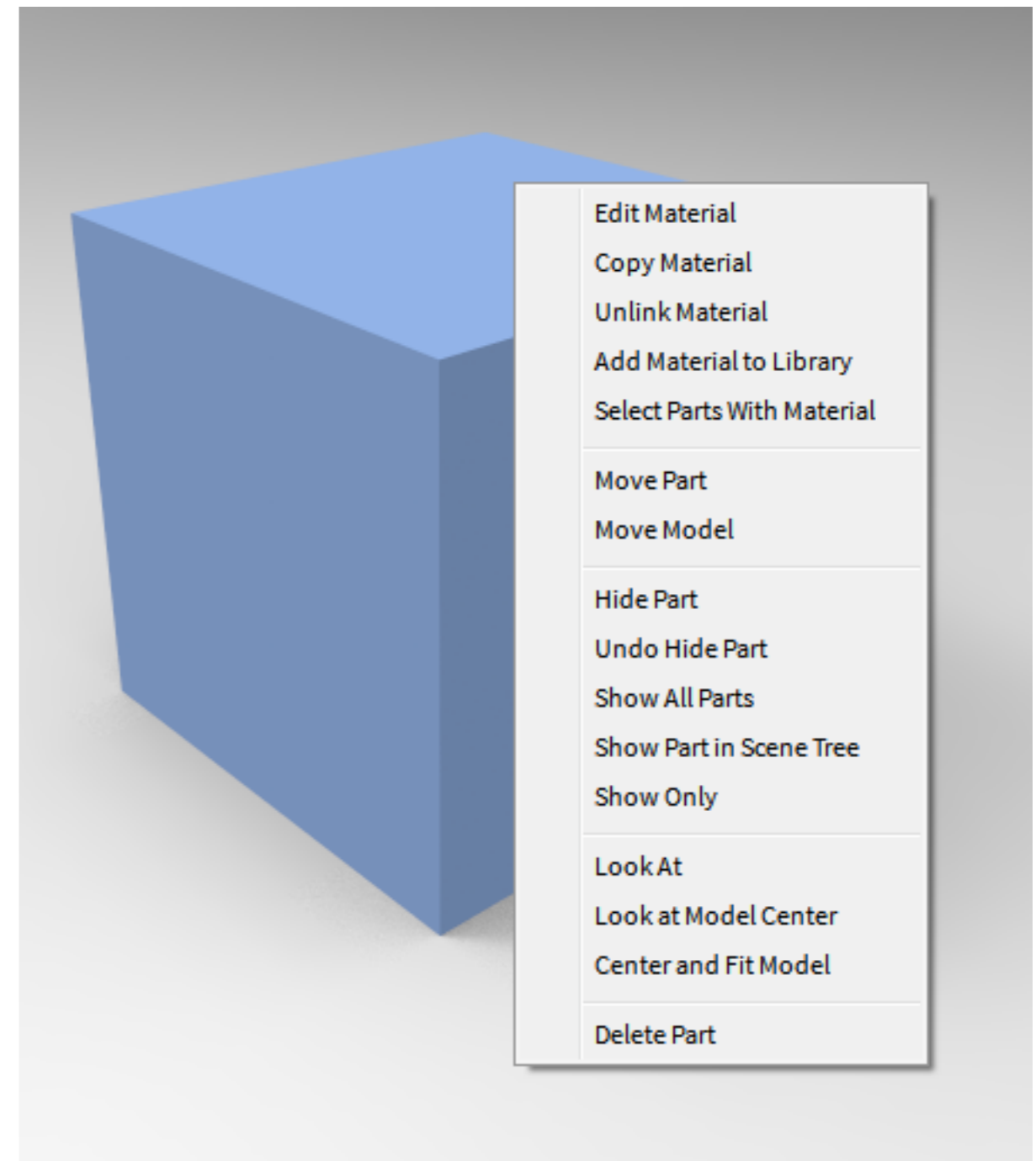
Regrouping Parts

Regrouping gives you the ability to organize the scene tree. Adding a group is done by right-clicking on the top level and selecting "Add to group" or "Add sub-group". Parts and sub-assemblies can be drag and dropped to new groups in the scene tree.

Note* Reordering parts and sub-assemblies will break live-linking and update geometry.
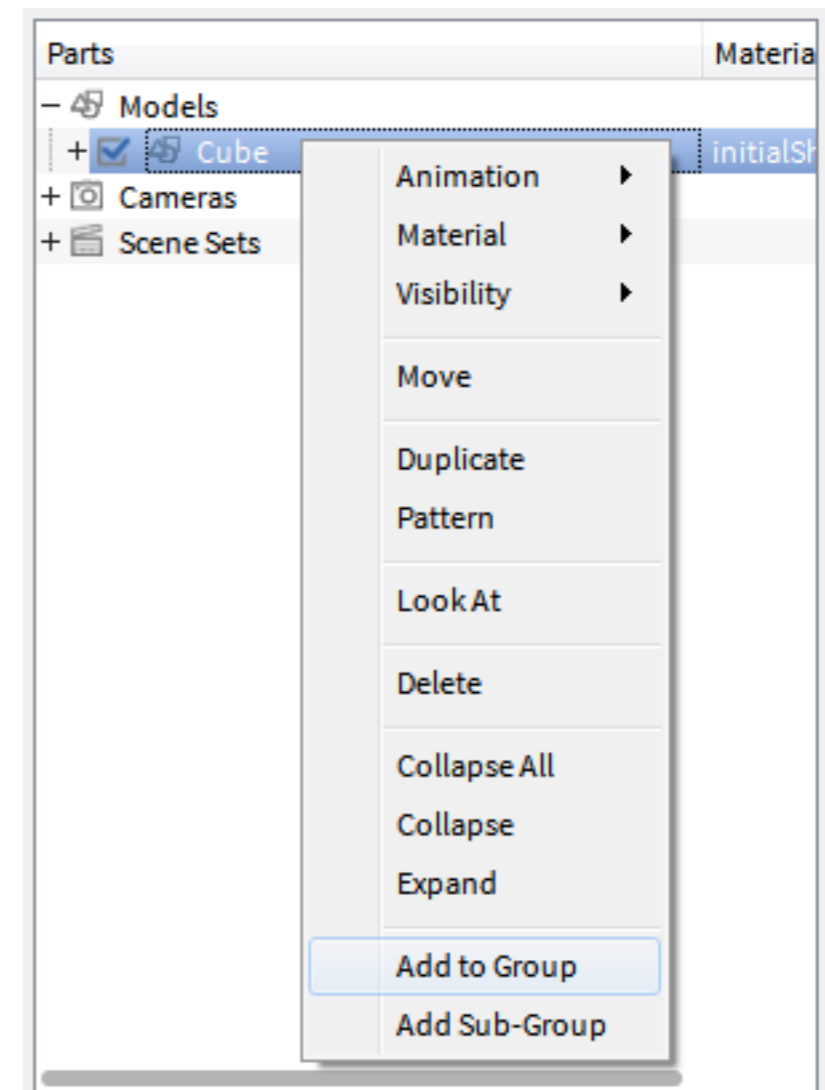
Scene Tree

The scene tree displays models and their hierarchies along with any cameras that exist in a scene. Animations are also represented in the scene tree in versions of the software that include the animation add on. Models and parts can be hidden and shown using the check box next to the name. The check box displayed next to animations can be used to disable and re-enable animations that are applied.

Collapsing the scene tree hierarchy can be very useful if your model has a lot of parts. This can be achieved by right-clicking the section you would like to collapse and select "collapse". The full hierarchy is able to be collapsed also, by selecting "collapse all".
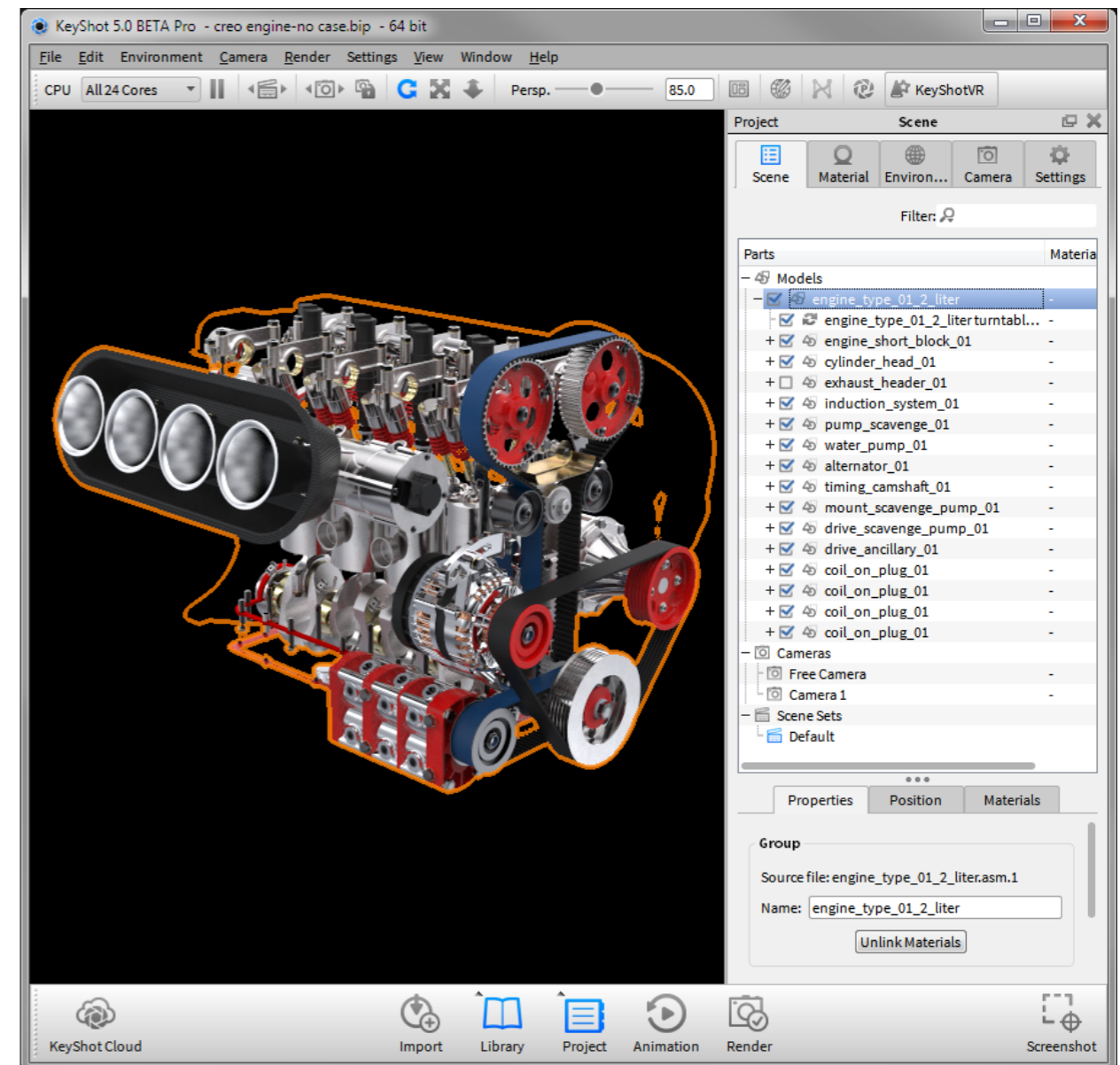
Multi-Selection

Multi-select multiple objects in the realtime window using box-selection. Hold down SHIFT + left mouse button to activate box-selection. Objects will only be highlighted when the scene tab is open, Object Highlight is enabled in Preferences by default.

Multi-selecting can also be achieve by holding SHIFT and selecting the models/parts in the scene tab.

Parts	Materials
− 🗗 Models	
− ☑ 🗗 DEWALT	-
☑ △ Part1.2	Mold-Tech-14052
☑ △ Part1.1	Mold-Tech-14052
☑ △ Part1.3	Mold-Tech-14052
☑ △ Part1.4	Mold-Tech-10783 #1
☑ △ Part1.5	Mold-Tech-14052
− ☑ 🗗 Part1.6	Mold-Tech-10783 #2
☑ △ Part1.6	Mold-Tech-10783 #2
☑ △ Part1.6	Mold-Tech-10783 #2
☑ △ Part1.7	mold test 2 unblur #2
☑ △ Part1.8	mold test 2 unblur #2
☑ △ Part1.9	mold test 2 unblur #2
☑ △ Part1.10	Mold-Tech-10783 #1
+ ☑ 🗗 Part1.11	Mold-Tech-10783 #1
☑ △ Part1.12	Aluminum polished #1
☑ △ Part1.13	Aluminum polished #1
☑ △ Part1.14	Aluminum polished #1
☑ △ Part1.15	Mold-Tech-10783 #3
☑ △ Part1.16	Mold-Tech-10783 #1
− ☑ 🗗 Product1	Aluminum polished #1
☑ △ ISO 7047 SC...	Aluminum polished #1
☑ △ ISO 7047 SC...	Aluminum polished #1
☑ △ ISO 7047 SC...	Aluminum polished #1
☑ △ ISO 7047 SC...	Aluminum polished #1
☑ △ ISO 7047 SC...	Aluminum polished #1
☑ △ ISO 7047 SC...	Aluminum polished #1
+ 🎥 Cameras	
+ 🎞 Scene Sets	

Duplicating Models

Models and parts can be duplicated by right clicking on them in the scene tree and selecting 'duplicate'. This action duplicates the model along with any assigned materials and animations.
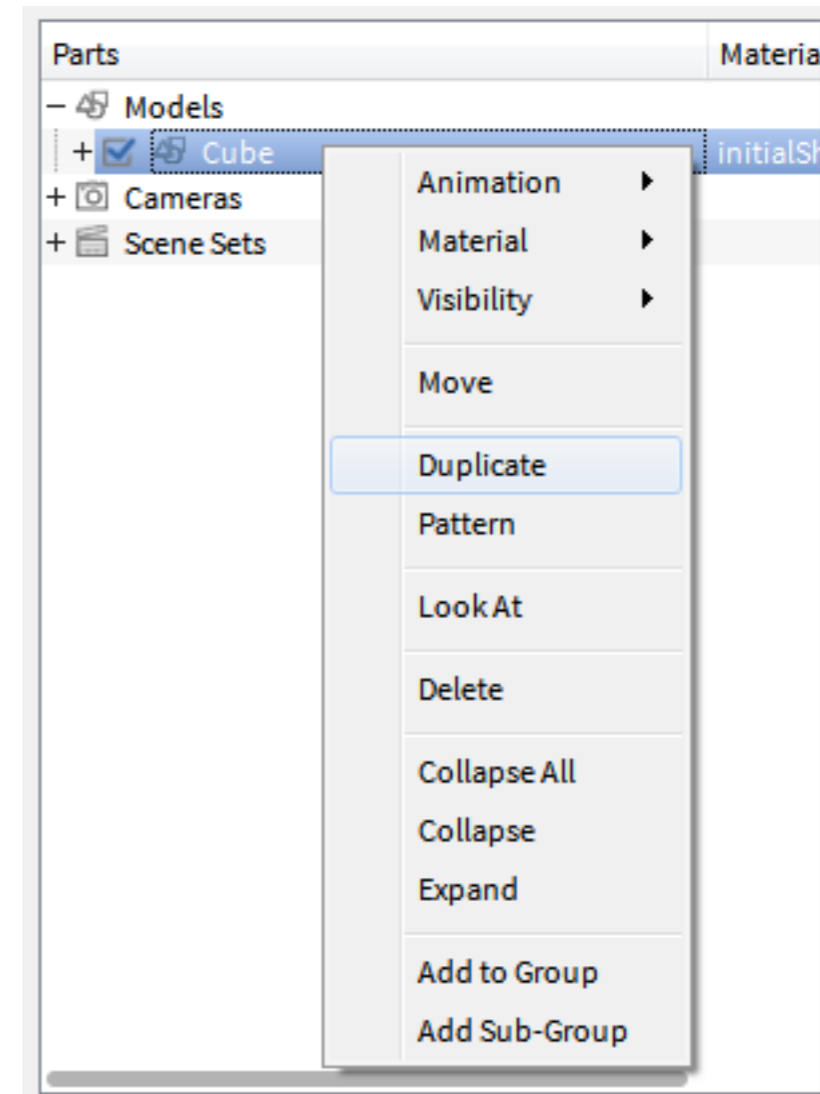
Pattern Tool

Right click a model on the scene tree, and select "Pattern" to open the pattern tool panel. The pattern tool creates instances instead of duplicates of model data to increase speed, and decrease model size.

Linear/Circular

Create patterns in a linear or circular formation.

Instances (Linear)

Set how many instances area created along the X, Y, and Z axis.

Count (Circular)

Set how many instances are arrayed around an axis.

Spacing (Linear)

Set the spacing of the instances for X, Y, and Z.

Radius (Circular)

Distance from instances to center or pattern axis.

Fill Angle (Circular)

The angle at which to array the instances from. 360 is a full circle.

Rotate Objects
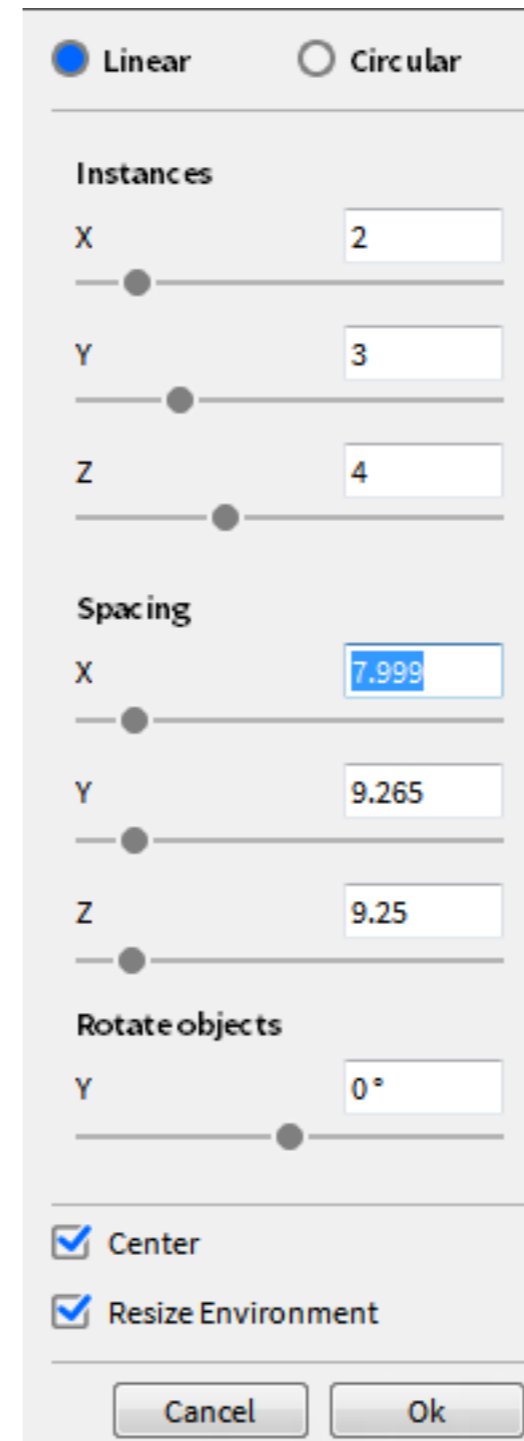
Instances can be rotated along the Y of each local access to dynamically position them in the scene.

Center
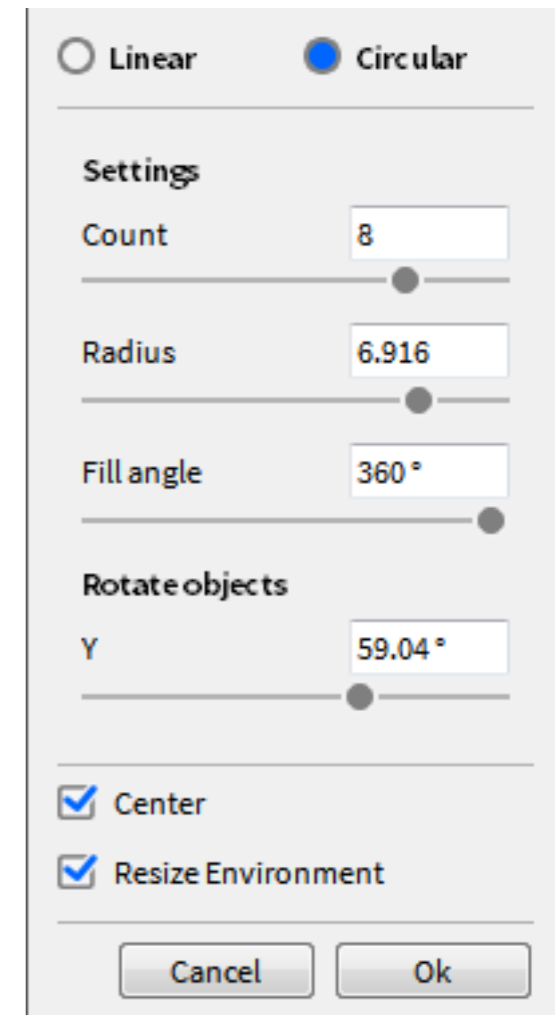
Centers the pattern to the scene.

Resize Environment

Automatically increase environment size to accommodate all instances.

Moving and Parts Models

Models and Parts can be moved by right clicking on the model or part and selecting move object. This will pull up the move widget. Highlight the different handles and click and drag to translate, rotate, and scale in the X, Y, and Z directions.

"Snap to Ground" quickly moves the model in the y direction so as to be tangent to the ground plane. This is useful when the model has been transformed and is not longer touching the ground plane.

Choose an axis from where to reference your transforms from. Local uses the axis inherent in the part or model, while global uses the XYZ coordinates from the KeyShot scene.

To snap in 15 degree increments, hold shift as you drag a rotate handle.

To save your transforms, click the green check. To undo all transformations, click the red X and the model will revert to the state before starting the move tool.
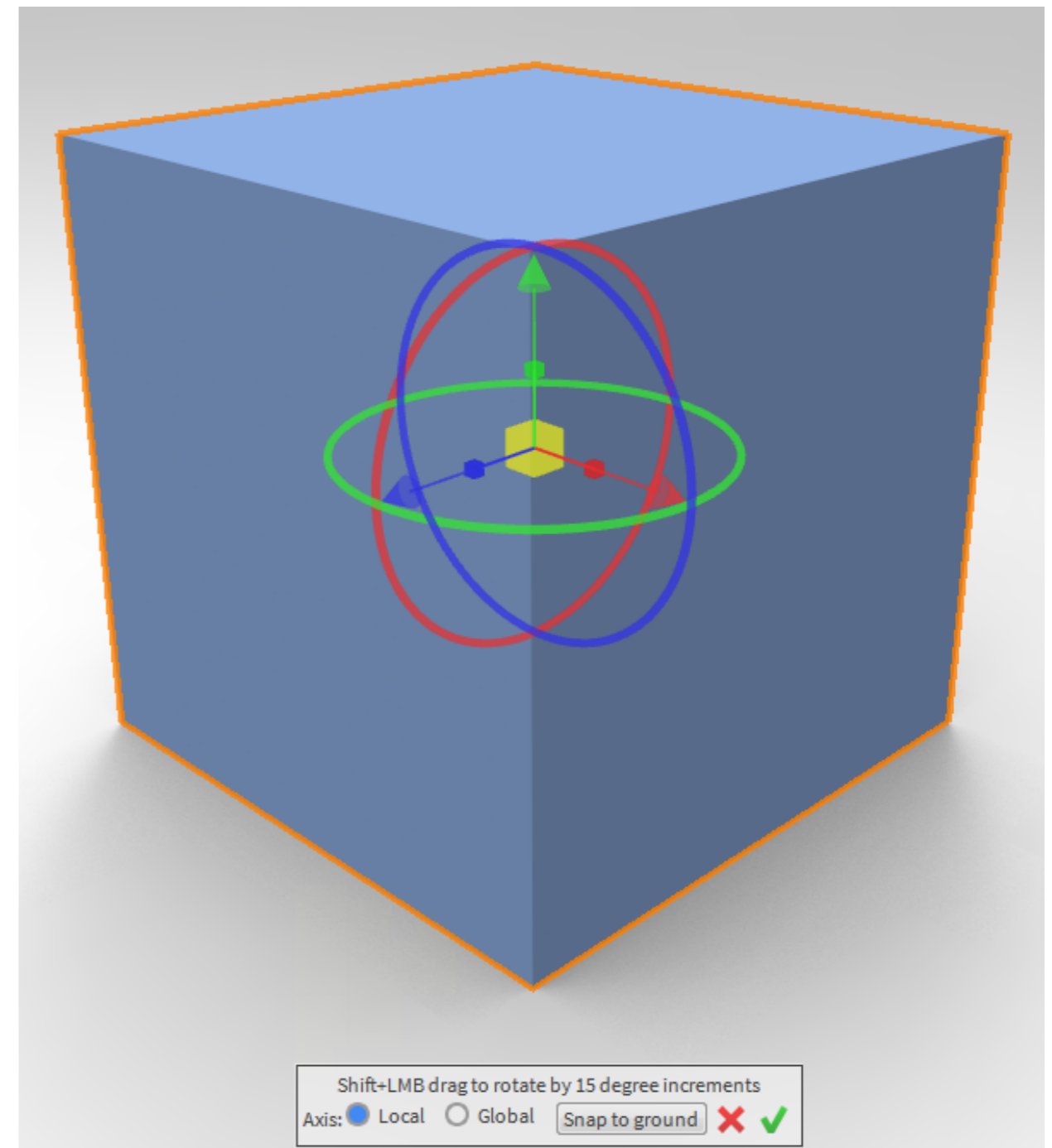
KeyShot® Manual

Live linking for Creo, Solidworks & Rhino

Live linking allows seamless model updates between the CAD software and KeyShot, without having to reassign materials or update settings. You will need to download the live linking plugin from our website

Live linking will need to be enabled in Preferences > Advanced.
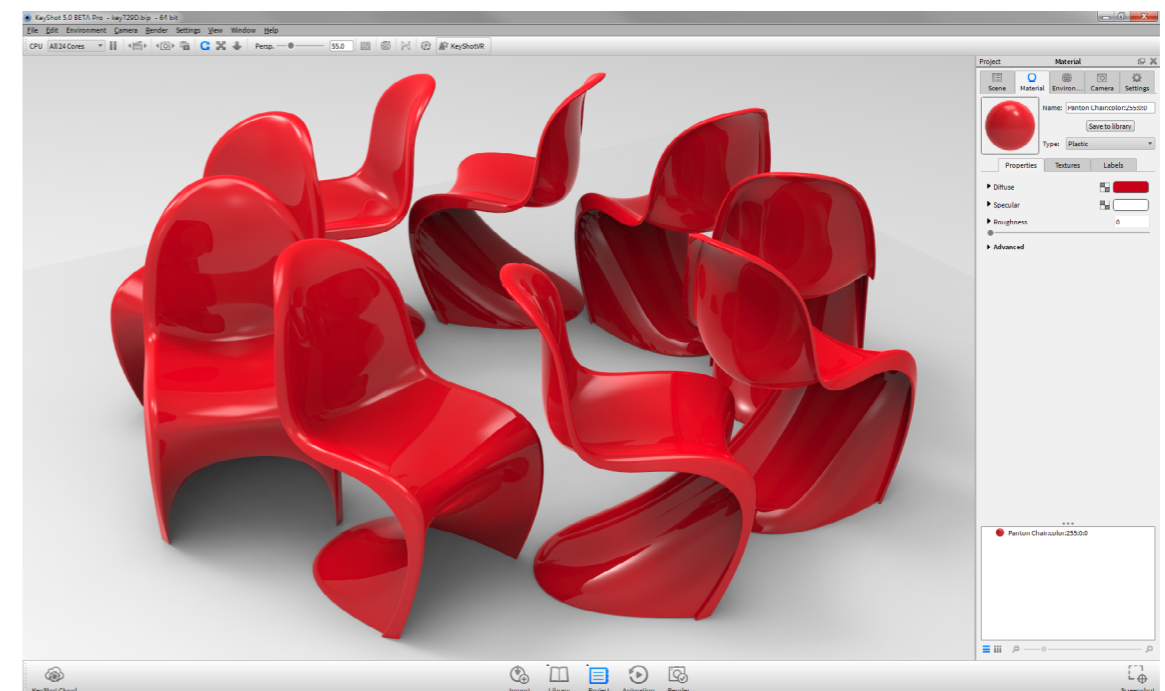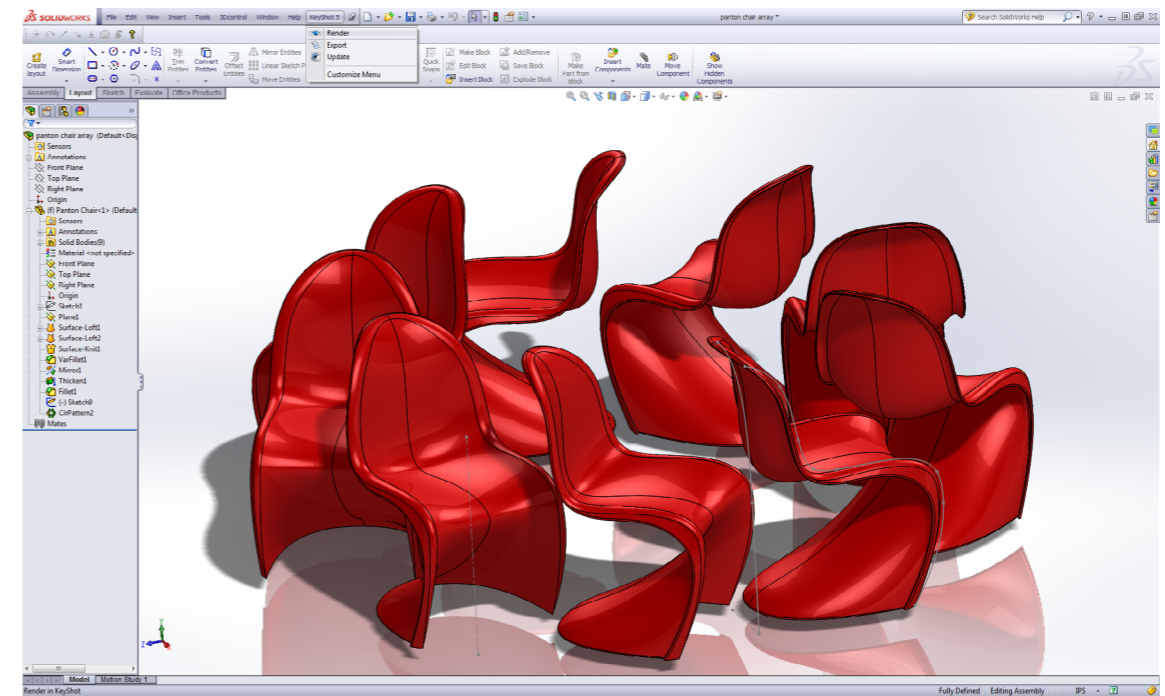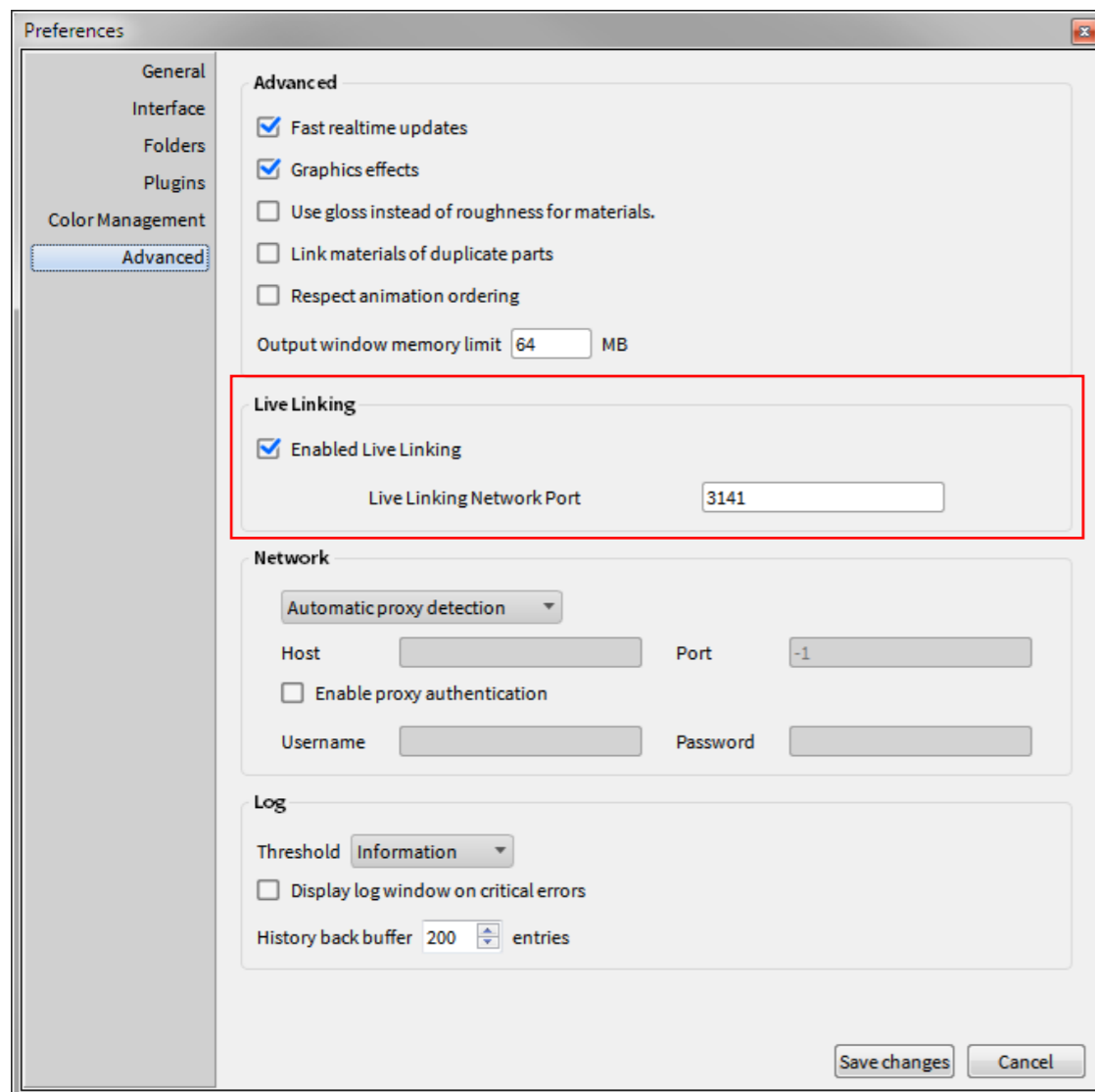
KeyShot® Manual

Working With Materials

- [**Accessing the Library**](#)

- [**Assigning Materials**](#)

- [**In Project Library**](#)

- [**Copying and Pasting Materials**](#)

- [**Editing Materials**](#)

- [**Saving Materials**](#)

- [**Material Templates**](#)

- [**Color Library**](#)

- [**Color Picker**](#)

Accessing The Library

The library can be accessed by clicking the library button in the main toolbar or hot key 'M'. That will pull up the library window shown. From there, any material, color, environment, backplate and texture available in the KeyShot resources folders will be loaded. This is also where your favorites are stored under the favorites tab..

Assigning Materials

Materials can be assigned to models by dragging and dropping from the library onto a part in the realtime window. This will show a preview of what parts that material will be assigned to. The material will not be assigned until the user lets go of the left mouse button.

Once the material has been loaded from the library, a copy will be placed into the in project library. Any additional materials assigned to the model will also be added to the in project library. If the same material already exists in the in project library, a copy will be created and a number will be appended to that material.

In some cases a user may want to have one material assigned to multiple parts, be able to make changes to that material, and have it affect all parts. To do this, the same material should be assigned from the in project library to those multiple parts. Since that is the same material from the in project library, any edits made to that material will affect all parts that it is assigned to. Another method of accomplishing this is by copying and pasting the material from one part to another.

Retaining Textures and Labels

If you are dragging a material onto a part that has an existing texture or label, you can retain them and apply them to the new material by holding ALT for textures, or CTRL for labels.
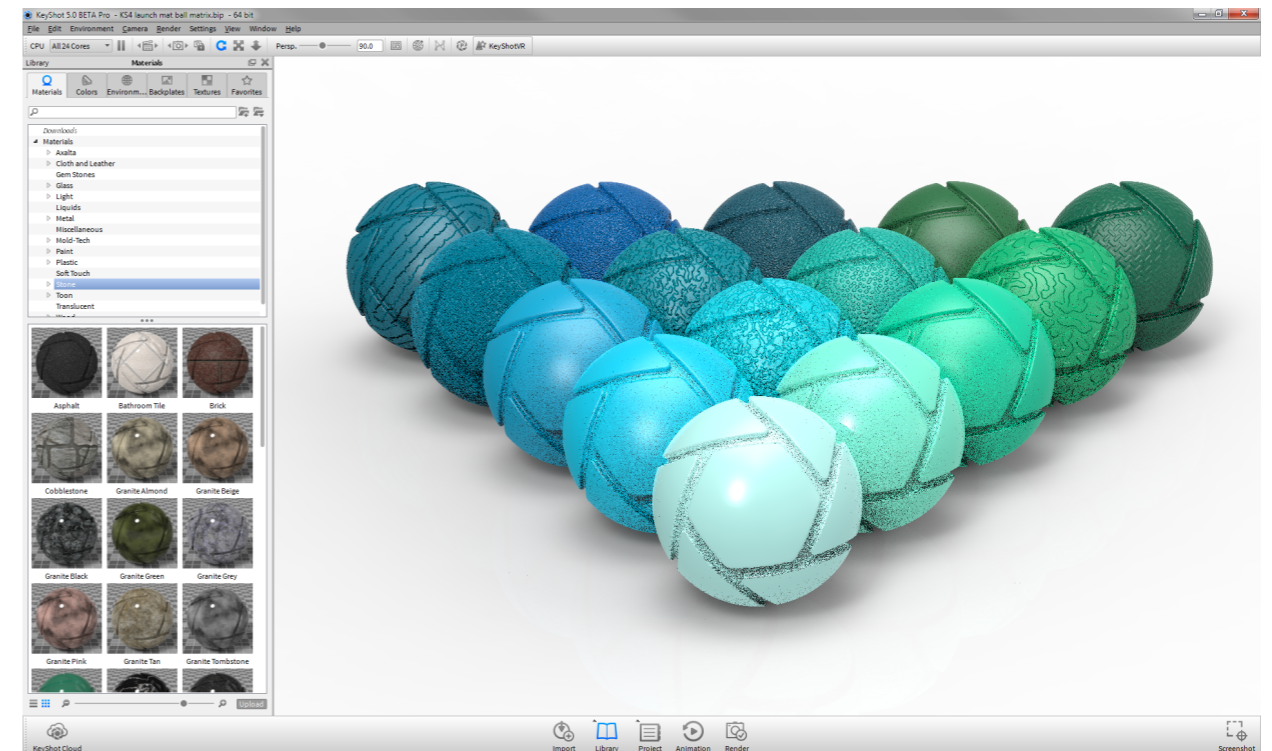
In Project Library

The in project library is found in the lower half scene tab under materials. When a material is pulled from the material library and assigned to a model, a copy of that material is placed in the "in project library". All materials will be represented in the form of material ball thumbnails, or a list view.

This window will show all materials that are active within a scene. If a material is no longer being used in the scene it will be automatically removed from the in project library. For example, if a material is assigned to only 1 part, and a new material is assigned on that part, the previous material will be removed from the in project library since it is no longer used in the scene.
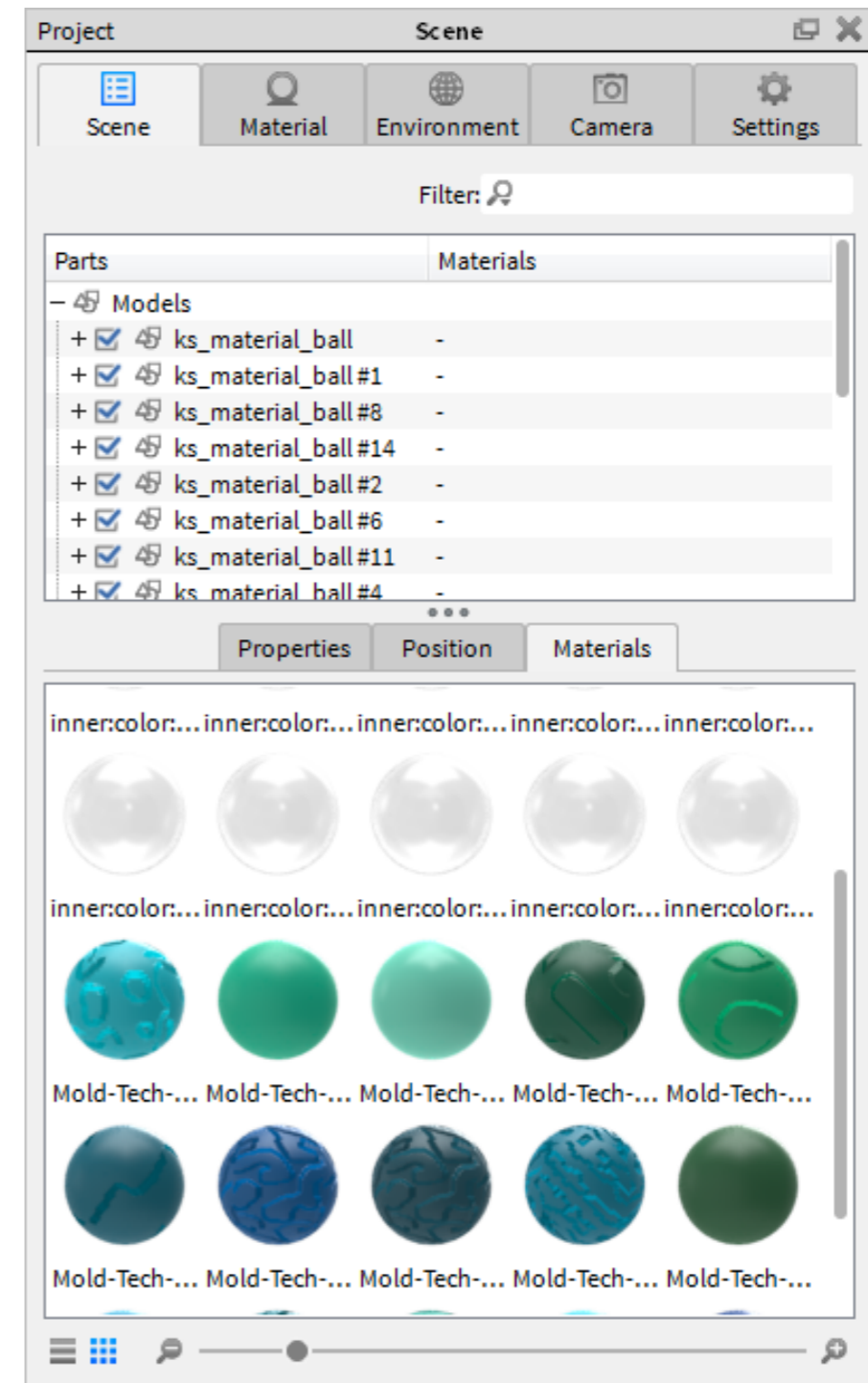
Copying and Pasting Materials

There are two methods of copying and pasting materials. The most important concept to understand when copying and pasting is that when a material is copied from one part to another, any future edits to that material will affect both parts.

The first method is by pressing "shift + left click" on a material assigned to a model. That will copy the material. Next, to paste the material, press "shift + right click" on another part. That will copy the same material from the in project library and paste it to another part. Now, any edits made to that material will affect both parts.

The second method is by dragging and dropping a material from the in project library onto a part that does not already have that material assigned.

SHIFT + LEFT CLICK   -   Copy Material

SHIFT + RIGHT CLICK   -   Paste Material

Editing Materials

There are multiple methods of navigating to the material properties to make changes, but all editing is done through the materials tab found in the project window.

The first method of accessing the material properties is by double clicking a part on a model in the realtime view. That will pull up the material properties for the material assigned to that part.

The second method of accessing material properties is by double clicking a material thumbnail in the in project library.

The third method of accessing material properties is by right clicking a part in the scene tree and selecting 'edit material'.

The forth method of accessing material properties is by selecting the part in the scene tree. In the second pane selecting "Edit material".

All material edits made will update interactively in the realtime view. For more detailed information on material settings and types please see the section of the manual that covers material types and their settings.
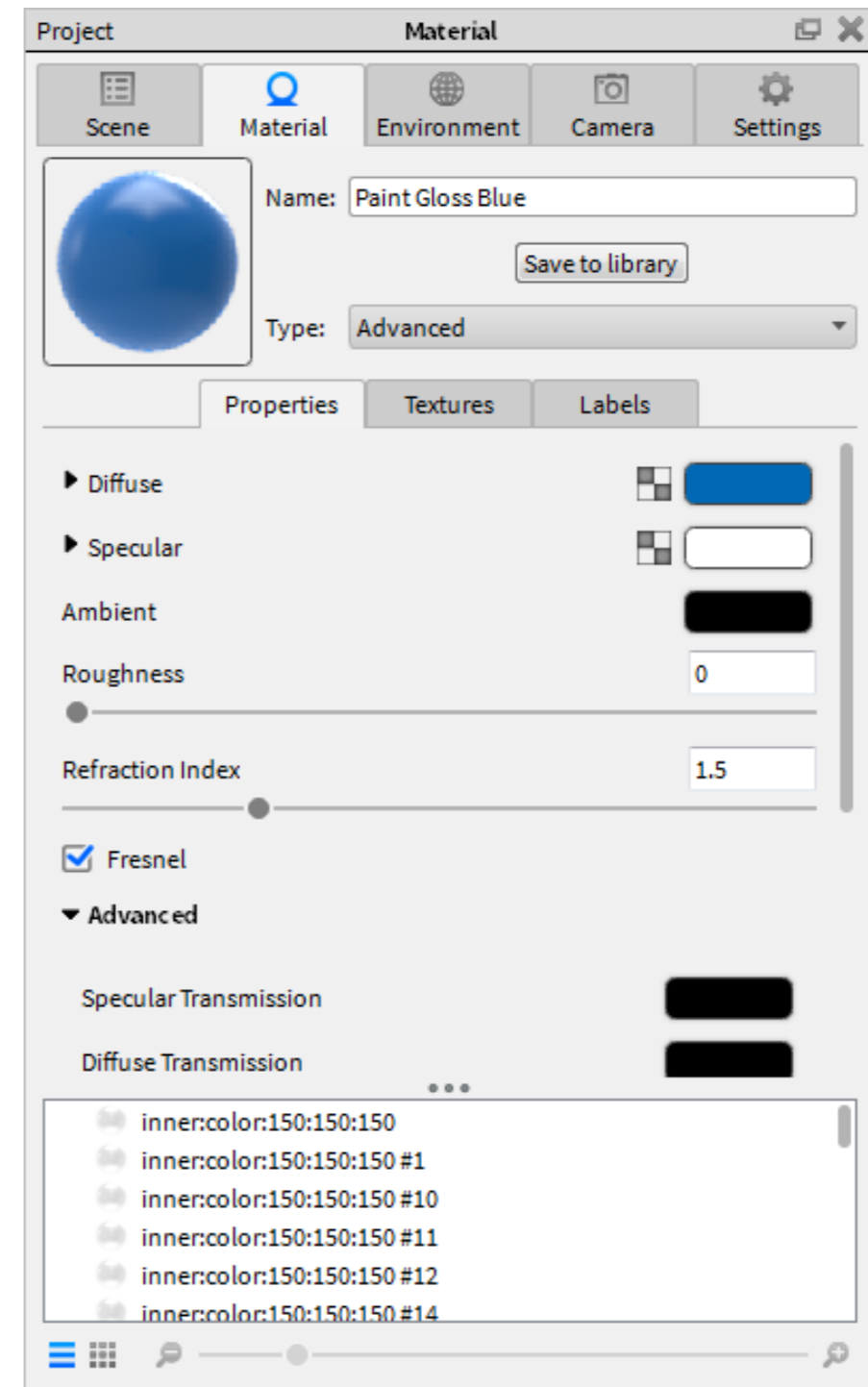
Saving Materials

There are two methods of saving materials.

The first method of saving is by right clicking a material on the model and selecting "add material to library".

The second method of saving is by clicking the "Save to library" shown in the material properties.

Once a user has gone through either step, a dialogue will prompt them to designate which folder in library hierarchy they would like to save to.

Once the folder location has been selected, the new material will be saved to the library.
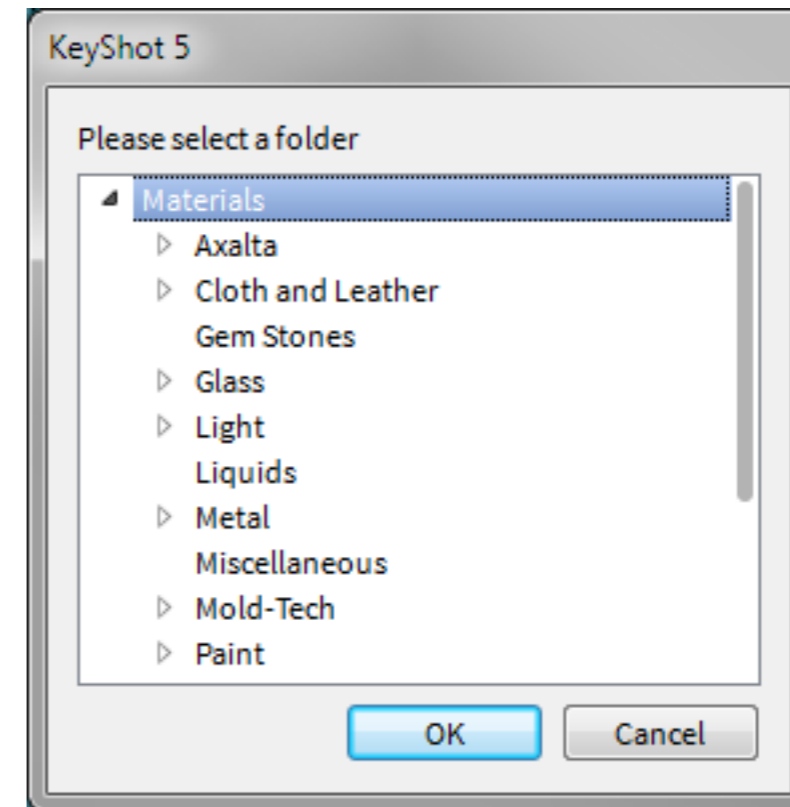
Material Templates

Material templates automate the material application process. Materials from the KeyShot library are applied to parts based on the name of the part's original materials.

The material template menu is found within the "Window" menu bar.

Create/Delete Templates

Create a new template by clicking on the add icon below the templates list. Two methods can be used in creating a material template: "Automatic" and "Manual".

Automatic-If a model is in KeyShot when creating a new template, the source and material names are automatically populated based on the material applications in the current scene.

Manual-An empty template is created and the user can add template items manually.

Each new template is added to the template list which can be accessed with any scene opened in KeyShot.

Material Templates

Template Items

A template item consists of a source name and material name.

Use the " + " button to create a new item.

Click an item to select the item from list and edit the source and destination name. You may also change the source type.

Use the to delete a selected item.

Source Type

The source type can be "Part" or "Material". The part type considers the part names in the scene. The material type considers the material names in the scene.

Source Name

Depending on the source type, the source name is the name of the part or the name given to the default material applied to parts of your models. The naming of your default materials is controlled in the modeling software.

Destination Name

The destination name is the name of the material from the KeyShot library that is to be applied to all parts that match the source name. When editing the destination name, you can type the name or drag and drop a material from the library into the templates menu.
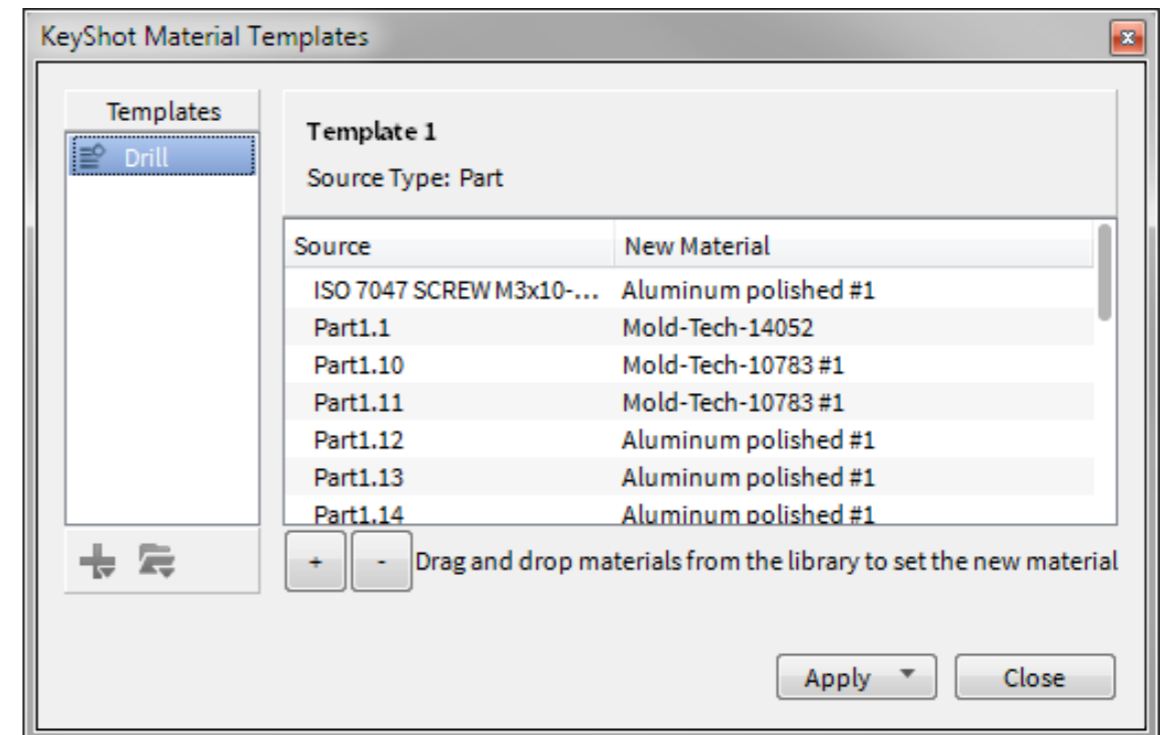
Material Templates

Applying Templates

Applying templates can be done through the material templates dialog or the import dialog.

Material Template Dialog

Templates can be applied using the "Apply" button. This will give you two options: "To Scene" or "To Selection".

To Scene

Apply the current template to the entire model.

To Selection

Apply the current template to the selected model or part.

Import Dialog

Click the "Materials" accordion to reveal the "use material template" checkbox. Enable this setting and select the desired template from the list. Click "Import" to complete the import.

Wild-Card Assignment

The wild card refers to the source name assigning to a certain destination. This can be activated by inserting an asterisk (*) to the source name (e.g. *Inner*) this will apply the material in the destination to all the parts containing "inner", upon applying the material template.
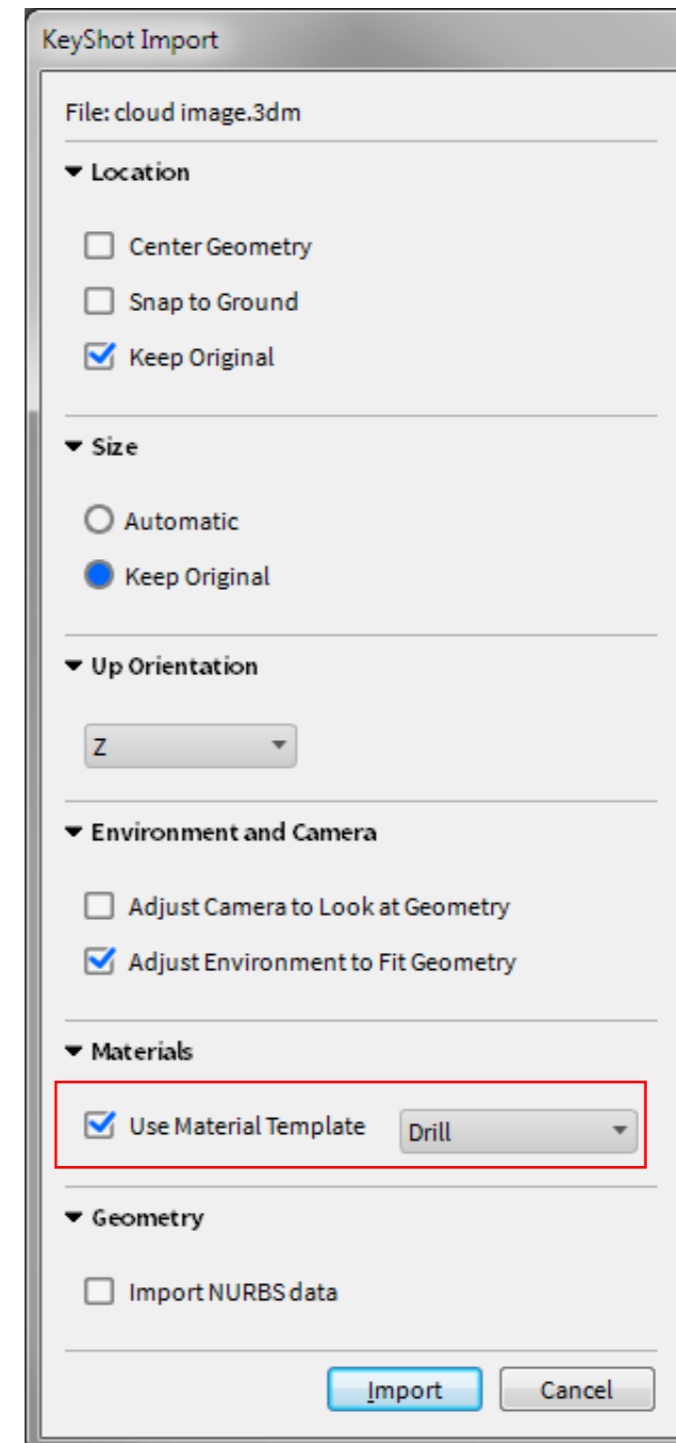
Color Library

KeyShot color library lets you drag and drop predefined colors onto any part or object inside the realtime window.

PANTONE® and RAL® color libraries are included for use.

Searching for colors can be done by clicking in the search box in the top right, and typing the name of the color. This will search the entire selected folder, for the specific color.

Searching can also be achieved by selecting the crosshair in the top right of the dialog. This will prompt a dialog with a color picker where you are able to select the color you are looking for.

Color libraries can also be imported from a *.csv file by using the import button, and browsing to the file.

You can create colors manually within KeyShot by right-clicking inside the color library and selecting "Add Color".
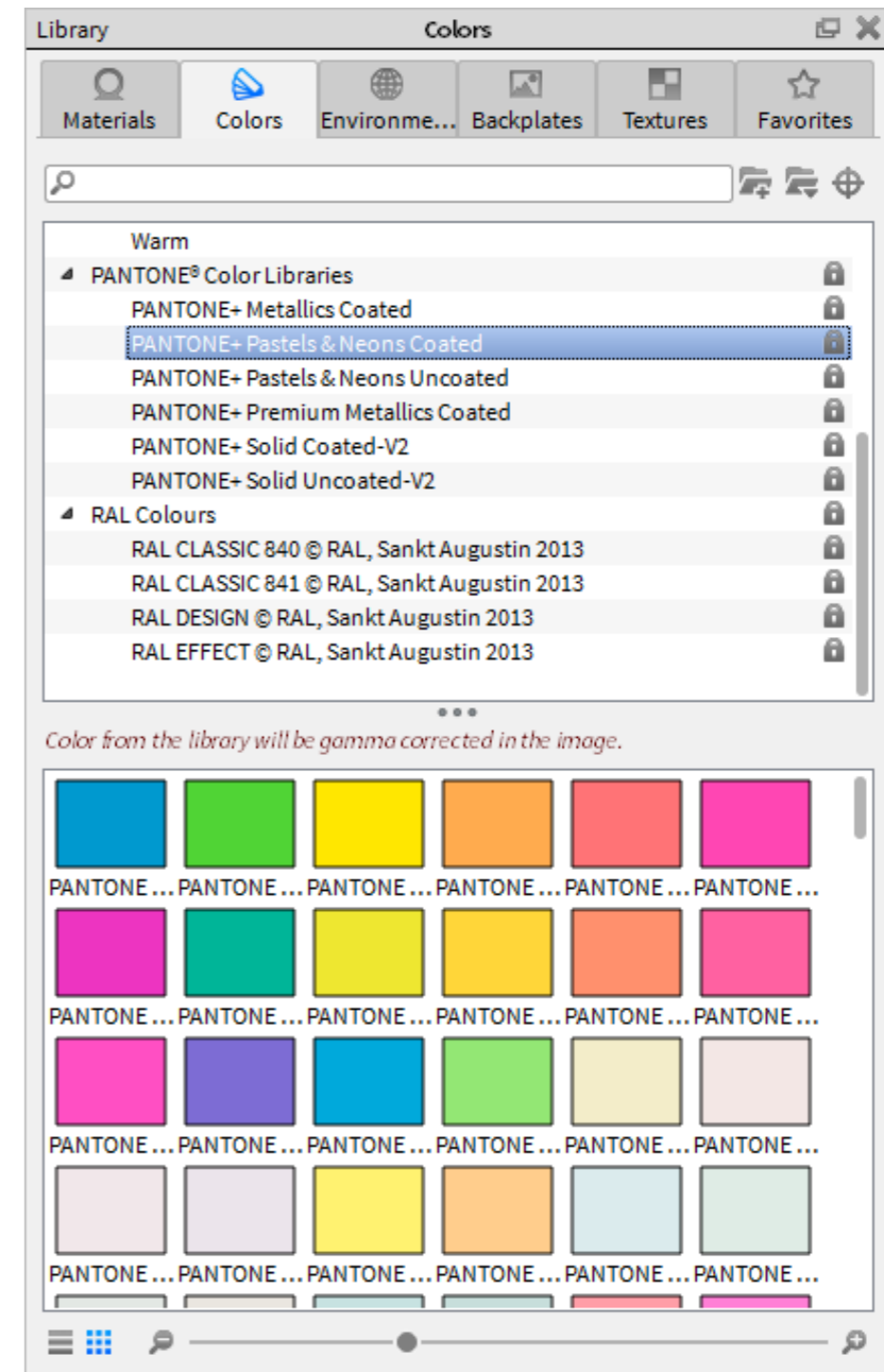
Color Picker

The Color picker can be accessed anytime a color box is clicked, as well as the eyedropper tool in the color library. The color picker gives you the ability to test and view your colors visually, or by numerically entering in specific values. The color picker supports rectangular and triangular color map representations.

The color picker supports the following color formats:

RGB

CMYK

HSV

Grayscale

CIE-L*ab

Kelvin

Swatch colors can be drag and dropped from the top color bars (both new and old), to the bottom squares. This will set the color in the square. Swatches can be overwritten by simply dragging and dropping new colors on existing ones.

The eye dropper icon gives you the ability to select any color on your display, and the color picker will update with the selected color from the eye dropper.

To save colors to your library, click the save icon which will prompt you to pick a folder to save your chosen color.
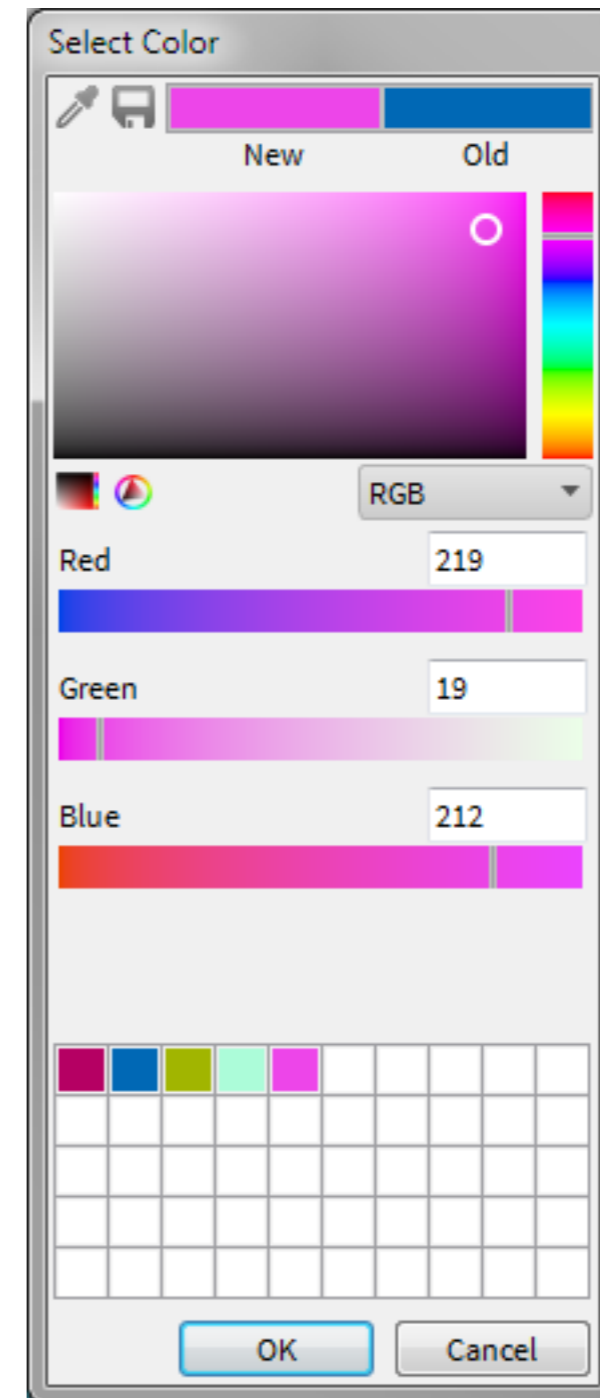
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Textures

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- [Texture Mapping](#)

- [Interactive Mapping Tool](#)

- [Texture Settings](#)

- [Color Maps](#)

- [Specular Maps](#)

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Texturing Overview

Texturing allows images to be mapped to materials to create the detailed effects such as wood grain, meshes, tile and fine imperfections such as brushed metals. Textures are applied in the material properties under the texture tab. Textures can be easily drag and dropped from a mapping type to another.(e.g. bump -> specular) Simple hold Ctrl(Windows) or Command(OS X) and drag the texture.
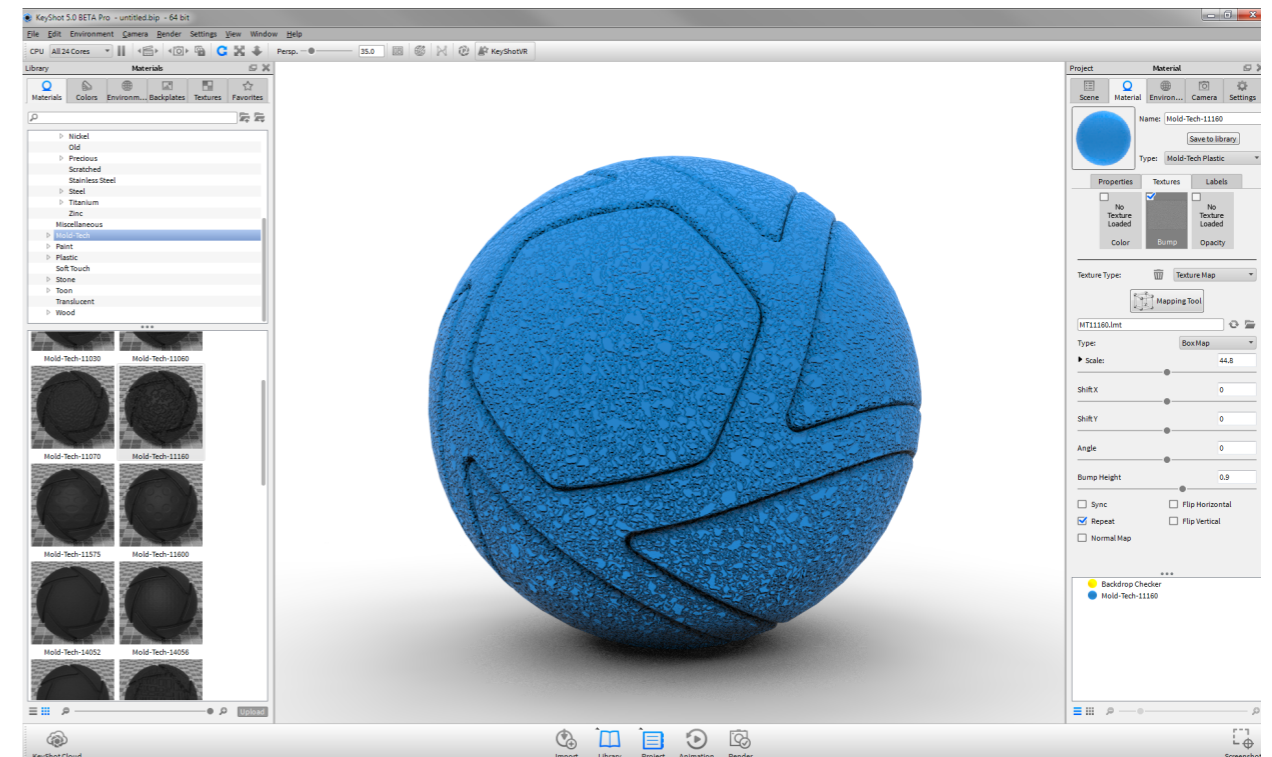
KeyShot® Manual

Texturing Mapping

Texture mapping is a way to take 2D images and place them onto 3D objects. This is a common problem that all 3D applications must address in some way. For example, does it place it from the top? On the bottom? From the side? The examples below cover the methods KeyShot has for addressing texture mapping.

Planar X

This will project a texture on the X axis only. Surfaces of 3D models that are not oriented on the X axis will show stretching in the texture like in the image shown.

Planar Y

This will project a texture on the Y axis only. Surfaces of 3D models that are not oriented on the Y axis will show stretching in the texture like in the image shown.

Planar X
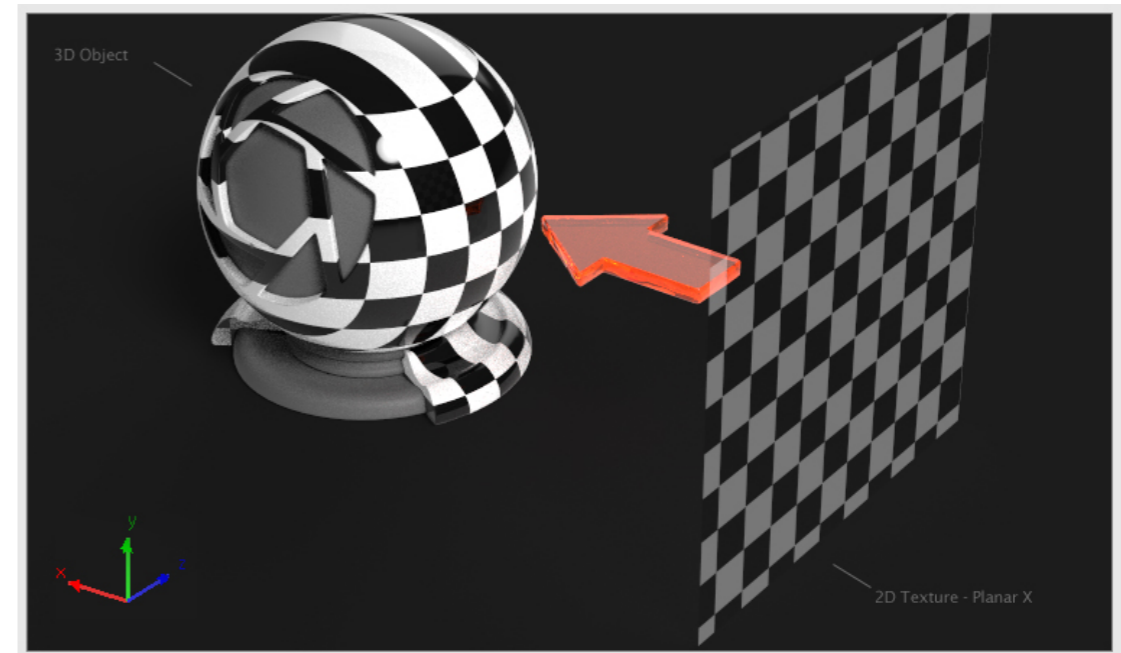
Planar Y
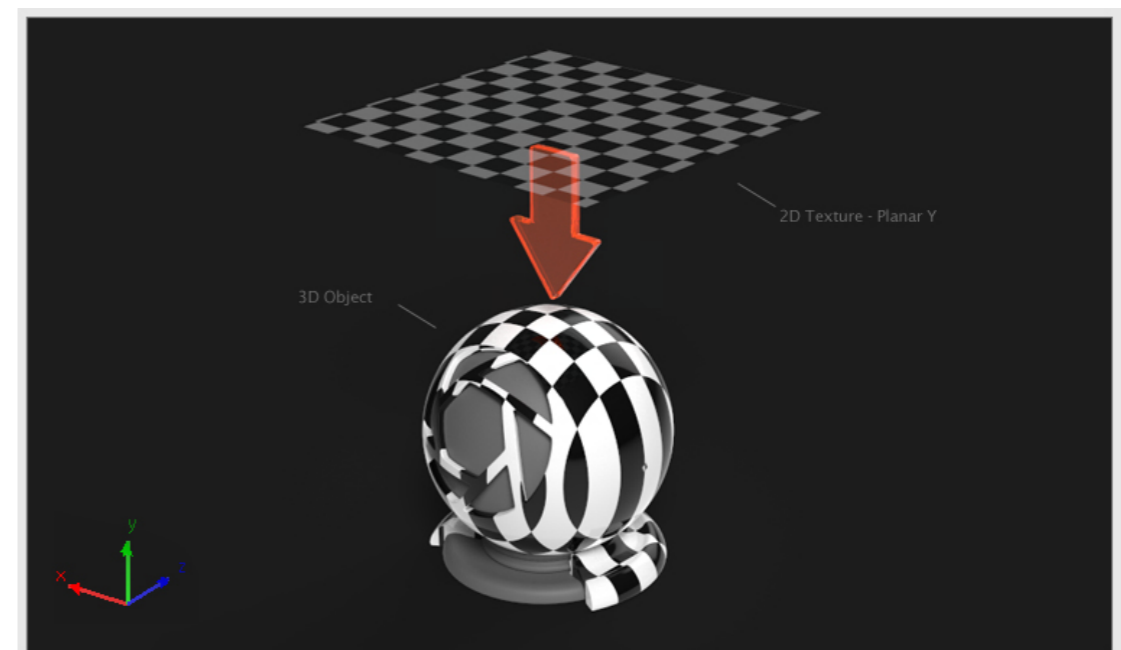
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Texturing Mapping

Planar Z

This will project a texture on the Z axis only. Surfaces of 3D models that are not oriented on the Z axis will show stretching in the texture like in the image shown.

Box Map

This will project a texture from six sides of a cube in towards a 3D model. A texture will be projected from a side of the cube until stretching occurs, then the next best projection side will take over. Box mapping is a quick and easy solution that will work in most cases because there will be minimal stretching of textures.

Planar Z
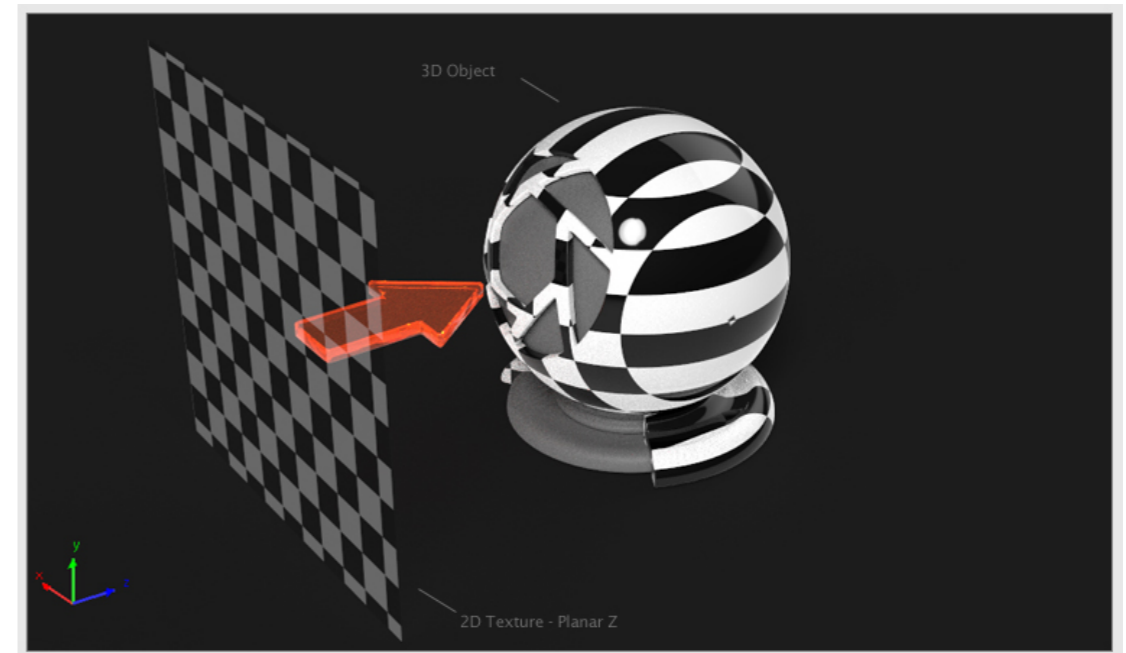
Box Map
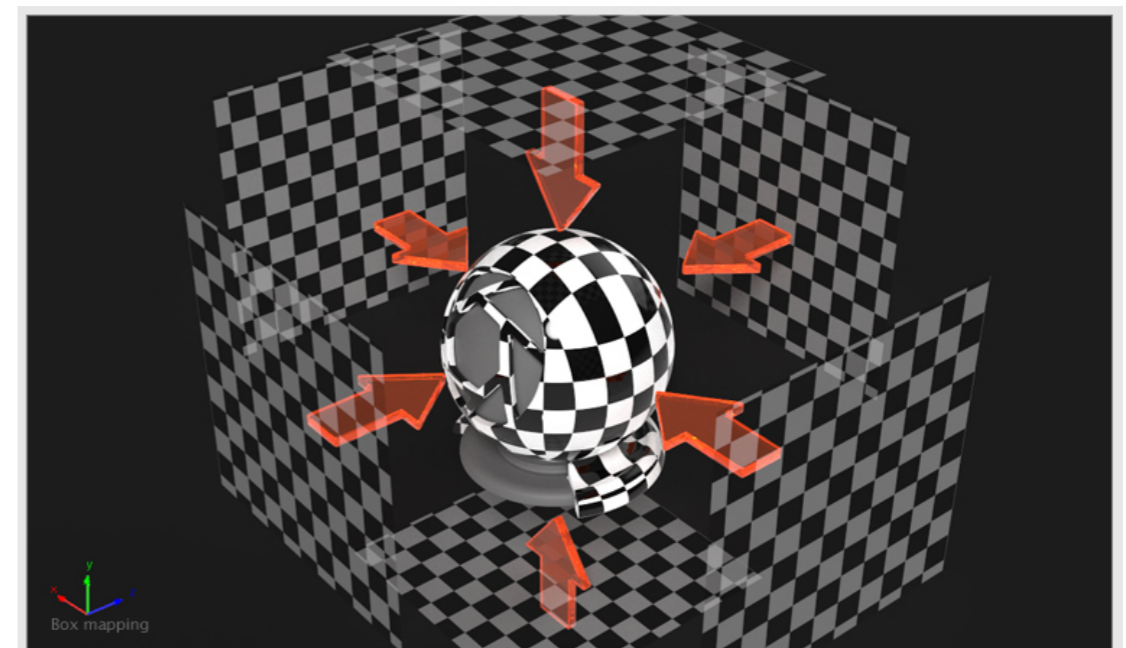
Texturing Mapping

Spherical

This will project a texture inwards from a sphere. The texture will resemble the original image the most at the equator. The texture will start to converge as it reaches the poles of the sphere. As with box mapping, stretching is less of an issue when working on multi sided objects than it is with any of the planar mapping modes.

Cylindrical

The example below illustrates how a 2D texture is projected on a 3D model when the mapping mode is set to "Cylindrical mapping". The texture will project the best on surfaces that are facing the inside of the cylinder. The texture on surfaces that do not face the inner walls of the sphere will stretch inwards.

Spherical Map
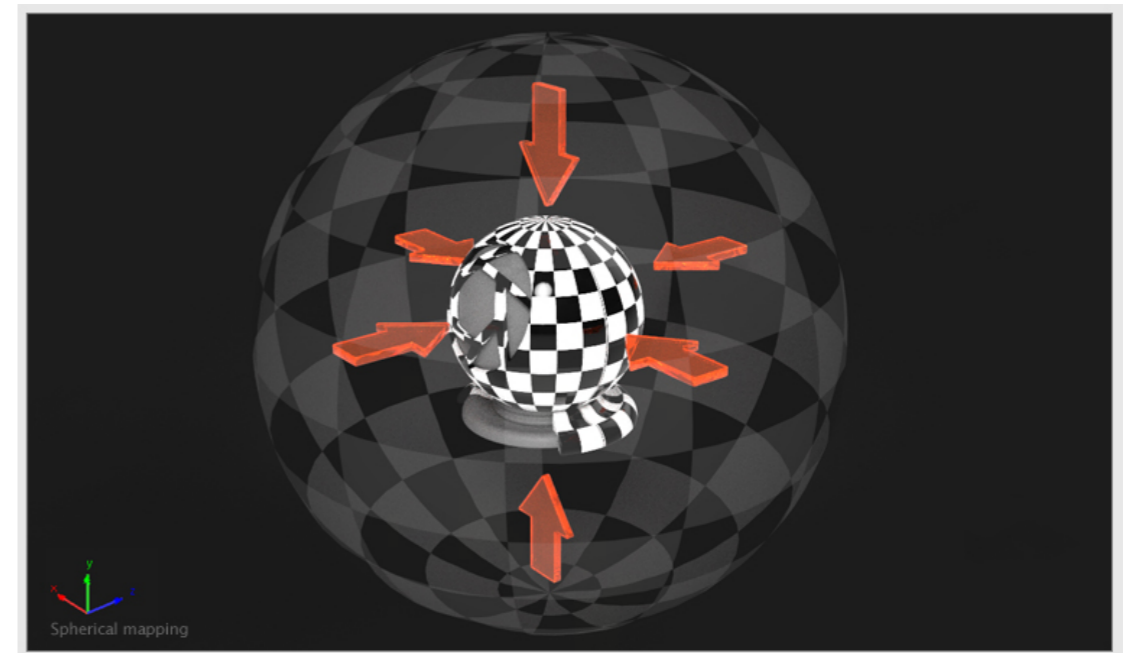
Spherical mapping

Cylindrical Map

Cylindrical mapping
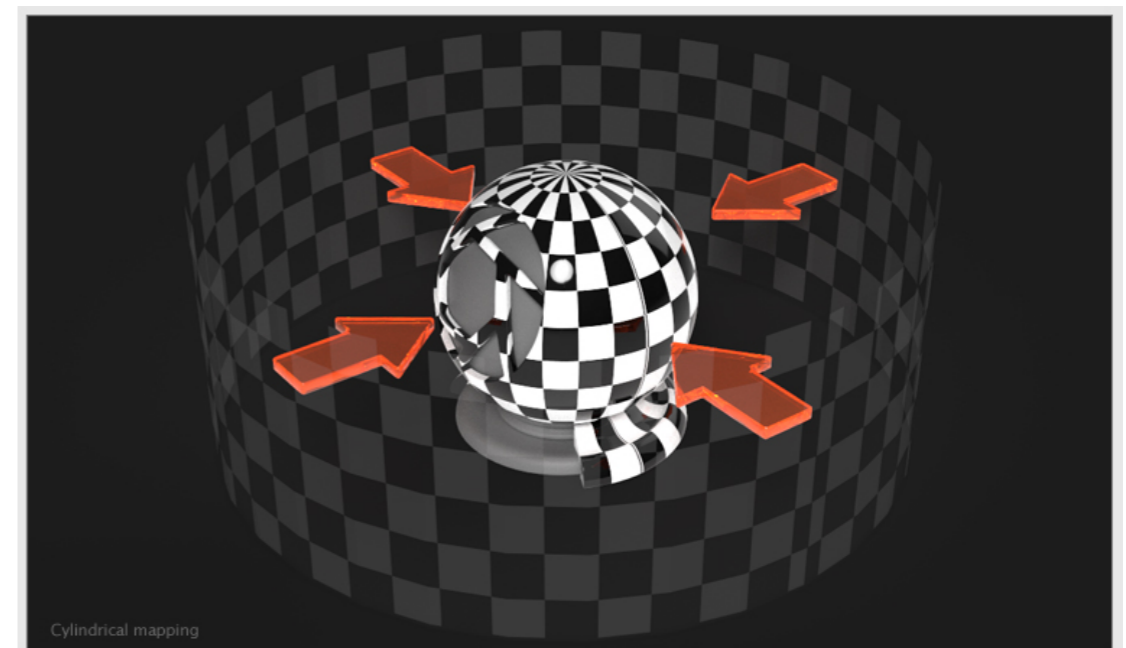
UV Coordinates

Texturing Mapping

UV Coordinates

This is a completely different method of applying 2D textures to 3D models, in that it is an entirely custom made. It is more time consuming and is much more widely used in the entertainment industry as opposed to the design/engineering world.

Interactive Mapping Tool

In addition to the automatic mapping modes shown above, KeyShot has an interactive mapping tool that will allow, scaling, translating and orienting any of the automatic mapping types interactively.
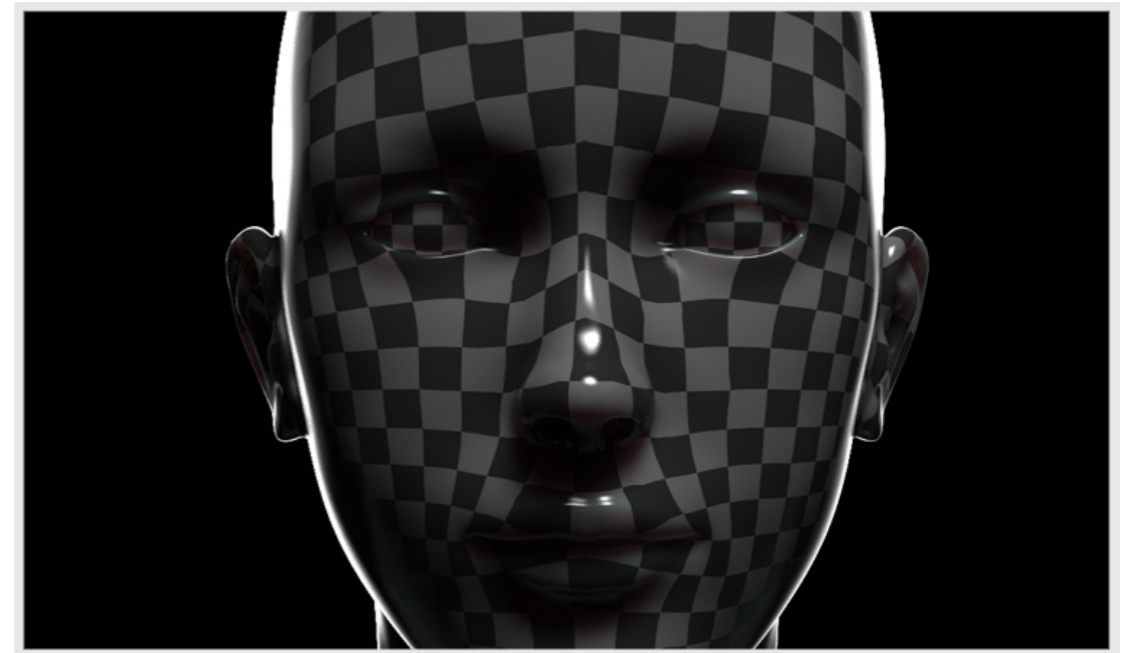
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Interactive Mapping Tool

The interactive mapping tool is used to fine tune the position of textures as they are mapped to your model. The tool is accessed from the texture mapping tab within the material editing menu, and is available when in box, spherical and cylindrical mapping modes.

Translate

Use arrow handles to move the texture mapping position on the XYZ axes. To translate the mapping click on any of the three axis arrows. The red, green and blue arrows correspond to the X, Y, and Z axes.

Rotate

Use circle handles to rotate and align the texture mapping to your model. Hold shift to constrain the rotation to 15 degree increments.

Scale

Use cube handles to change the size of the texture mapping. Click on red, green, or blue boxes to scale the texture on only one axis, Or, click on the center yellow box to scale the texture uniformly.

Position

Use position to establish exactly where you want the center of your texture image to project. Once in position mode you can simply click on the surface of the model to change the where your texture is projecting.

Cancel or Confirm Changes

After adjusting the texture mapping with the mapping tool, click the green check mark to confirm the changes and close the mapping tool. Click the red X to cancel the changes and close the mapping tool.
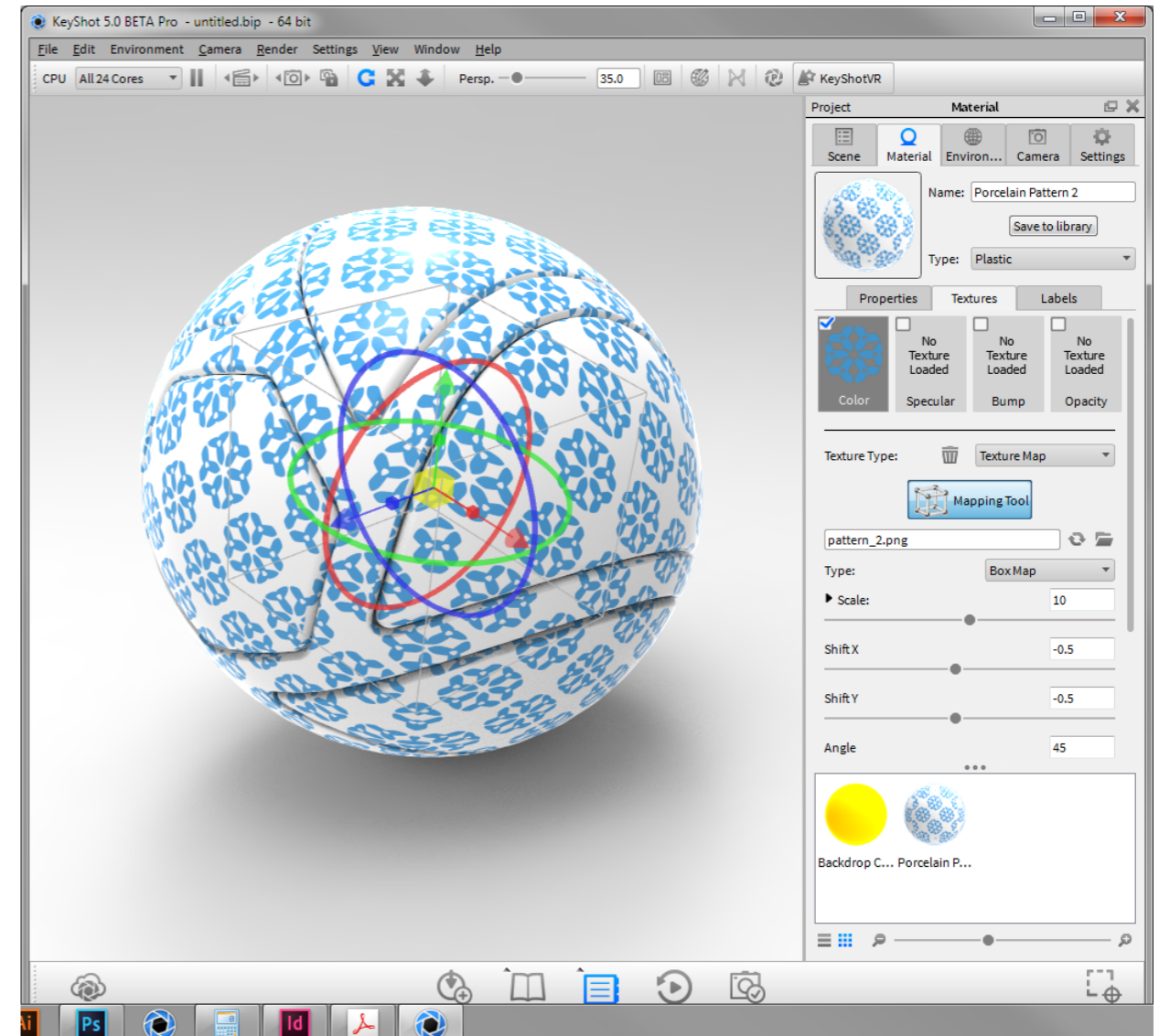
Texture Settings

Scale

Change the scale of the image file. This can be done uniformly or on the X or Y axis.

Shift X/Y

Use shift to nudge textures incrementally to apply textures exactly where you need them to be.

Angle

The Angle slider will control the textures mapping angle. The slider supports both negative and positive values.

Brightness

Adjust the brightness of the image file.
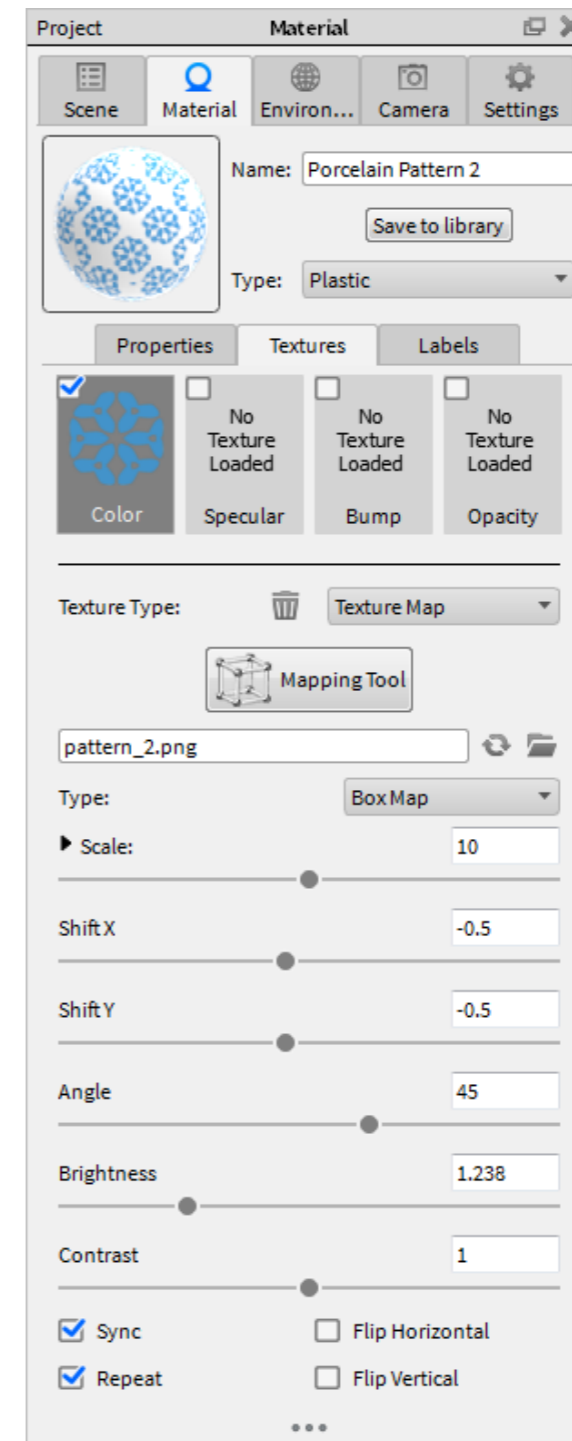
Contrast

Adjust the contrast of the image file.

Sync

When using multiple maps in conjunction Sync allows the settings for each map to match. This allows the maps to align properly.

Repeat

When enabled the image file used for the texture will be tiled and repeated along the surface. When unchecked, the image fill will only appear once.

Flip Horizontal/Vertical

If the image file you are using needs to be mirrored use these toggles to flip the image on the correct axis.

Color Maps

Color maps use photographs to replace the basic solid diffuse color. This is used to recreate realistic digital materials based on photographs of real world materials Any common image format can be mapped to material types that have the color map available. The example shows a wood texture mapped to the color texture on the advanced material.
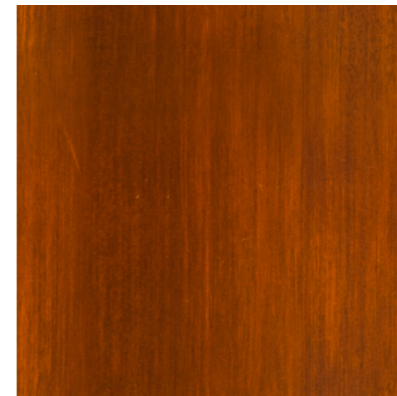
Specular Maps

Specular maps can use black and white values to indicate areas that have varying levels of specular intensity. Black will indicate areas of 0%specular reflectivity, whereas white will indicate areas of 100% specular reflectivity. Notice on the example that the metal portions are reflective and emitting specular reflections, whereas the rust area does not. The rust area has black mapped to it, whereas the metal area has white. See the texture for reference.

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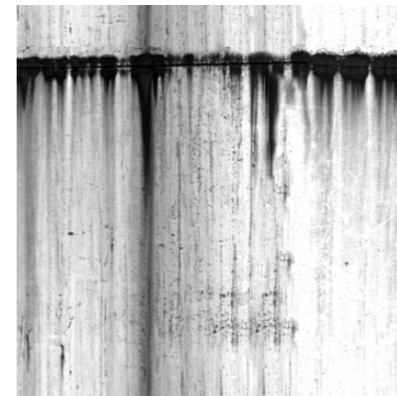
Bump Maps

Bump maps are used to create fine details in materials that would be unrealistic to include in the model, like the hammered chrome and brushed nickel in the example. There are two different methods of creating bump maps. The first and easiest way is by applying a black and white image. The second way is by applying a normal map.

Black and White Values

In a black and white bump map, the black values are interpreted is lower and the white values are interpreted as raised. You can see how this interpreted in the example.

Normal Maps

A normal map was used to create the hammered chrome in the example shown. Normal maps contain more colors than the standard black and white bump maps. These additional colors represent different levels of distortion on X, Y and Z coordinates. This can create more complex bump effects than a black and white bump map which has only 2 dimensions. However, most bump effects can and will look very realistic without the need for normal maps. Enable the effect by checking "Normal Map" in the bump map settings.

Bump Height

In bump maps, brightness and contrast has been replaced with bump height. Increasing this raised the peaks of the bumps, and helps exaggerate the bump when the texture needs to be more visible.
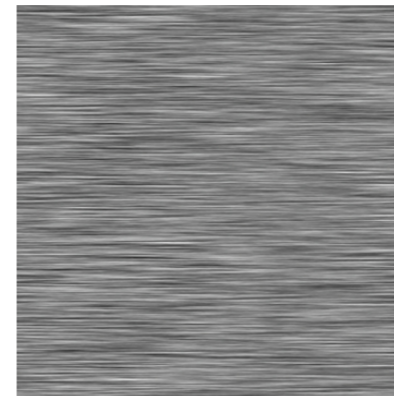
Bump Map
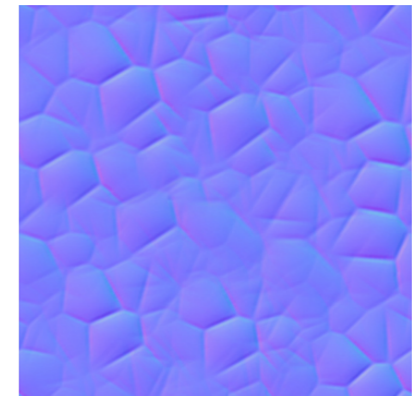
Normal Map

Opacity Maps

Opacity maps can use black and white values or alpha channels to make areas of a material transparent. This is useful for creating materials like the mesh material shown, without actually modeling the holes.

Opacity Mode

The opacity mode can be set to 3 different methods:

Alpha - this will use any alpha channel that is embedded in the image to create the transparency. If no alpha channel is present, no transparency will be shown.

Color - this will interpret black areas as completely transparent and white areas as completely opaque. 50% gray will be 50% transparent. This method is available to avoid the need for alpha channels.

Inverse Color - inverse color is the opposite of color. White will be completely transparent, black will be completely opaque and 50% gray will be 50% transparent.
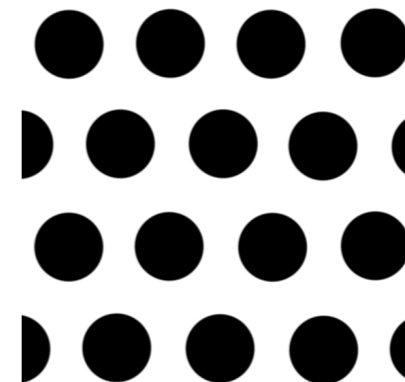
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- [Fiber Weave](#)

- [Scratches](#)

- [Granite](#)

- [Leather](#)

- [Marble](#)

- [Noise(Texture)](#)

- [Noise(Fractal)](#)

- [Wood](#)

Procedural Overview

Procedural textures are customizable textures that allow you to control the grain and color of the texture in realtime. In comparison to traditional texture mapping, procedural textures wrap around your model without leaving seams or stretching, regardless of the model's shape.

KeyShot 4 comes with six commonly used procedural texture types: Granite, Leather, Marble, Noise (Texture), Noise (Fractal), and Wood. You can select your texture type via the Texture Type pull down found inside the texture mapping tab within the material editing menu.

Brushed

The brushed procedural texture simulates the effects of brushed metal. Best used as a bump on a metal material with low roughness value.

Bump Height
Set the depth of the brushed texture

Length
Control the length of the brush strokes.

Contrast
Controls how defined the brush stokes are.
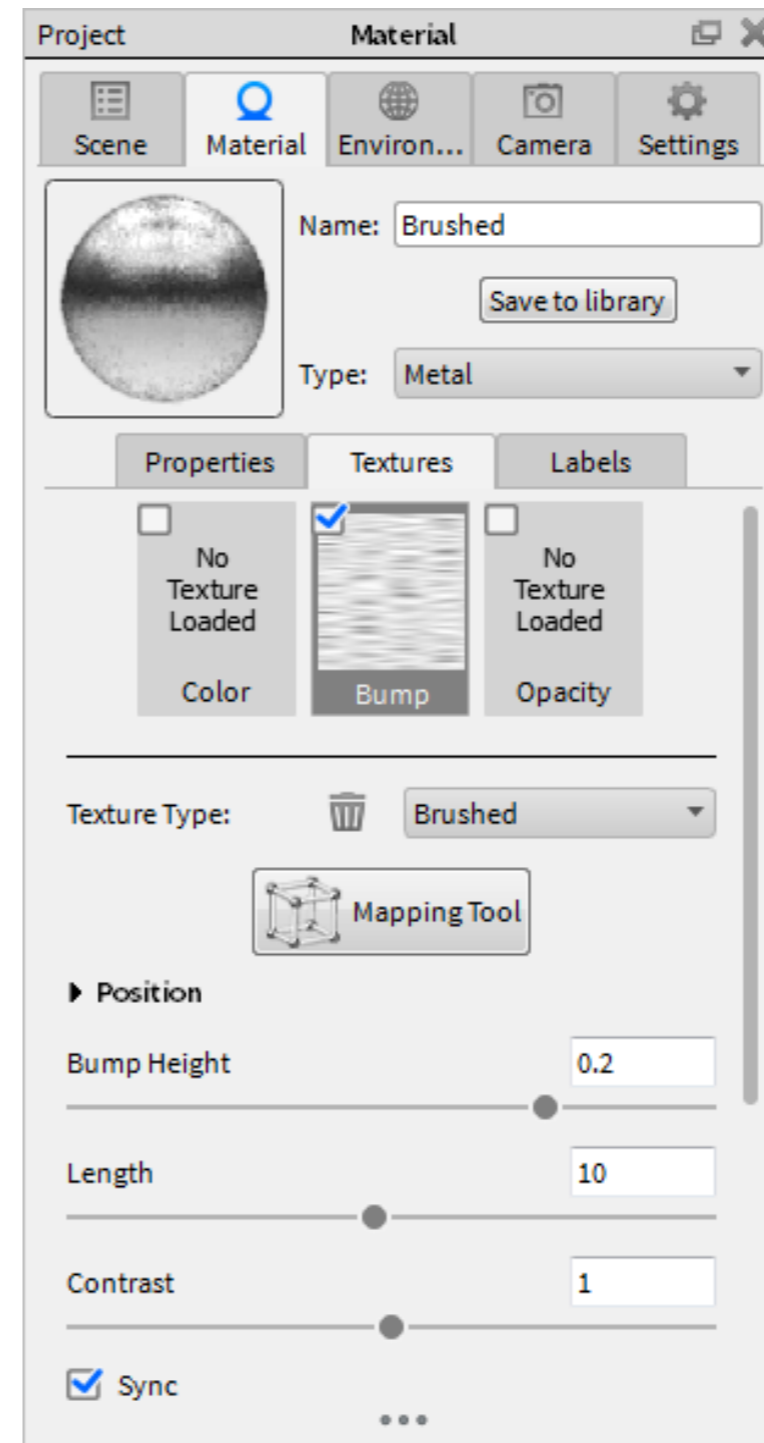
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Cellular

The cellular procedural texture is an advanced tool to create a wide variety of texture maps. You can create a hammered texture as seen here, or you can create cracked surfaces, orange peel paint, crumpled paper, and more.

Scale
Set the scale of the scale of the texture

Bump Height
Control the overall intensity of the texture map

Contrast
Contrast refers the to the difference in the peaks and valleys of the bump map. Control them globally, or expand for finer controls.

Shape
Control the fractal shapes generated with this slider, and the sliders contained within.

Levels
Increase or decrease the levels of fractals being generated.

Noise
Add noise to the line quality of the fractal shapes
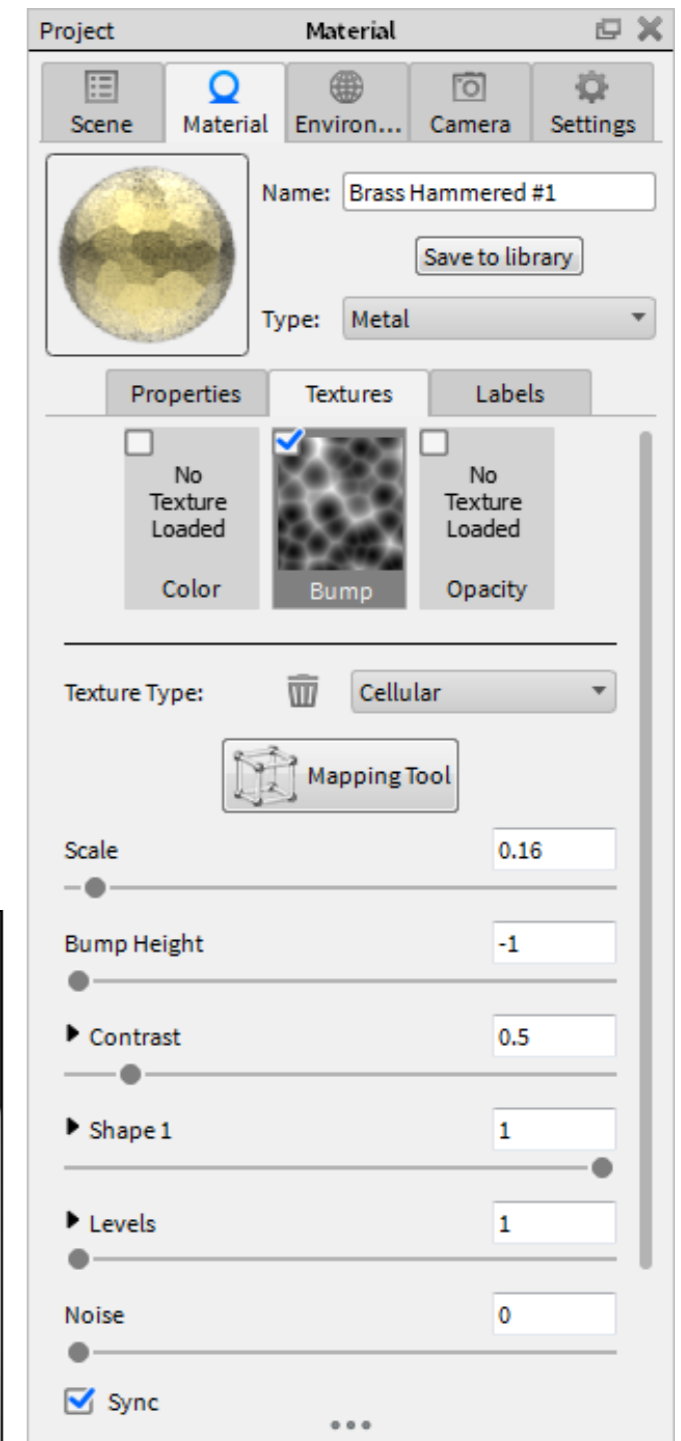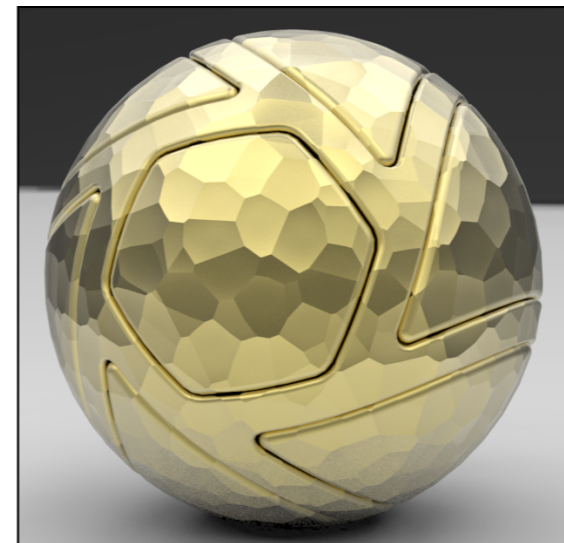
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Cloth Weave

Cloth Weave simulates many types of fabrics and fine woven materials.

Gap Color

This will designate the color in between the woven colors.

U/V Thread Colors

Assign the colors of your threads to affect the overall color of the weave.

U/V Width

Controls the thickness of the threads.

UV Wave

Changes the direction of the threads within the weave to simulate different types of woven patterns.

Contrast

Increase or decrease the contrast of the threads.

Width Noise

Controls the uniformity of the thread widths.

Color Noise

Controls the uniformity of the thread colors.

Distortion Noise

Controls the uniformity of the thread straightness.
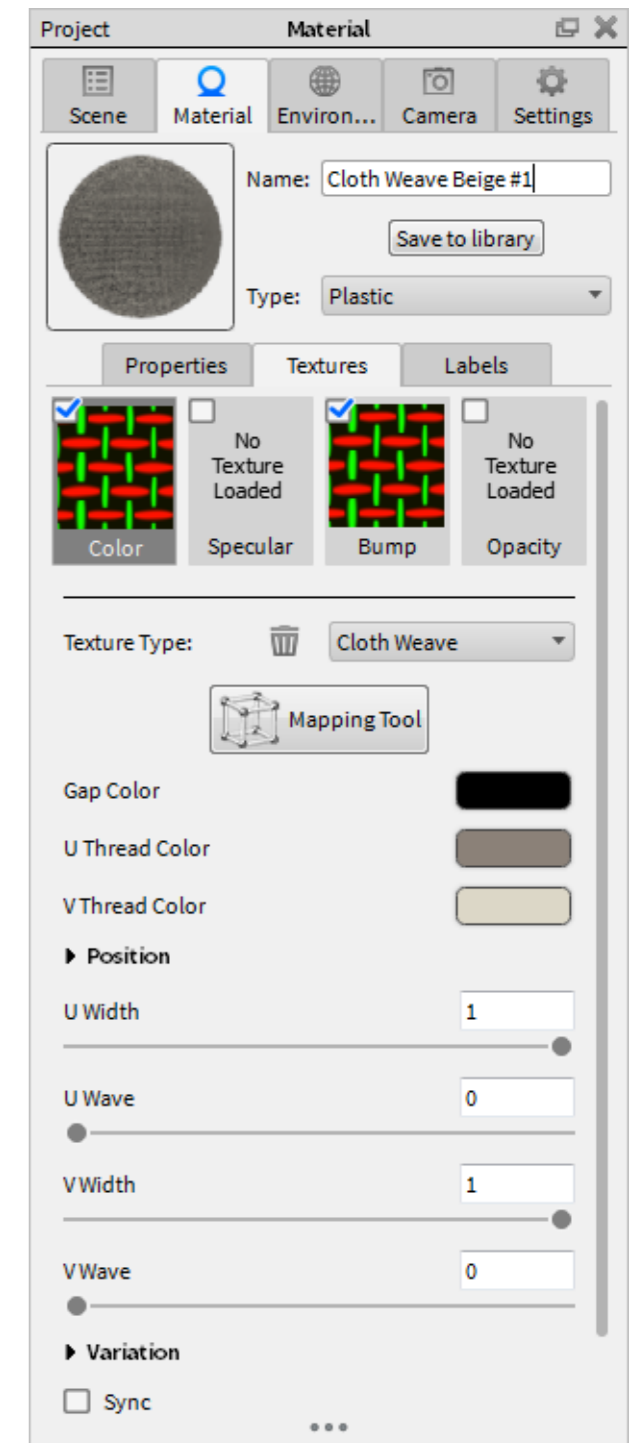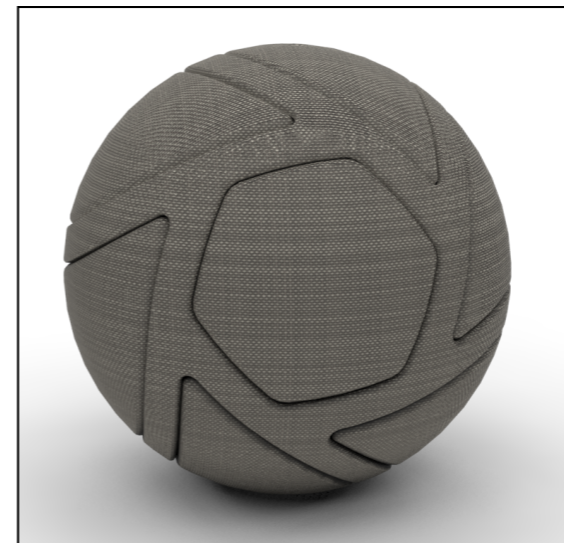
Color Gradient

The Color Gradient Procedural Texture allows you to mix 2 seperate colors on a surface, without having to create a custom texture map.

Mapping Tool
Use this to move the center line of the gradient.

Color 1
Choose the first color of the gradient

Color 2
Choose the second color of the gradient.

Scale
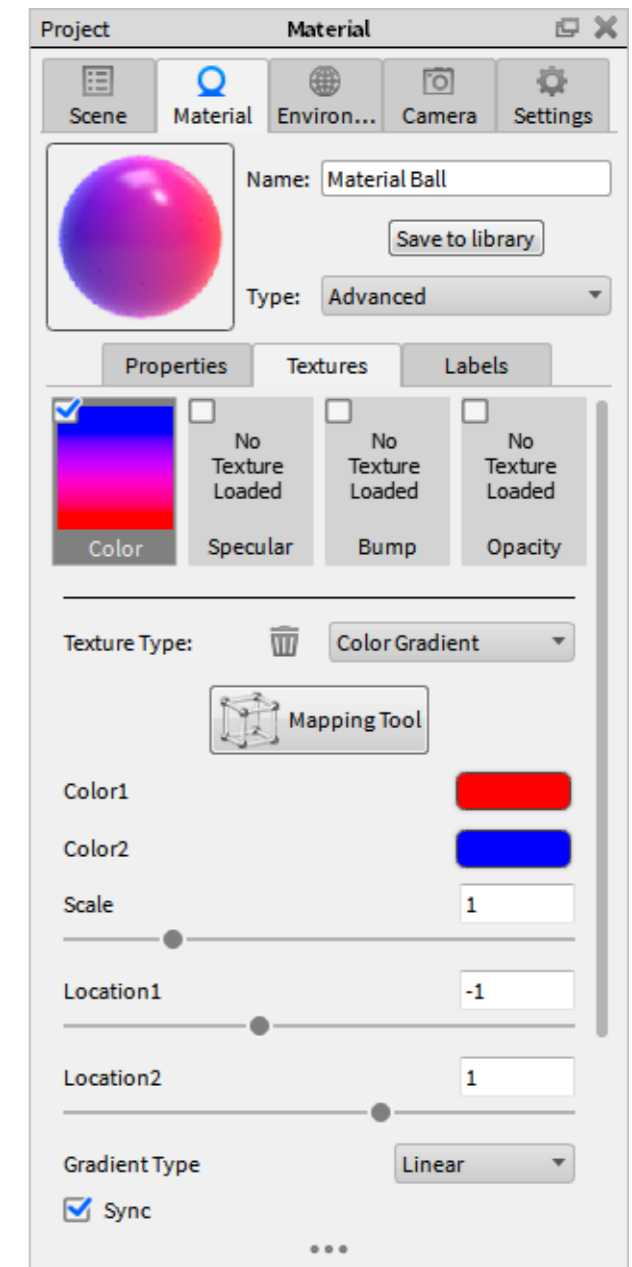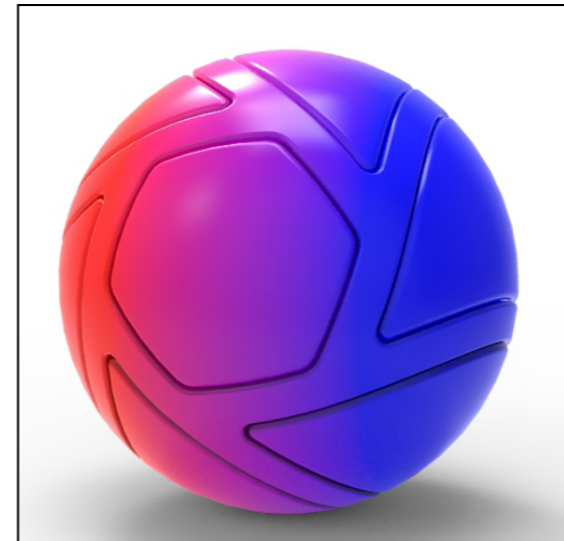Adjsut the scale to have a large or small blend across the surface.

Location 1
Adjust the location of where color 1 starts on the gradient.

Location 2
Adjust the location of where color 2 starts on the gradient.

Gradient Type
Choose from linear, spherical, and cylindrical to match the shape of your part or model you are applying the gradient to.

KeyShot® Manual

Fiber Weave

Fiber Weave simulates many types of thicker woven material like carbon fiber meshes.

Color 1
This is the gap color.

Color 2
This is the color of the woven material.

Projection
Choose the type of projection used.

Scale
Set the correct scale of the weave in relation to the model.

Gap
Controls the size of the gap between the weaves.

Edge Width
Increasing this creates deeper shadows within the weave

Contrast
Increase or decrease the contrast of the threads.

Fibers
Set the amount of threads seen within the fibers.

Noise
Add noise to the weave color.

Weave Noise
Add noise to the straightness of the weave.
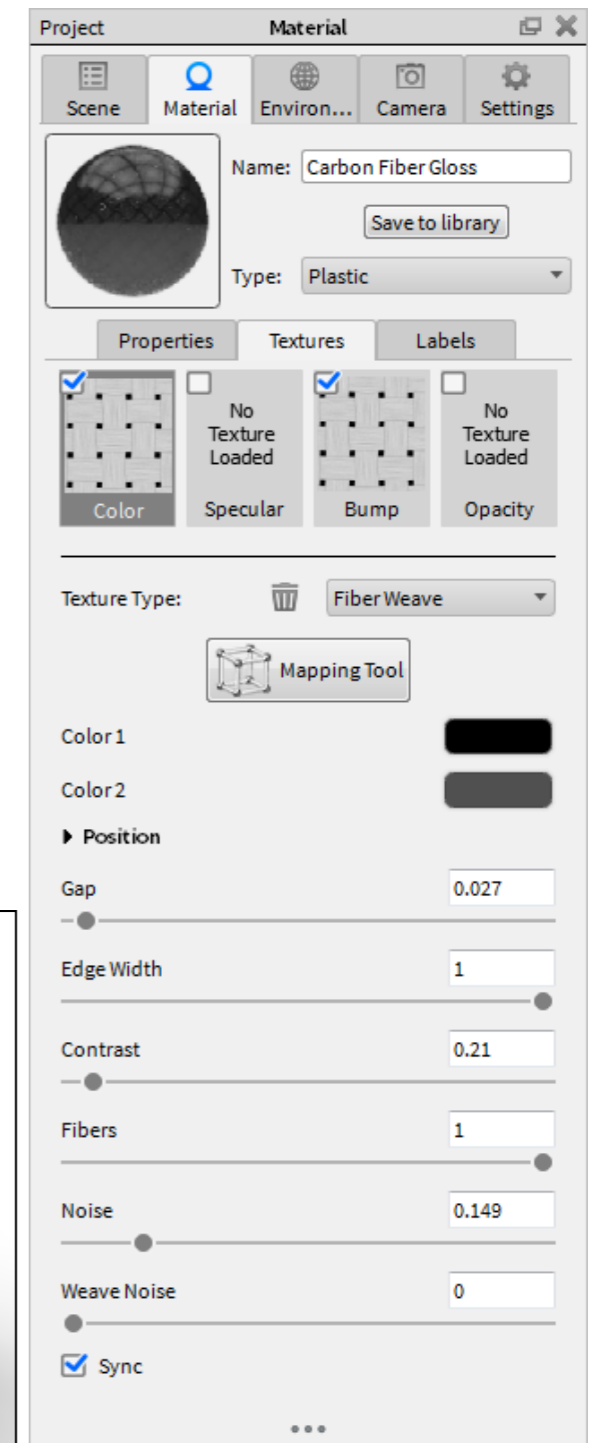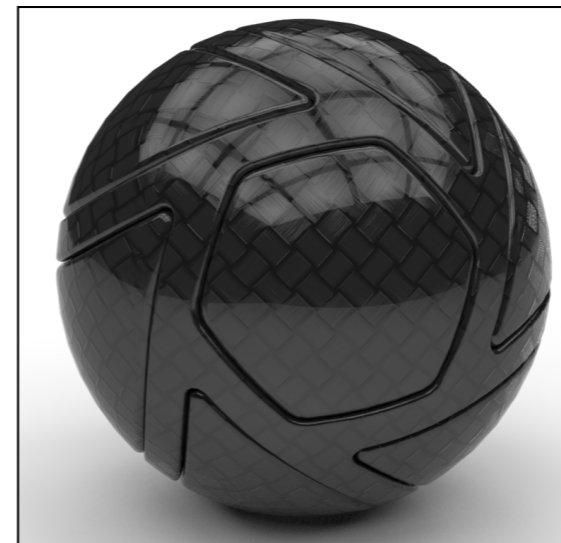
KeyShot® Manual

Scratches

Scratches is great way to add weathering to a material, in particular, metal materials.

Scale
Set the correct scale of the pattern generated.

Bump Height
Increase to have deeper scratches.

Density
Controls the amount of scratches generated.

Size
Set the size of the individual scratches. Expand to control scratch width, and scratch falloff.

Directional Noise
Controls the randomness of the direction of the scratches. Decrease to have scratches in a more aligned direction. Expand to choose mapping.

Noise
Controls the straightness of the scratches. Increase to have more irregular shaped scratches. Expand to access the noise scale slider.

Levels
Controls the amount of unique scratches are generated. Expand to access the level scale.
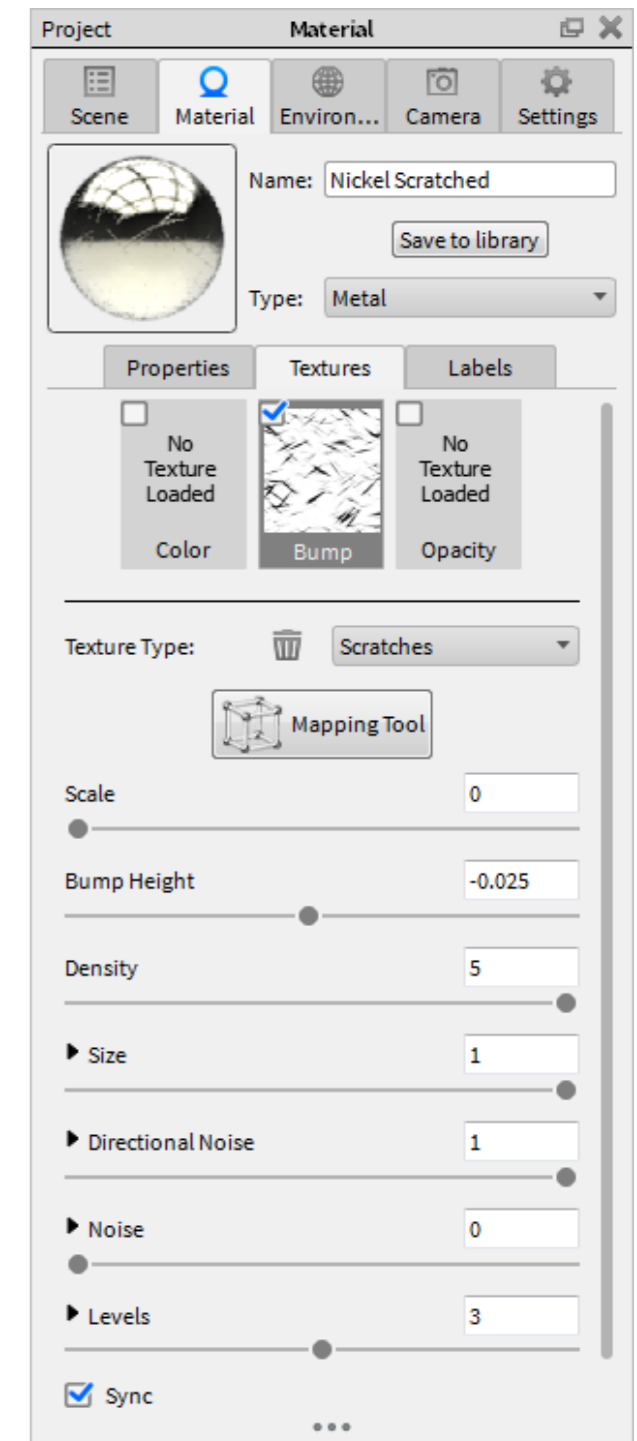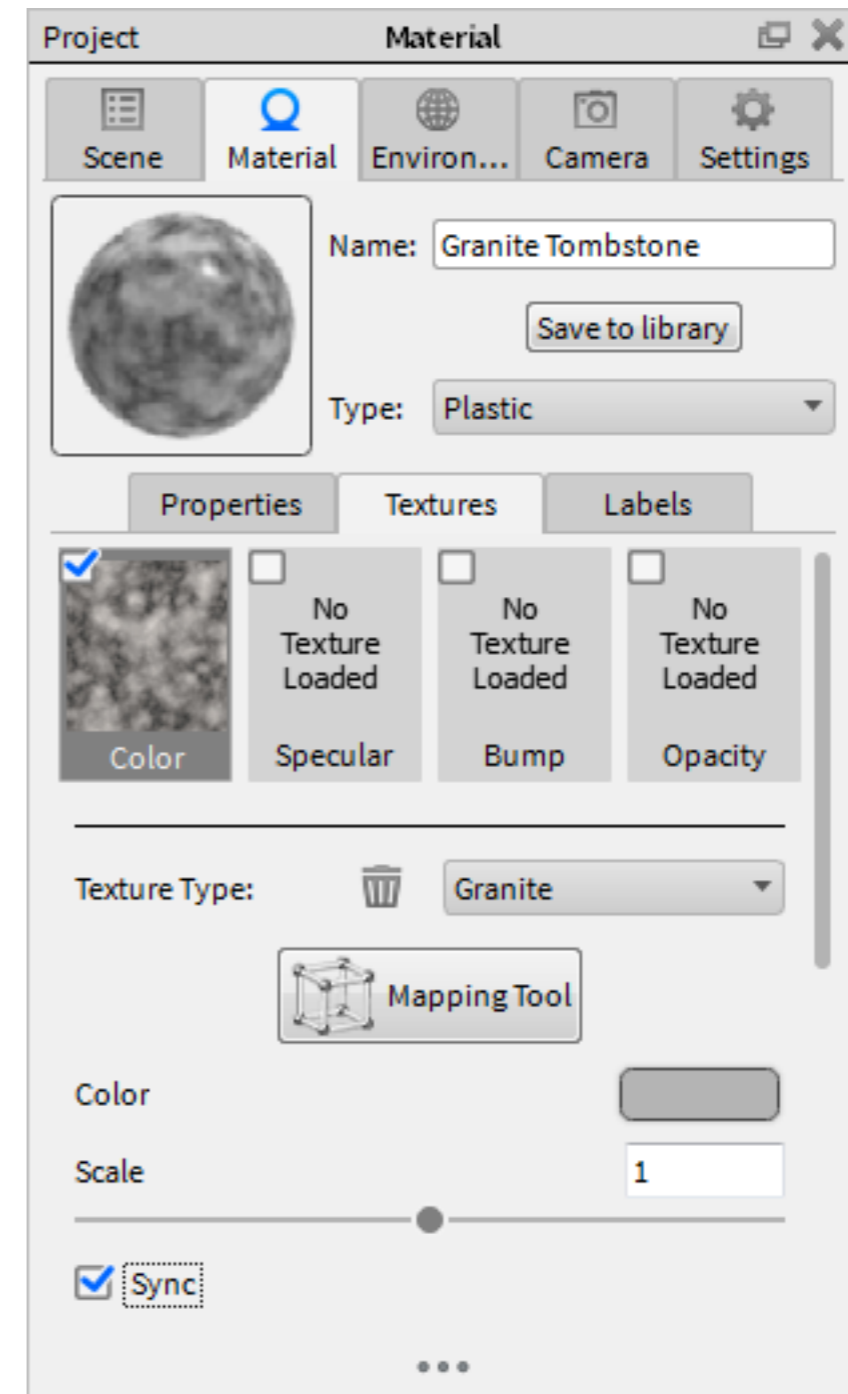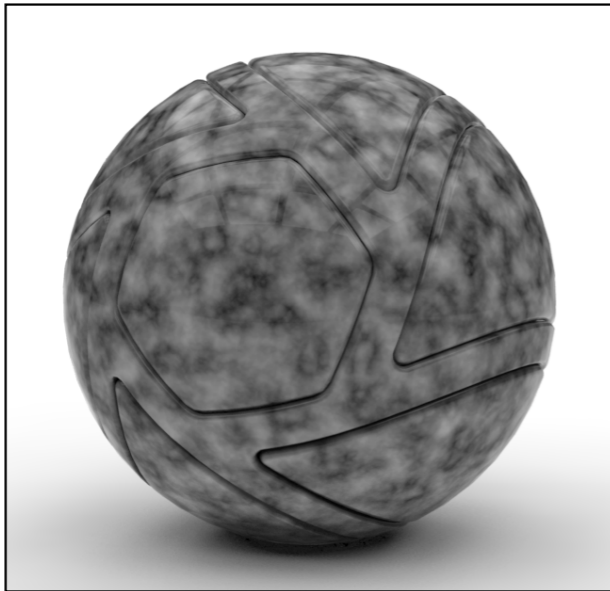
KeyShot® Manual

Granite

The granite procedural texture allows you to simulate the granite on a counter top, tile, or stone.

Color
This is the overall color of your granite texture

Scale
This controls the scale of the grain in the granite.

Leather

The leather procedural texture allows you to easily replicate a leather textured material.

Color 1
This is the color of the high points (bumps) in leather. This color should be lighter than color 2, but it should be as close to color 2 as possible for realistic looking leather.

Color 2
This is the color of the low points in leather. This color should be darker than color 1, but it should be as close to color 1 as possible for realistic looking leather.

Scale
This controls the scale of the leather grain.

It is highly suggested to add a synced procedural leather bump to further simulate realistic leather.
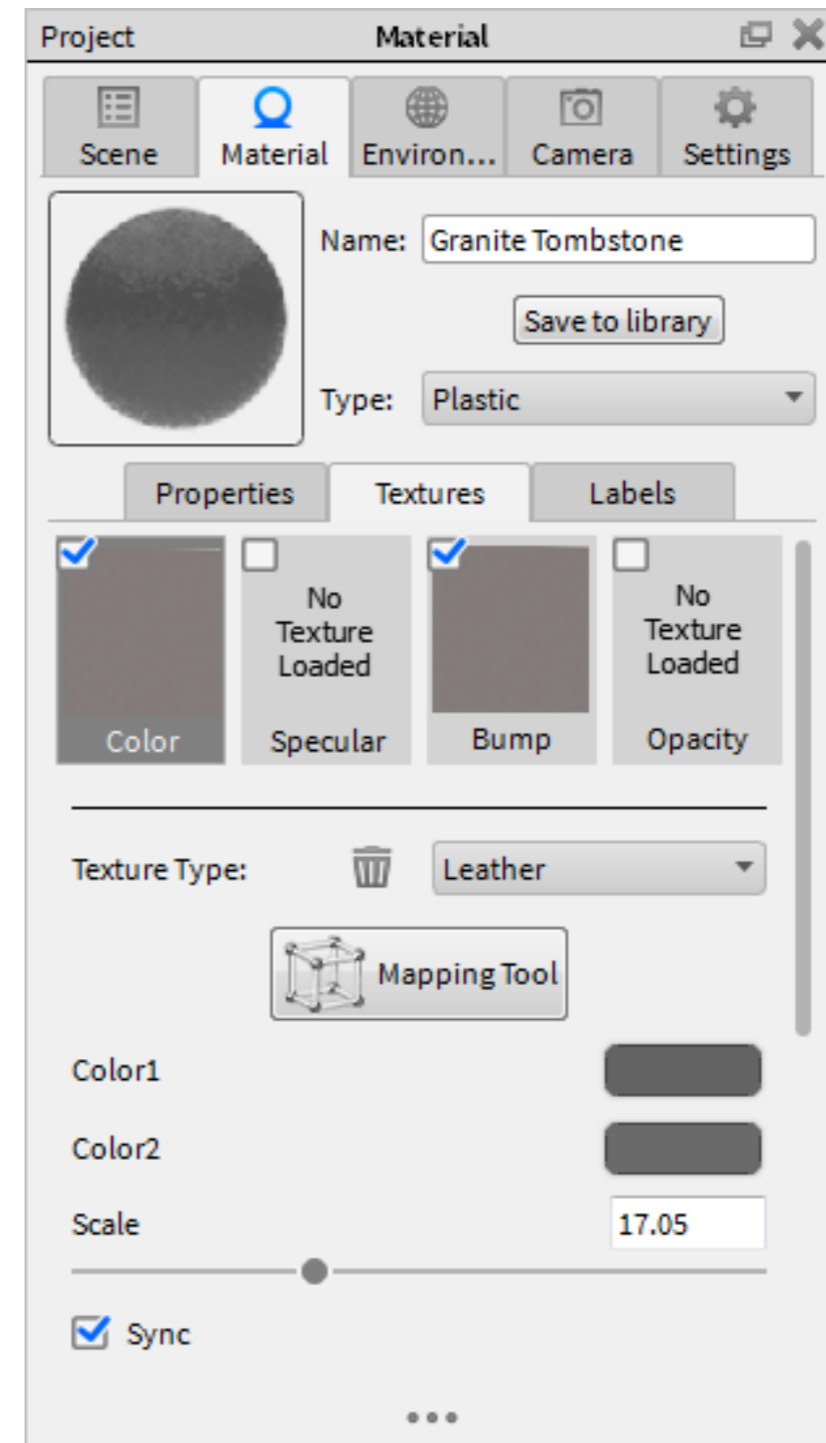
KeyShot® Manual

Marble

The marble procedural texture allows you to simulate the marble material on a counter top, tile, or stone.

Color 1
This is the overall color of your granite texture.

Color 2
This is the color of the veins in granite.

Vein Thickness
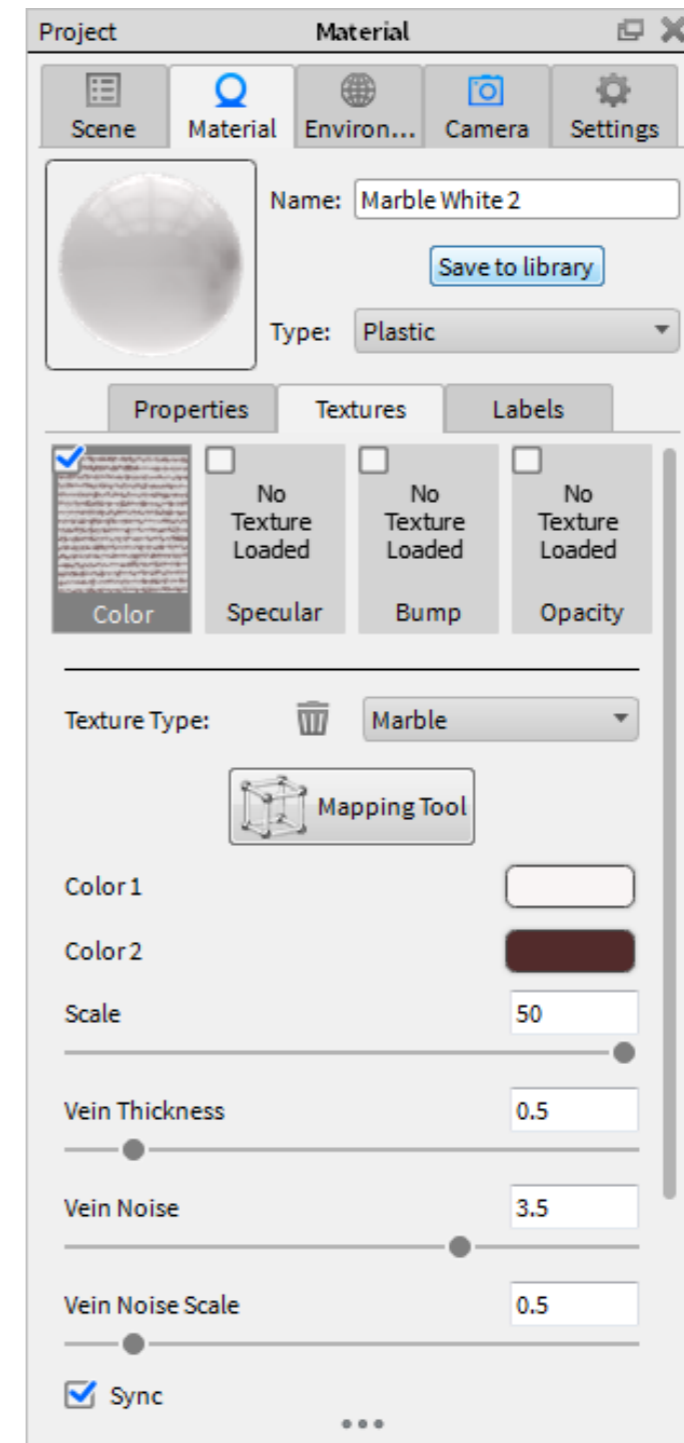This allows you to adjust the thickness of the veins in granite.

Vein Noise
This adds random fluctuations in the granite veins.

Vein Noise Scale
This adds fluctuations to the overall direction of the granite veins.

Scale
This controls the scale of the veins in granite.

KeyShot® Manual

Noise (Texture)

The noise (texture) procedural texture is very similar to the stock noise texture in the textures library and it allows you to simulate ripples in glass and liquid materials when used as bump.
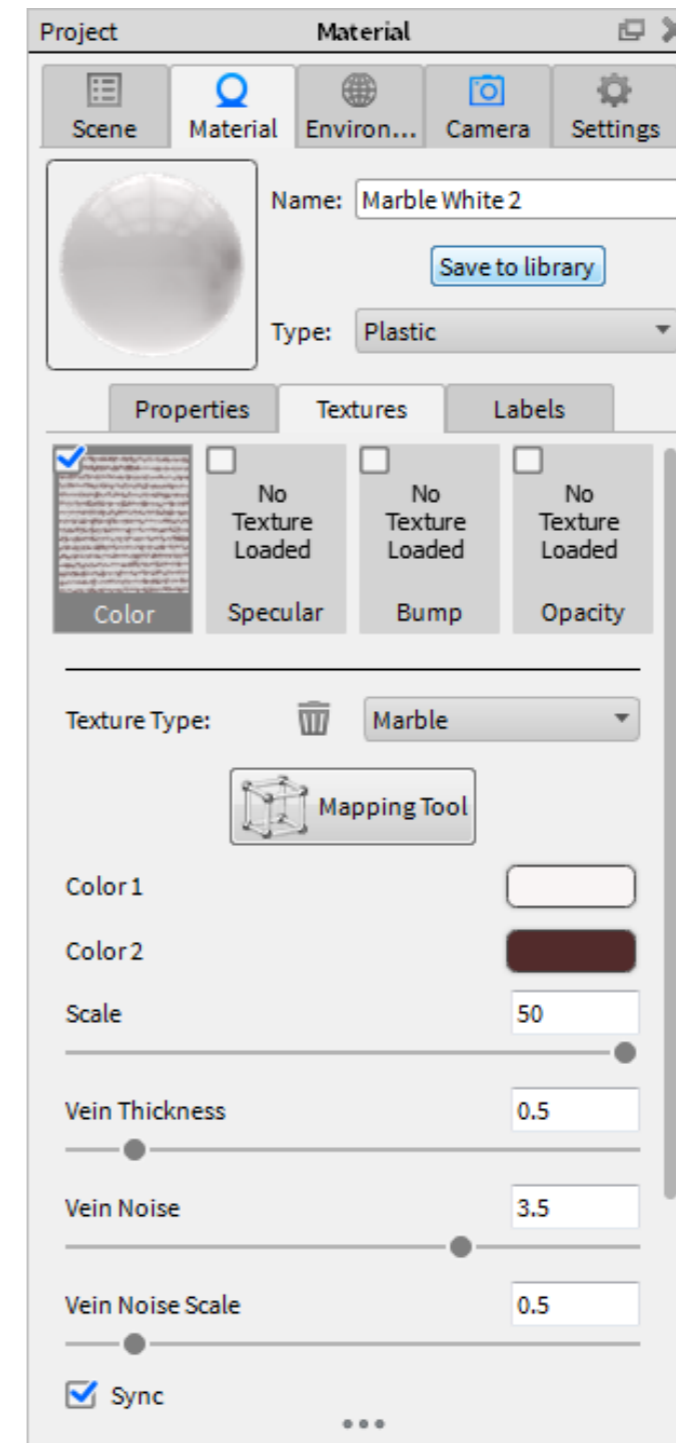
Color 1 and 2
The noise procedural has light and dark colors that you can modify using these two settings.

Scale
This controls the scale of the noise.

Magnitude
This increases the intensity of color 2 and contrast between the two colors.

KeyShot® Manual

Noise (Fractal)

The noise (fractal) procedural texture also allows you to simulate ripples and bumps in your material.

Color 1 and 2
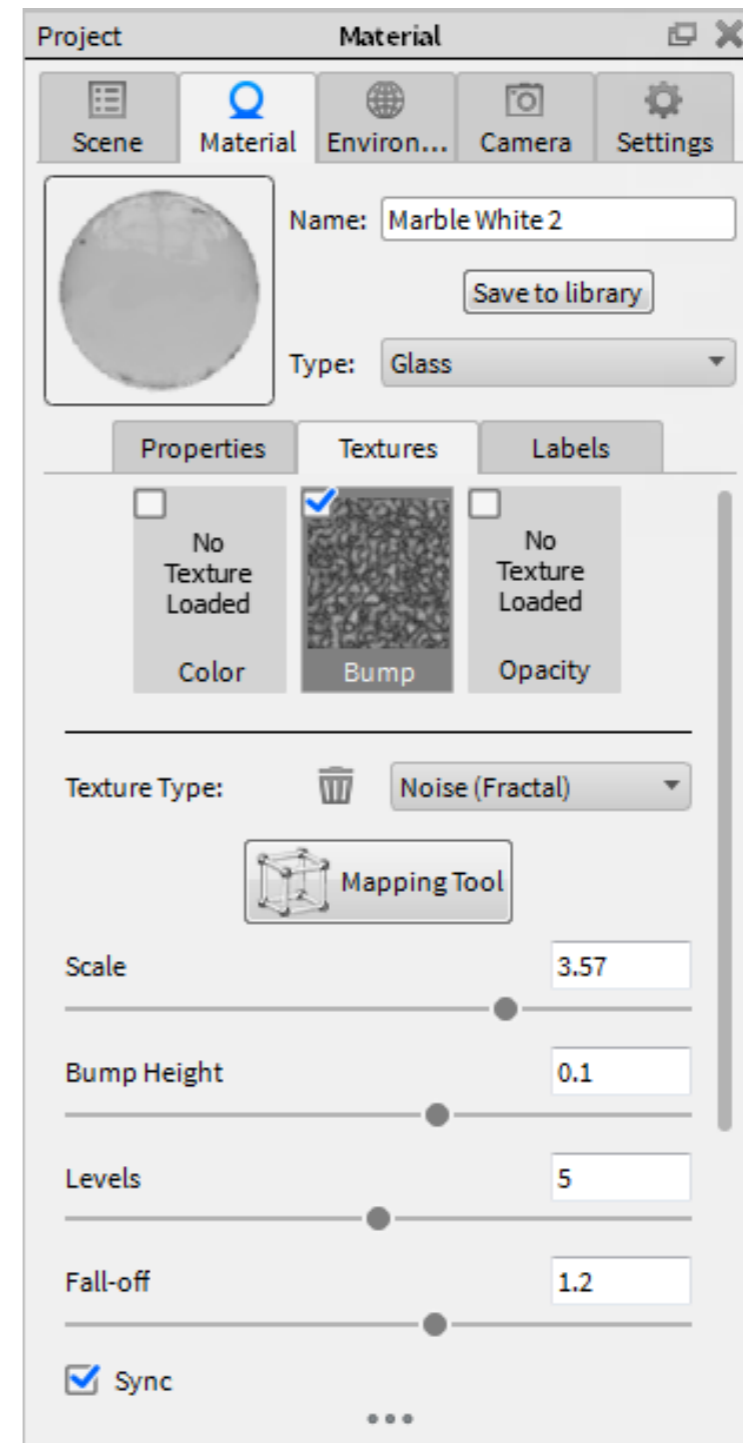The noise procedural has light and dark colors that you can modify using these two settings.

Levels
This adds more detail to the fractal noise.

Fall-off
This controls the color balance. Low values accentuate Color 2, and high values accentuate Color 1.

Scale
This controls the scale of the fractal noise.

Wood

The wood procedural texture allows to customize the look of your wood materials. Most often you will want to start out with the plastic material type and change the specular color to white.

Ring Width
This adjusts the thickness of the wood ring.

Ring Noise
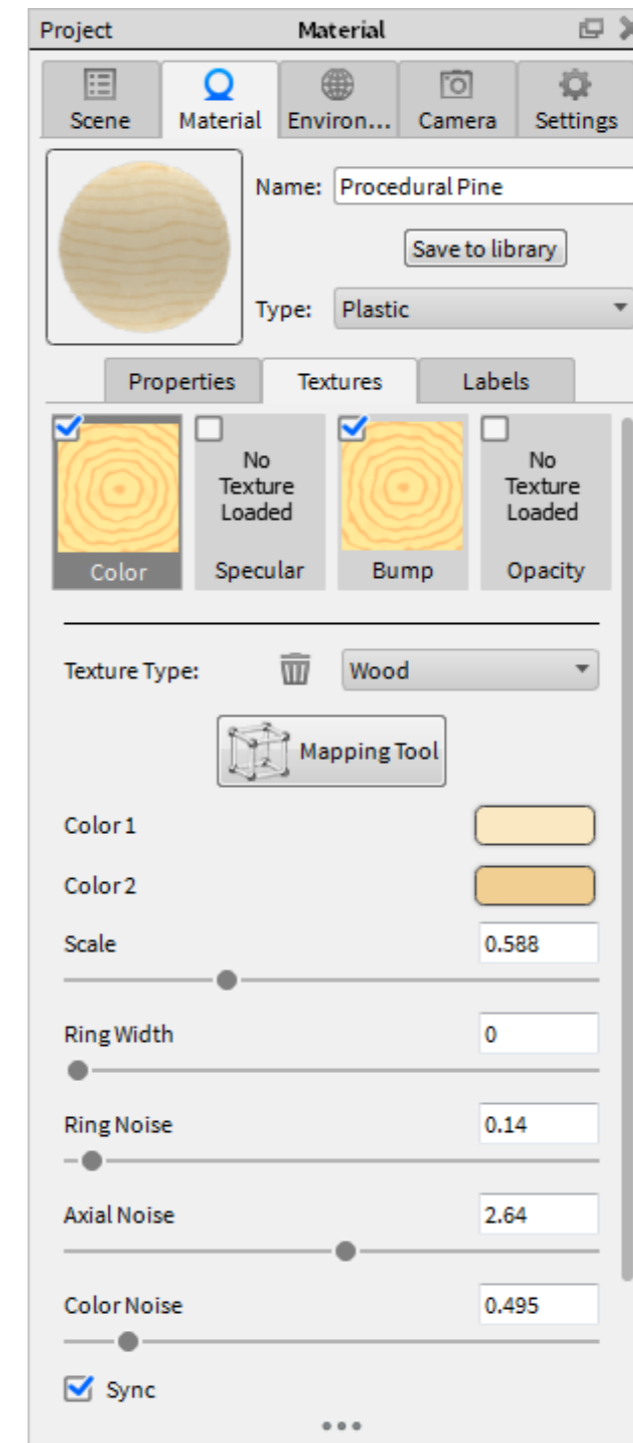This adds random fluctuations in each ring.

Axial Noise
This adds fluctuations or waviness of the overall direction of the grain.

Color Noise
This creates random thicks and thins to give a more organic look to the wood ring.

Scale
Increase size of the grain. For best results keep a small scale.

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- [Label Management](#)

- [Label Mapping](#)

- [Label Properties](#)

Labels

Labels are designed for easy placement of logos, stickers or images that need to be placed freely onto a 3D model. Labels are added through the labels tab in a material's properties.

Any common image format will be supported such as .jpg, tiff, tga, .png, .exr and .hdr. An unlimited number of labels can be added to a material and each label can have it's own mapping type. If an image has an alpha channel embedded, it will be retained and areas of transparency will not show. The image below uses a PNG with transparency so that the square border of the image does not show.

Label Management

Adding Labels

Labels are added by either clicking the Add Icon or the Folder Icon or by double clicking the empty image swatch next to the labels list. Once added, the label name will be displayed in the list. If a label has been updated outside of KeyShot, it can be refreshed by clicking Refresh Icon.
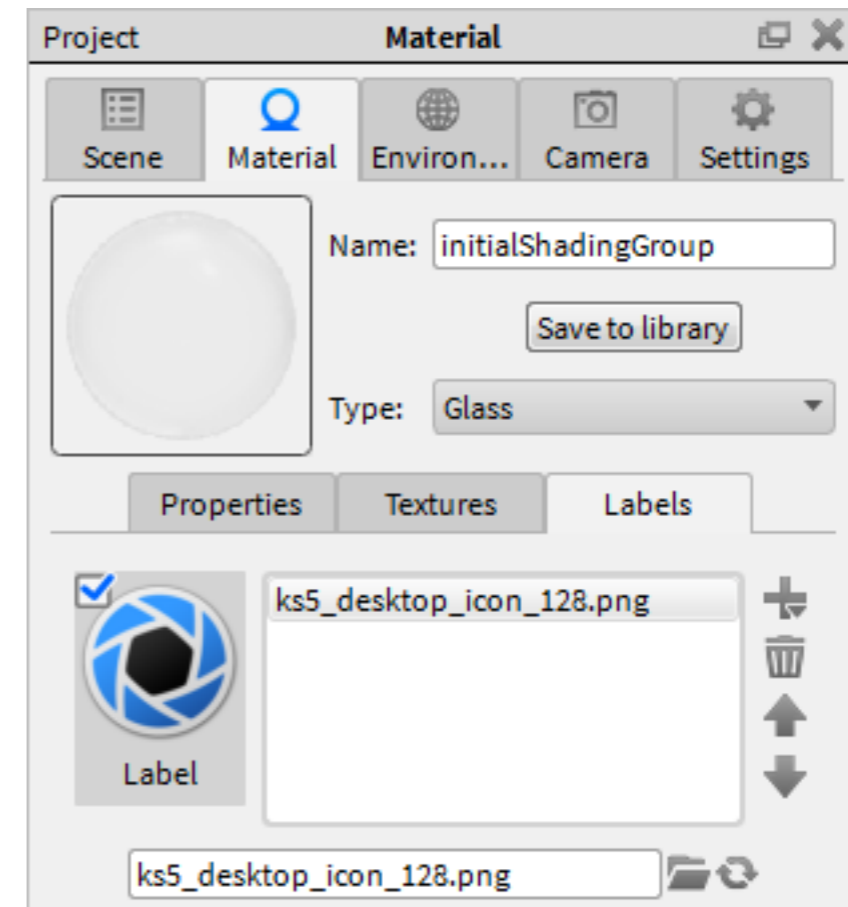
Deleting Labels

Labels can be deleted by selecting the label in the list and clicking the Trash Icon

Duplicating Labels

Labels can be duplicated by selecting the label in the list and clicking the Add Icon, and select duplicate.

Layering

Labels will be layered as they are added. The label at the top of the list will be the top label in the layers. The label order can be shifted by pressing the up and down arrow buttons.

Label Mapping

Labels can be mapped using the same mapping types as other textures but labels have a mapping type that textures do not. This mapping type is Normal Projection. This allows labels to be projected on surfaces interactively - even across curved surfaces. Normal projection is the default method that will be set when a label is added.

To position the label, click the mapping tool button and then click on the model to move the label. When the label is in the desired position,

Confirm the placement by clicking the 'done' button in the bottom of the realtime window. That will deactivate the interactive positioning.

To scale the label, move the scale slider. This will adjust the size of the label and maintain height to width proportions. To scale the label vertically or horizontally, expand the scale parameter to scale independently on the X or Y axis.

To rotate the label, use the angle slider which will rotate the label in degrees.

Labels can also be flipped vertically, horizontally and repeated by checking any of those options.
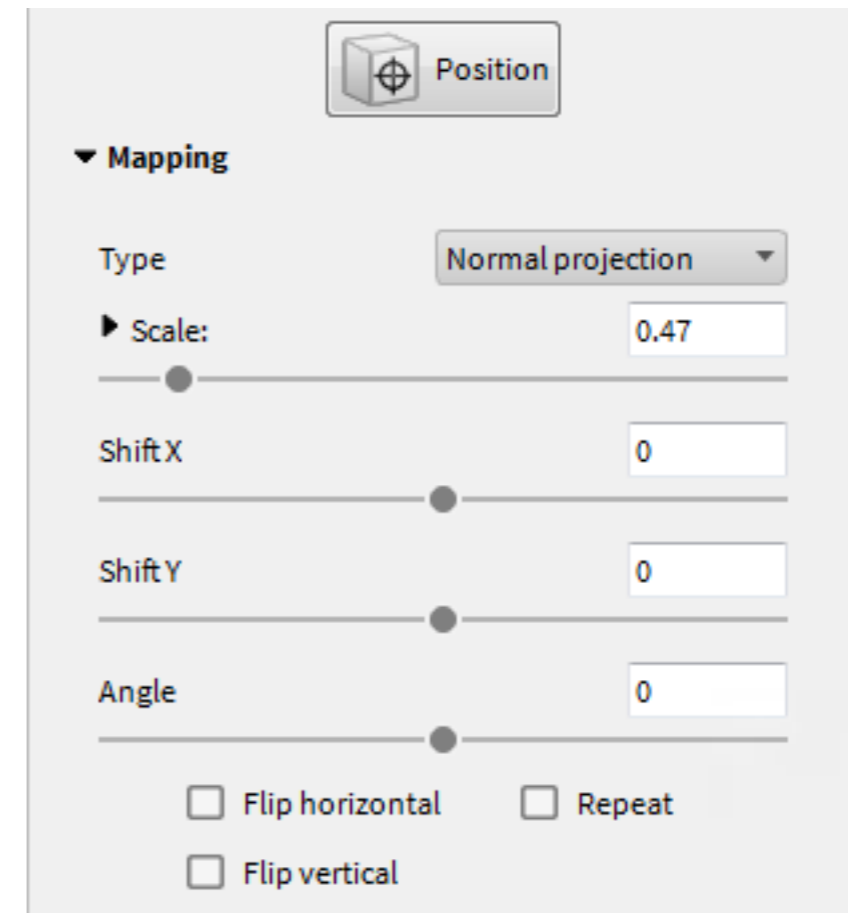
KeyShot® Manual

Label Properties

Intensity

Intensity can be thought of as a brightness adjustment. If the overall lighting of a scene is good, but a label appears too bright or dark then the intensity slider can be used to adjust this.

Contrast

Controls the amount of contrast in the label image.

Depth

This will control how far a label is projected through a material.

Specular

The specular parameter will allow specular reflections to be calculated on the label. Click below for an example and more information.

Refraction Index

Index of refraction. Although this property is most commonly associated with transparency, it can be used on labels to increase the level of reflectivity. It will only affect the label if the label specular color has a value other than black.

Two sided

The two sided parameter will control whether or not a label is visible from the back. Click the thumbnail below to see an example.
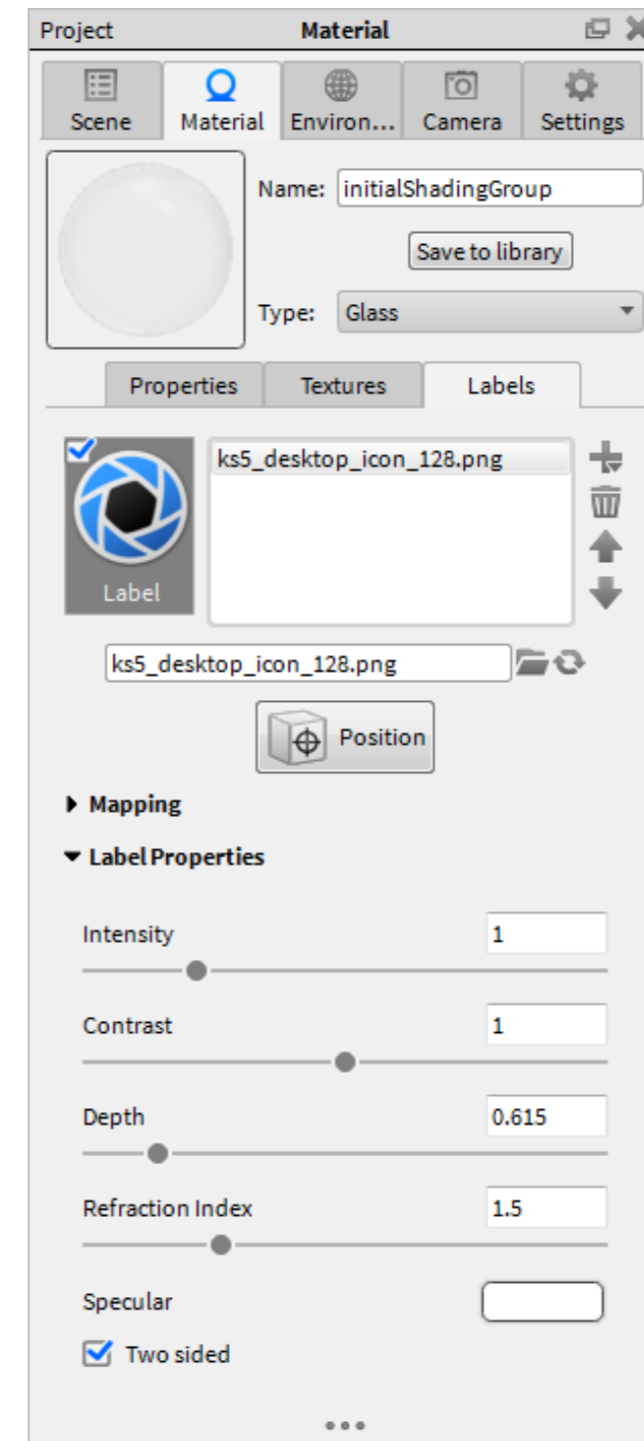
KeyShot® Manual

Adjusting Lighting

- [Overview](#)

- [Changing Environment Lighting](#)

- [Adjusting Brightness](#)

- [Controlling Lighting Direction and Reflections](#)

- [Background Color](#)

- [Ground Shadows and Reflections](#)

- [Physical Lights](#)

Overview

The main source of lighting in KeyShot is through environment images. These are 32 bit images designed to map to the inside of a sphere. When the KeyShot camera is inside this sphere, it can be pointed in any direction to see a fully enclosed environment. This method makes the creation of photo realistic lighting as simple as dragging and dropping a thumbnail into the realtime view.

KeyShot ships with several different environment types broken into categories. Some are real world photo environments and others are studio environments. The photo environments are usually best suited for automotive or entertainment, whereas the studios are usually best suited for product and engineering. Either one will produce unique and realistic results regardless of what is being rendered.

The image is a view where the camera has been pulled back to show a 3D model enclosed in an environment. The environment is mapped to the inside of the environment sphere.
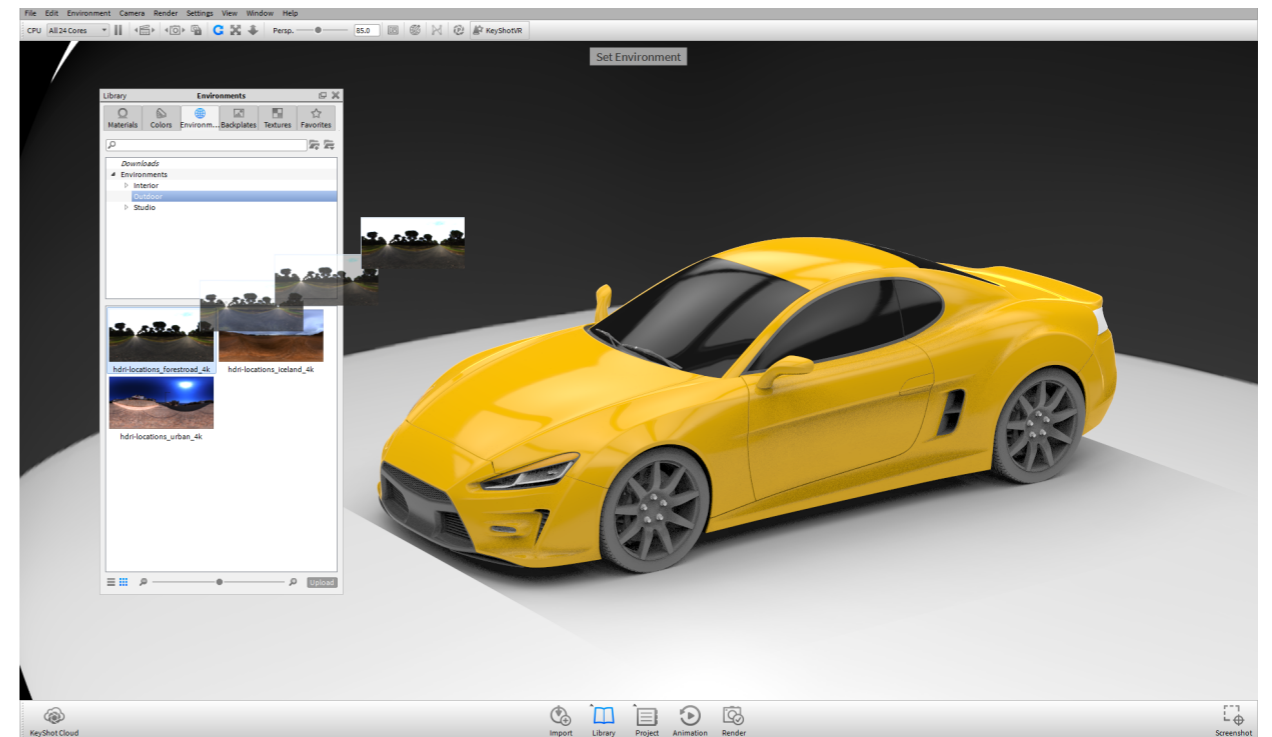
Changing Environments

All lighting is determined by the currently loaded environment.
To change an environment, simply drag and drop one from the environment library into the realtime view. When the left mouse button is released the new environment lighting will be loaded and the lighting of the model will be updated.

Adjusting Contrast

The contrast of the environment lighting can be adjusted by using the contrast slider This will change the contrast between light and dark areas in the environment lighting. Less contrast will soften shadows and more contrast will sharpen them.

Adjusting this value too much can have a negative effect on the realism of the rendered image. It is recommended to leave this at the default value for that reason.

Adjusting Brightness

There are multiple methods of adjusting the brightness of the lighting within a scene. Regardless of the method, all changes will be shown instantly in the realtime view.

The first method is by using the arrow keys on the keyboard. Up and Down arrows will increase or decrease the environment brightness in large increments. The Left and Right arrows will increase or decrease the brightness in smaller increments.

The second method adjusting brightness is by using the brightness slider in the environment tab of the project window.
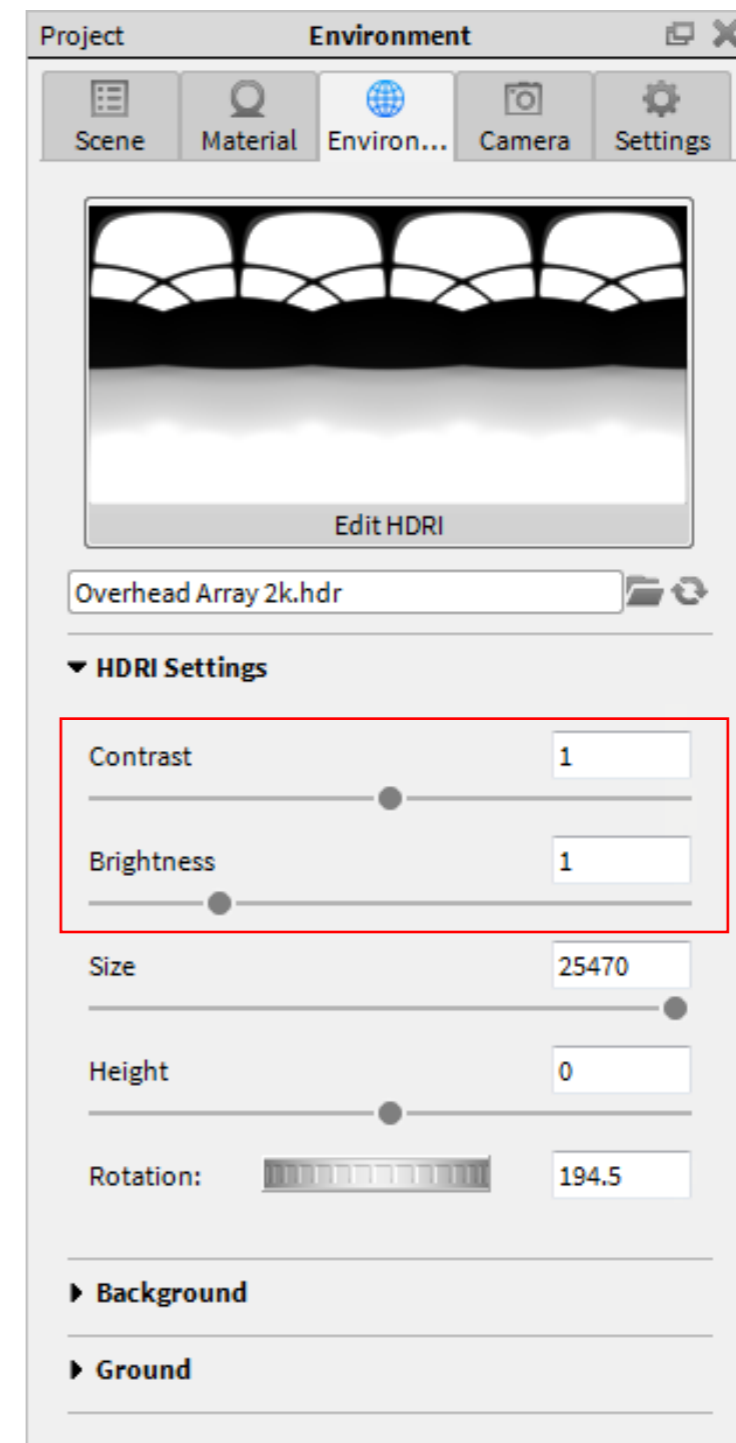
KeyShot® Manual

Controlling Lighting Directions and Reflections

Although the environment lighting that ships with KeyShot is preset, there are quite a few adjustments that can be made to change the look.

Rotate

The first and easiest method is by pressing "control + left click + drag left or right" in the realtime view. This will rotate the environment and change the value of the rotation property found in the environment tab in the project window. The two images below show the same camera view with the same materials and environment. The only difference is the environment rotation. KeyShot can determine the brightest light sources in an environment and will calculate shadows accordingly.

Height

The next method of controlling lighting and reflections is by adjusting the height slider found in environment tab in the project window. This will shift the environment sphere up and down and will also change how lighting and reflections affect the model.

Size

Another method of controlling the lighting is by adjusting the size of the environment sphere by adjusting the size slider found in environment tab in the project window.
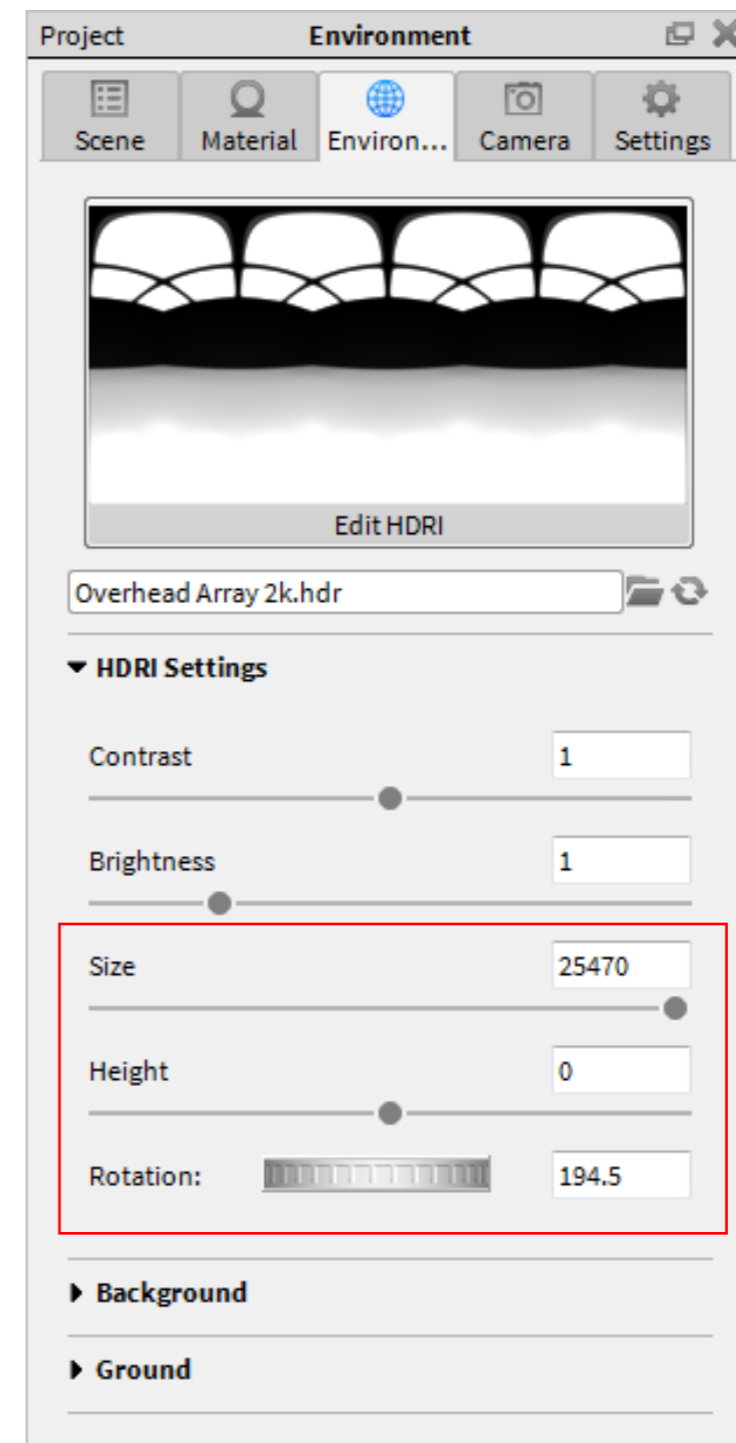
Background Color

Any background color can be set by choosing the color option from the environment tab in the project window. When 'color' is selected, the environment will no longer be shown behind the model. This will have no effect on the lighting of the model and will only serve as a backdrop. However if there are any transparent materials in the scene, the background color will show through them. To change the background color, click on the color box.
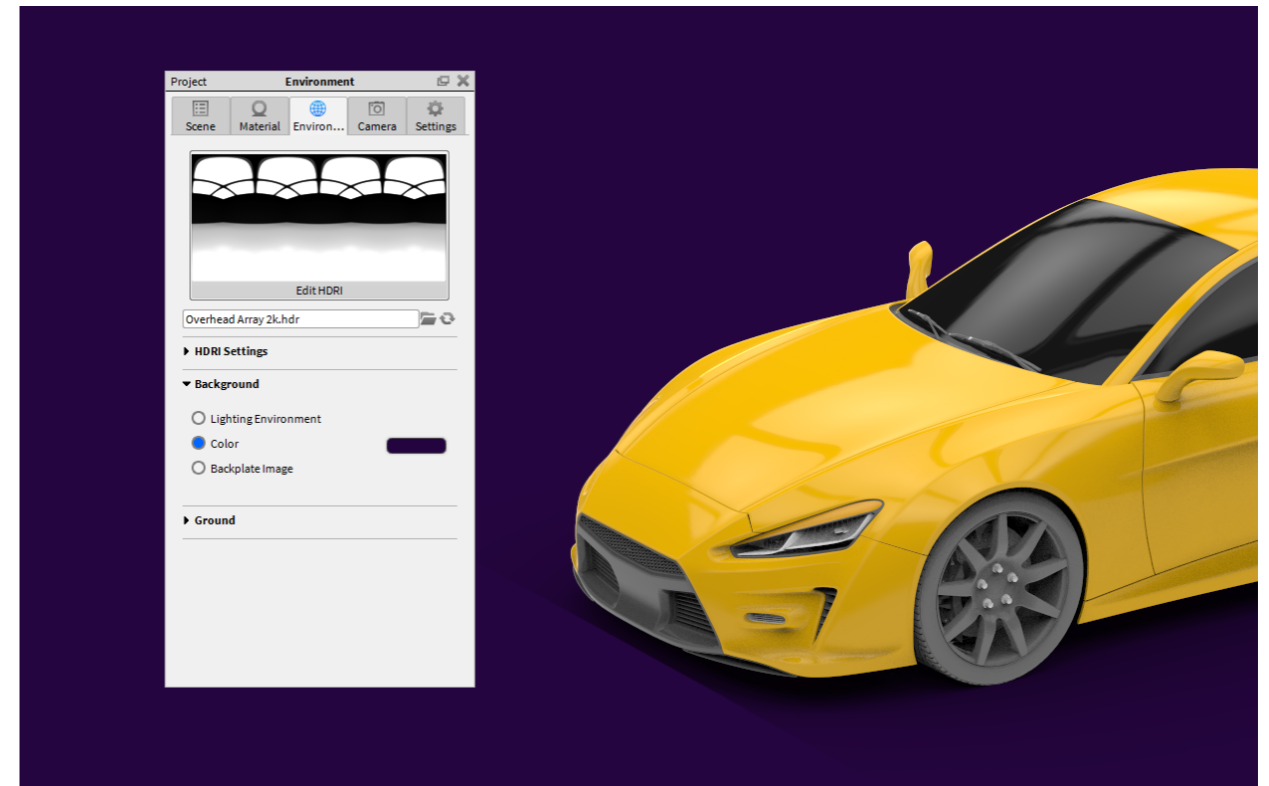
Ground Shadows and Reflections

Ground shadows and reflections can be enabled under the environment tab in the project window

Ground Shadows
Enable to show ground shadows on ground plane. Default and suggested color of shadows are black, but can be changed to suit special situations where the shadow color needs to be changed.
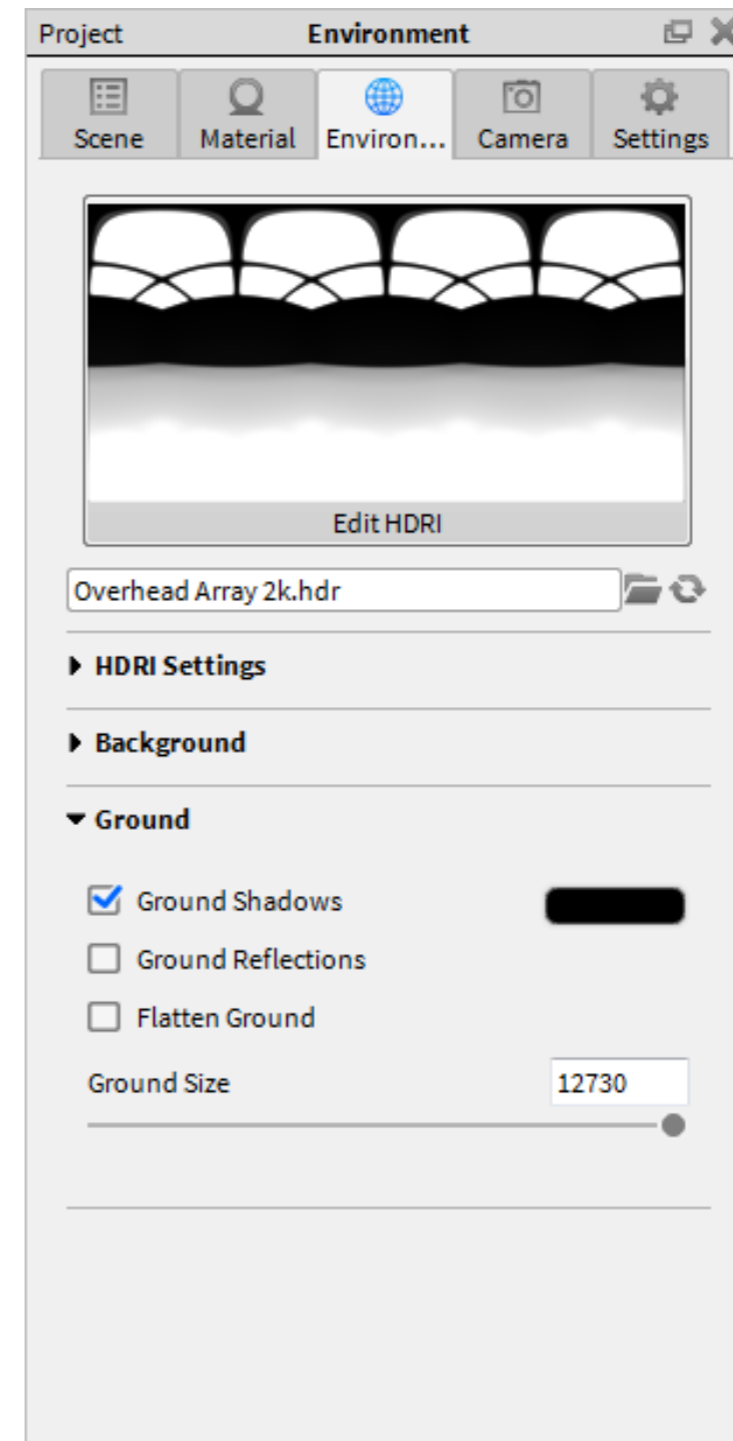
Ground Reflections
Enable to show a reflection of the scene on the ground plane.

Flatten Ground
Pulls the Environment to a flat ground instead of projected on the sphere. Turn this setting on only for specific usages.

Ground Size
Ground shadows and ground reflections are projected onto an invisible ground plane. The size of the ground plane can affect the quality of shadows and whether or not shadows and/or reflections become clipped. The ground size can be adjusted by using the ground size slider in the environment tab in the project window. This setting should be set as small as possible without clipping the ground shadows or reflections.
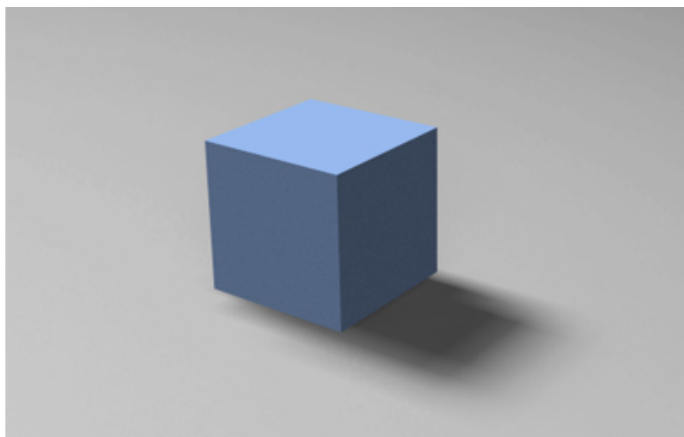
KeyShot® Manual

Ground Shadows and Reflections

A good way to understand the ground shadow is to compare it to digital images composed of individual pixels. When an image is scaled up and individual pixels can be distinguished, the image loses clarity. When the image is scaled down, the pixels condense together and a clear image is produced.

The ground plane works in a similar manner. It is composed of grid squares that are shaded at different intensities to produce the ground shadow. If the ground plane is 128 by 128 squares and a model sits on top of only 8 squares, there is not very much resolution to work with and a shadow can appear blocky. By reducing the ground size, more squares are packed into a smaller area which will improve the ground resolution and the look of the ground shadow. This is why lower ground size values are better.
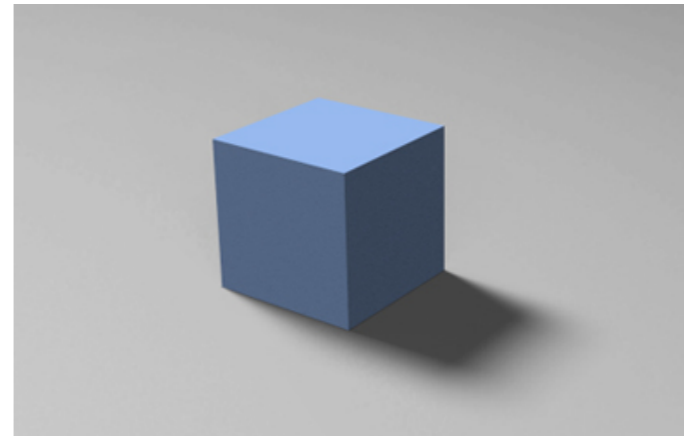
The ground size has been reduced which condenses the grid squares into a smaller area. The shadow has more resolution and is rendered higher quality.

The ground size is large and the cube sits on top of a small amount of grid squares. This makes the shadow appear blocky.
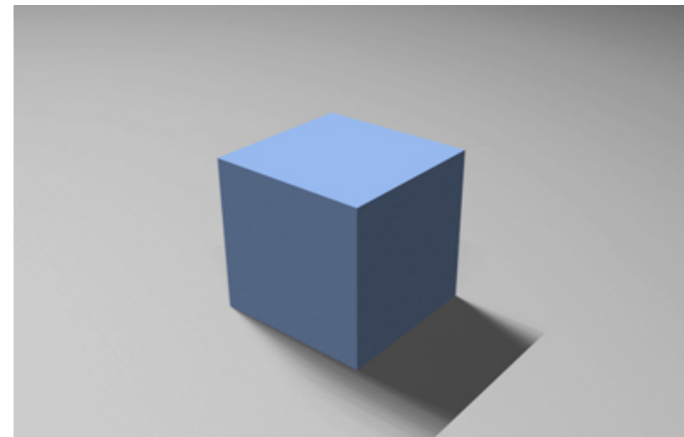
The ground size has been reduced too much and the shadow becomes clipped.

KeyShot® Manual

- [Overview](#)

- [Point Light Diffuse](#)

- [Point Light IES Profile](#)

- [Area Light Diffuse](#)

KeyShot® Manual

Physical Lights

Physical Lights are essentially working as materials that are being applied to parts and objects. Any geometry can be turned into a light source. You can either import new geometry, or use existing geometry to turn into a light source.
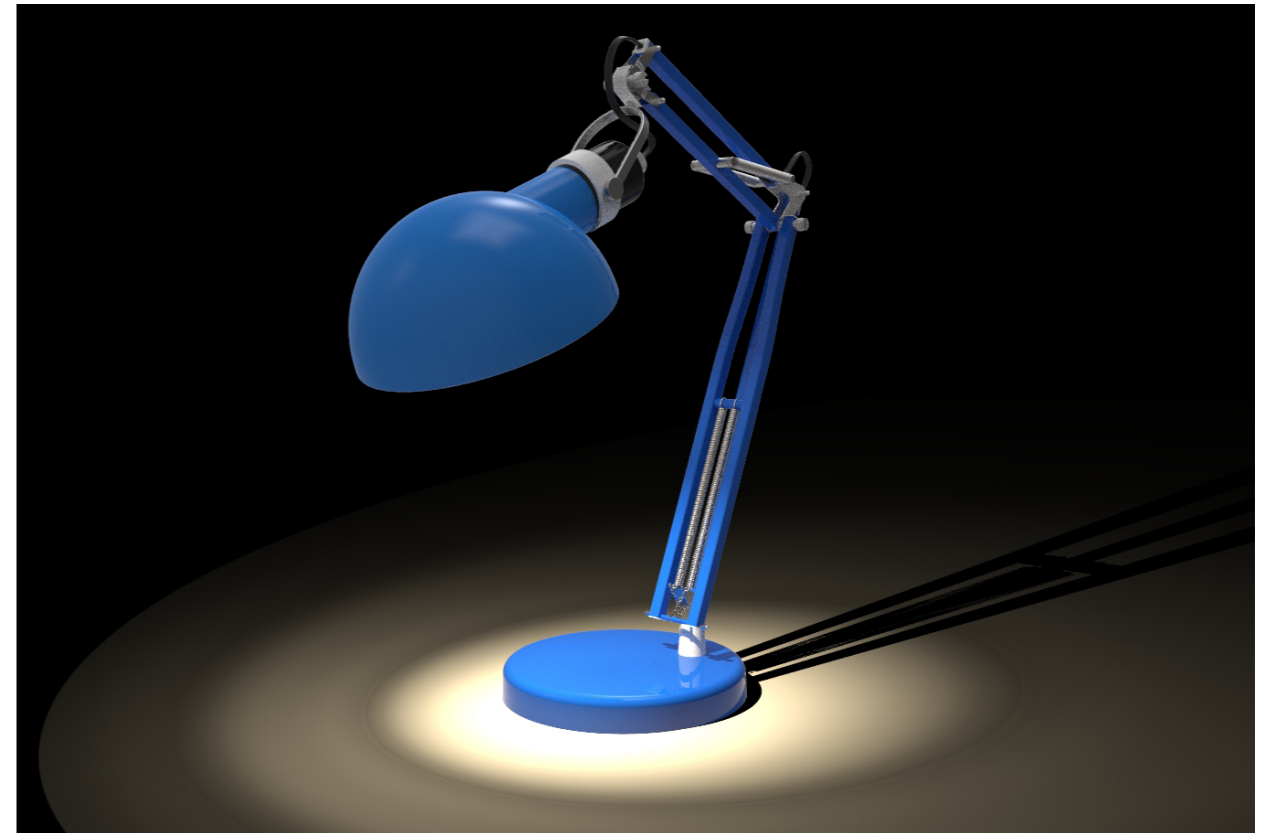
Applying a Light

Applying a light material is similar to applying materials. Light materials will be displayed in the material type drop down. Select the light source type, and KeyShot will update the object to a physical light. Light sources can be easily found in the scene tree represented by a light bulb icon.

Moving Lights

Right-click the object/part that is assigned as a light and select "Move Model". This will activate the move tool widget.

You can also select the light source in the scene tab, in the second pan select the position tab. You can activate the move tool widget from there, or use the input boxes for a more precise positioning.

KeyShot® Manual

Physical Lights

Point Light Diffuse
Applying a point Light Diffuse to geometry replaces it with a point located at the parts center.
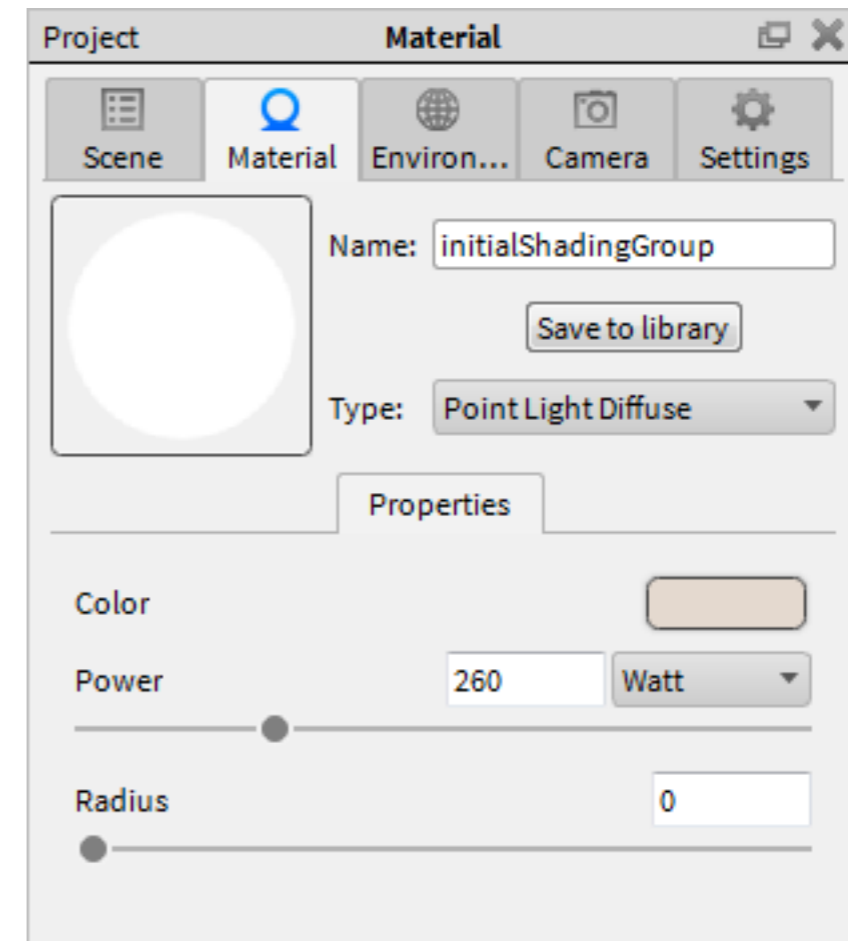
Color
Choose the color the light will cast. For accurate lighting colors, use the Kelvin scale to select accurate lighting temperatures.

Power
The power of the light can be controlled by either Watts or Lumen.

Radius
Adjust the radius to control the falloff from shadows cast from this light.

Physical Lights

Point Light IES Profile

When switching the material to IES light you will need to load an IES profile by clicking on the folder icon in the editor. As soon as you load the profile you will see the shape of the IES profile in the material preview. You will also see the shape in form of a mesh in the realtime window.

File

Displays the name and location of the IES profile being used. Click the folder icon to change to a different IES profile.
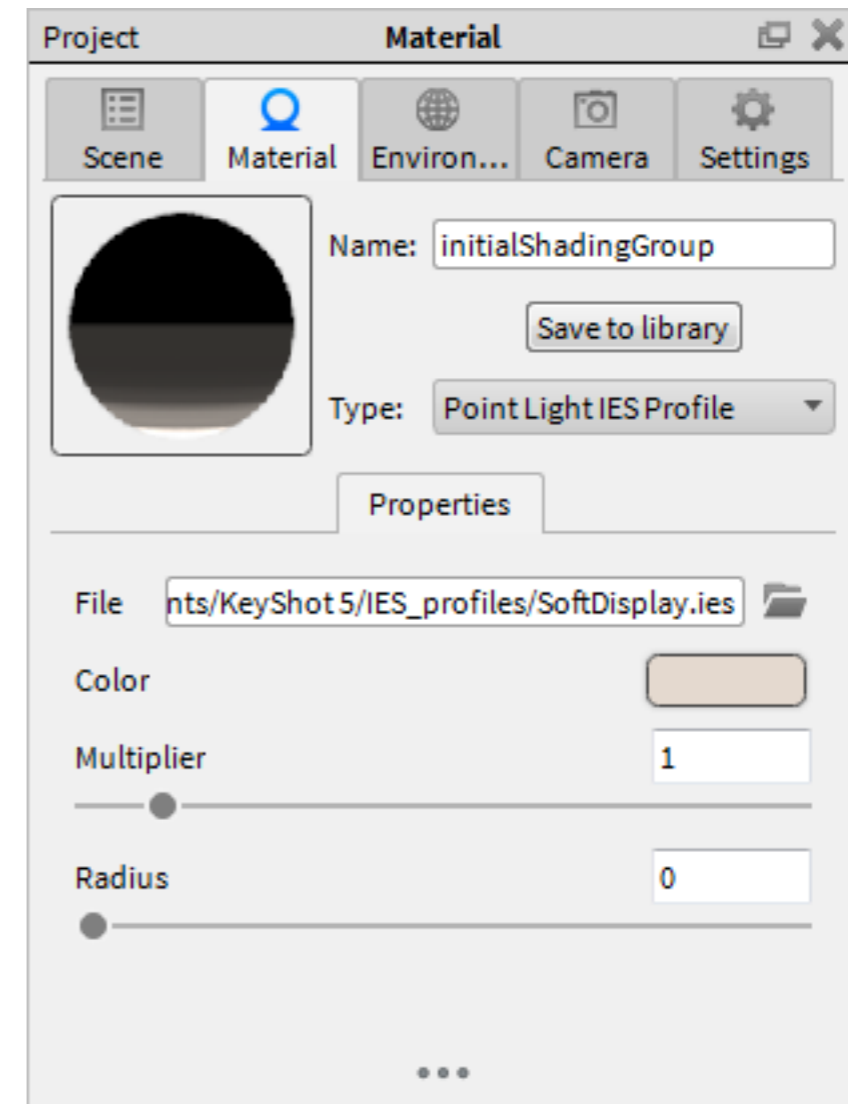
Color

Choose the color the light will cast. For accurate lighting colors, use the Kelvin scale to select accurate lighting temperatures.

Multiplier

Adjust the intensity of the light with this slider.

Radius

Adjust the radius to control the falloff from shadows cast from this light.

KeyShot® Manual

Physical Lights

Area Light Diffuse

Area light diffuse will give you a wide range of light dispersion. This will function similarly to a flood light. Power can be controlled in either Watts or Lumen.

Color

Choose the color the light will cast. For accurate lighting colors, use the Kelvin scale to select accurate lighting temperatures.

Power

The power of the light can be controlled by either Watts or Lumen.

Apply to Front of Geometry

Apply the light source to the front of the surface geometry.

Apply to Back of Geometry

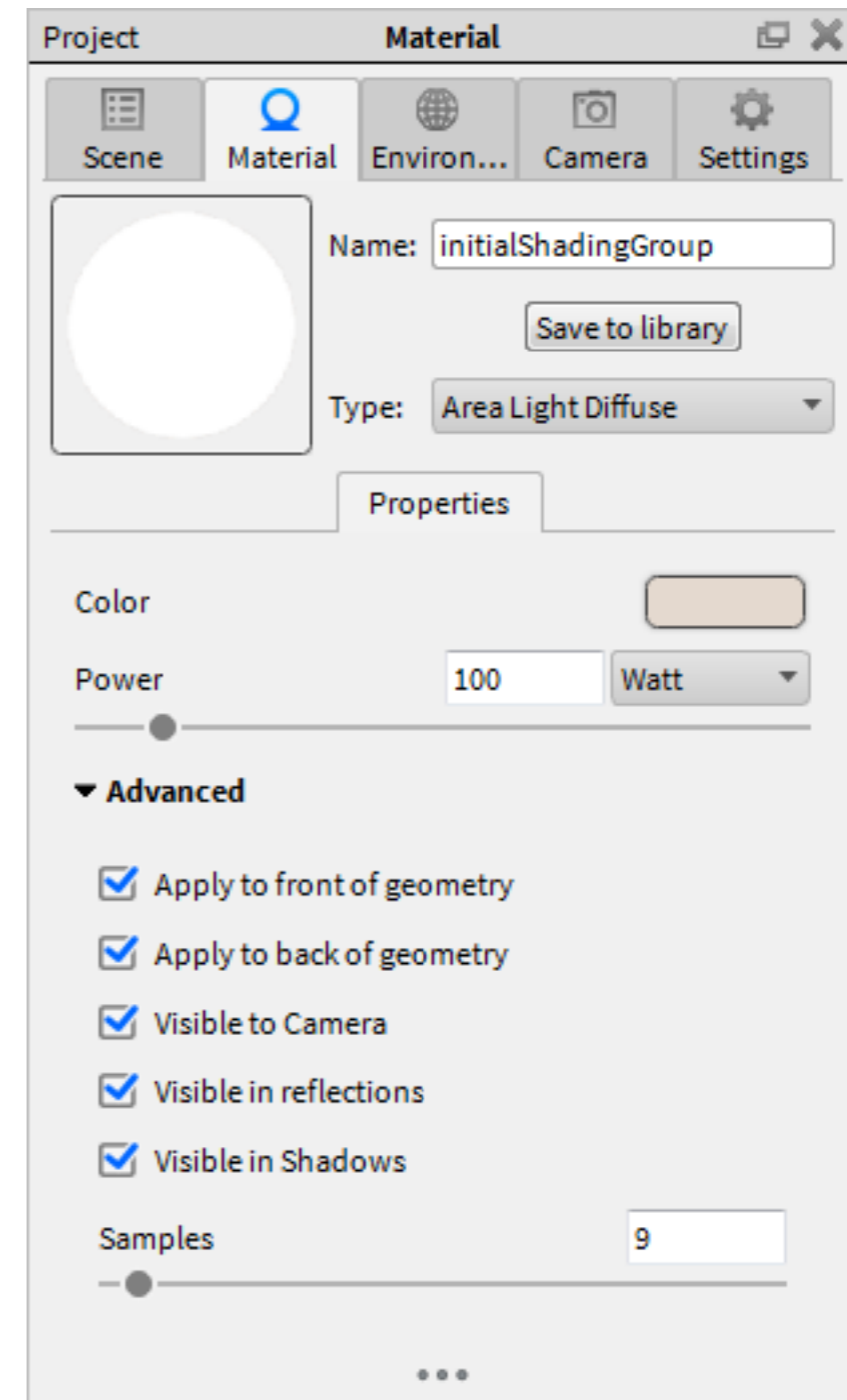Apply the light source to the backside of the surface geometry.

Visible to Camera

Toggle the light source geometry from being shown in the realtime.

Visible in Reflections

Toggle the light source geometry from being seen in a reflection.

Visible in Shadows

Toggle the light source geometry from casting a shadow in the scene.
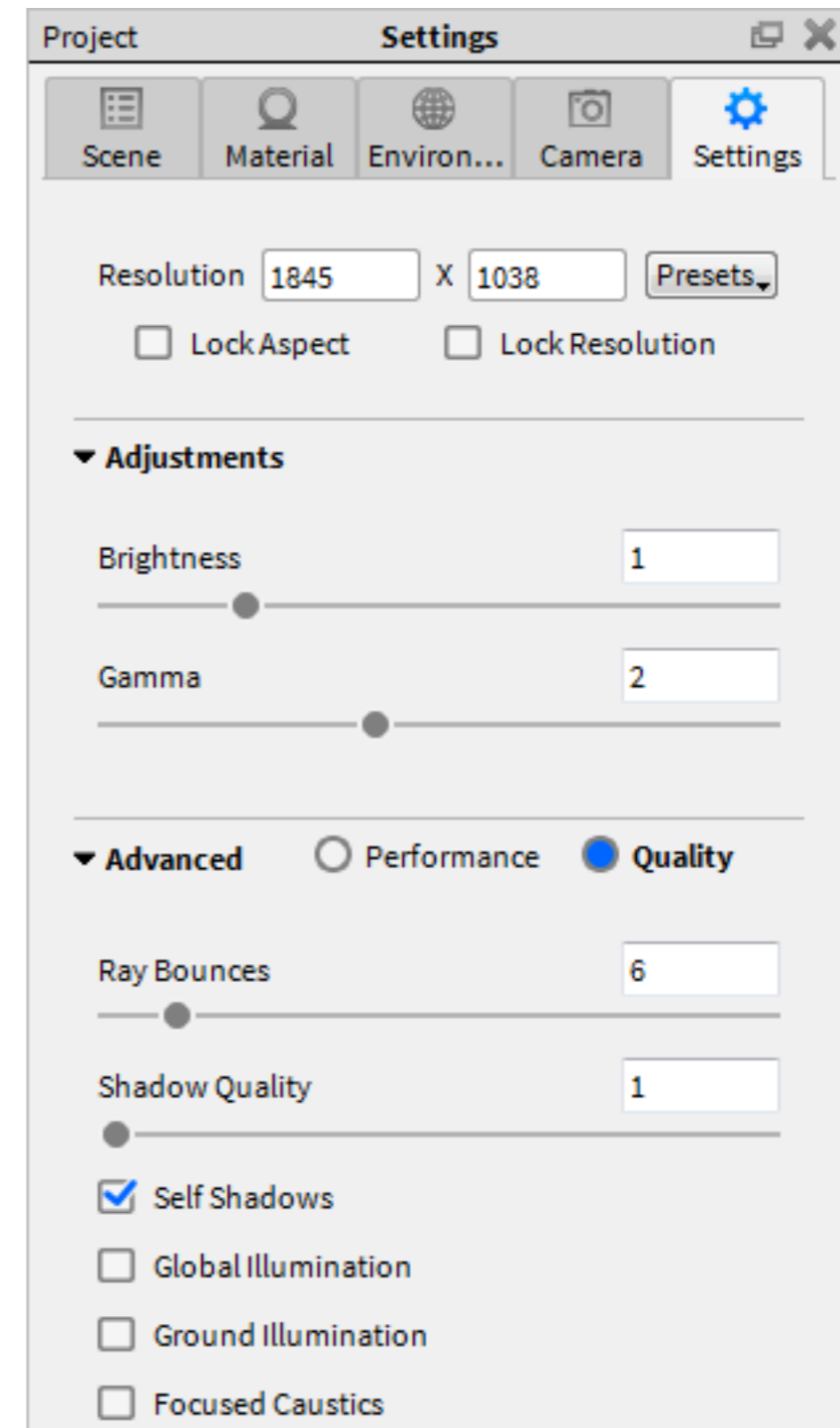
KeyShot® Manual

Realtime Settings > Overview

Overview

The realtime settings are found in the project window under the settings tab. The settings here will have the greatest effect on the performance of realtime rendering as well as the look of the rendering in the realtime view.
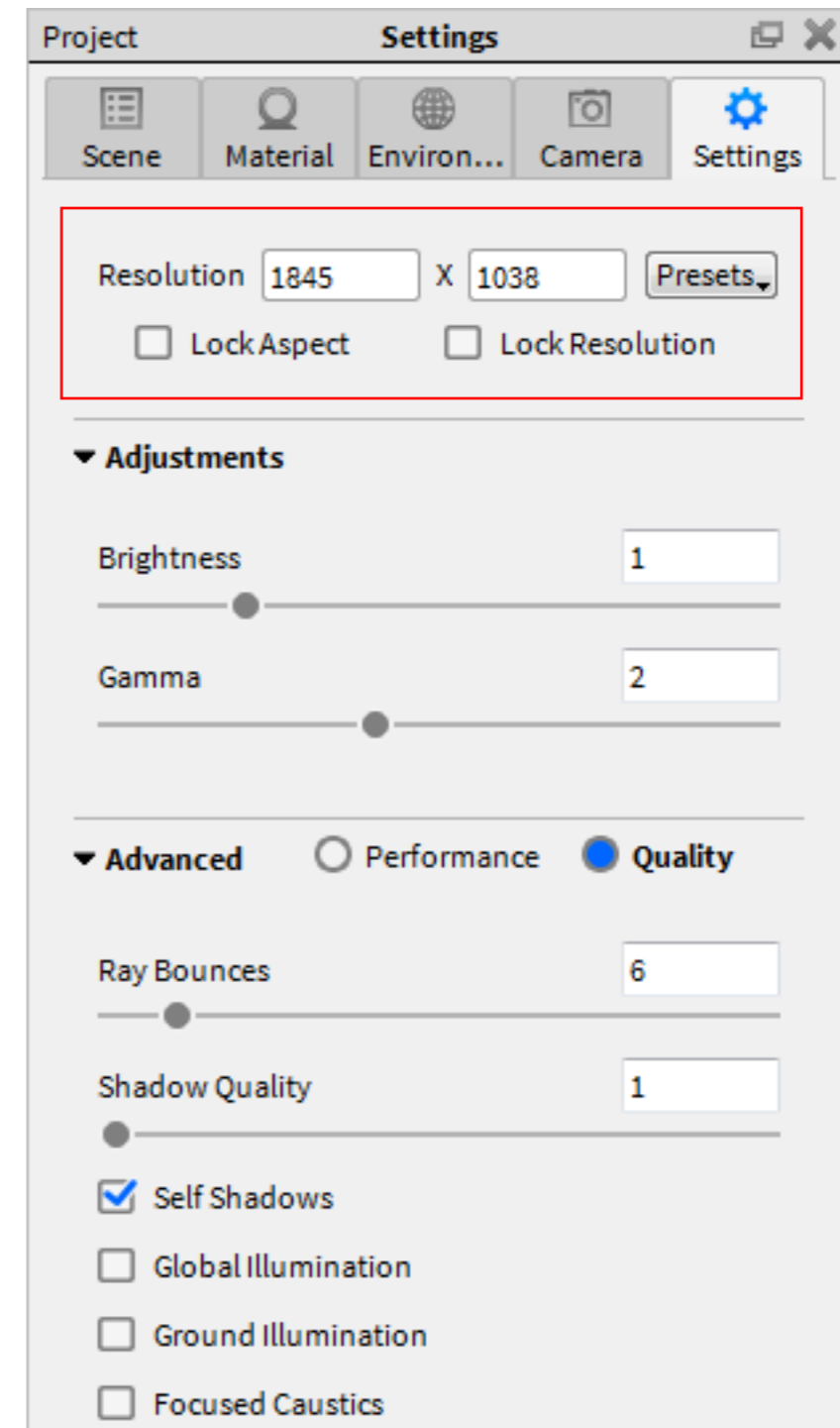
Setting Resolution

Resolution

The resolution for the realtime view is set in the project window under the settings tab. Use the Preset pulldown to select commonly used dimensions.

Lock Aspect

When this option is checked the width to height ratio of the realtime view will be maintained when values are typed in the resolution box, or when the realtime view is scaled by grabbing the edges of the window with the mouse and scaling up or down.

Lock Resolution

This will lock the current resolution, and disable the rescaling of the realtime render window.

KeyShot® Manual

Brightness

Adjusting the brightness in the realtime tab is a post process applied to the image rendered in the realtime view. Since it is a post process the image does not need to be recalculated when this value is adjusted, unless a backplate is loaded.

Gamma

Adjusting this value applies a gamma correction to the rendered image as a post process. Again, since this is a post process the image does not need to be recalculated.

Gamma correction is a method for displaying colors in the most efficient way for human vision. Without gamma correction colors can be displayed in ranges that the human eye could not differentiate between.

It can also be thought of as a form of contrast. Lower values will add additional contrast and higher values will decrease contrast.

This is a sensitive setting and can cause unrealistic results very easily if adjusted too much in either direction. For the most realistic renders, it is recommended to leave this at close to default value.
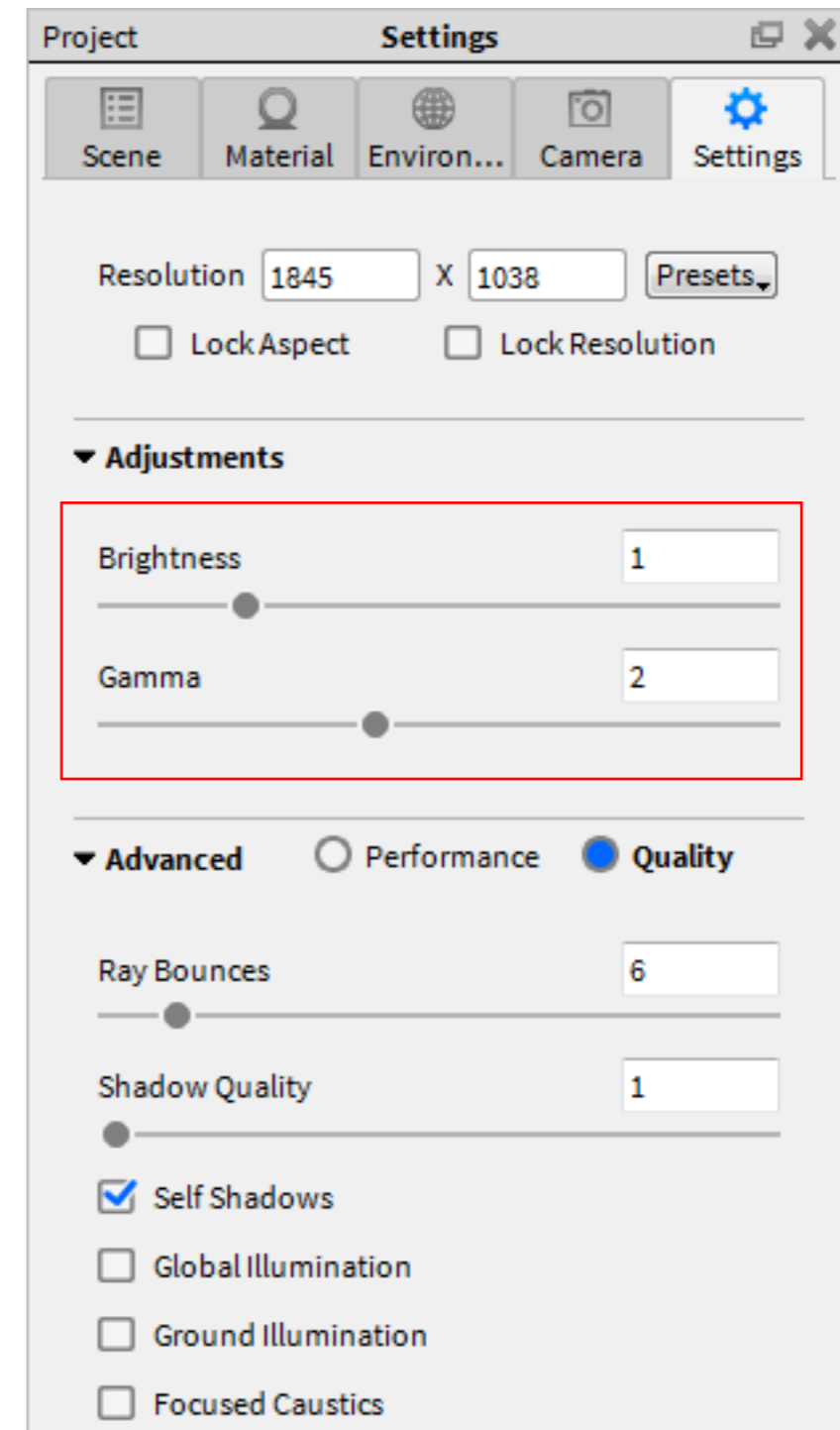
Quality Mode

This is the default mode for KeyShot and will have the best image quality for the realtime render. This mode favors the quality of the image over the performance and speed of your computer.

Performance Mode

Performance mode lowers the realtime render settings to achieve the fastest performance and speed. The upper right corner of the realtime view will show this icon to indicate performance mode is active.

Quickly toggle between Quality Mode and Performance Mode by pushing ALT + P.
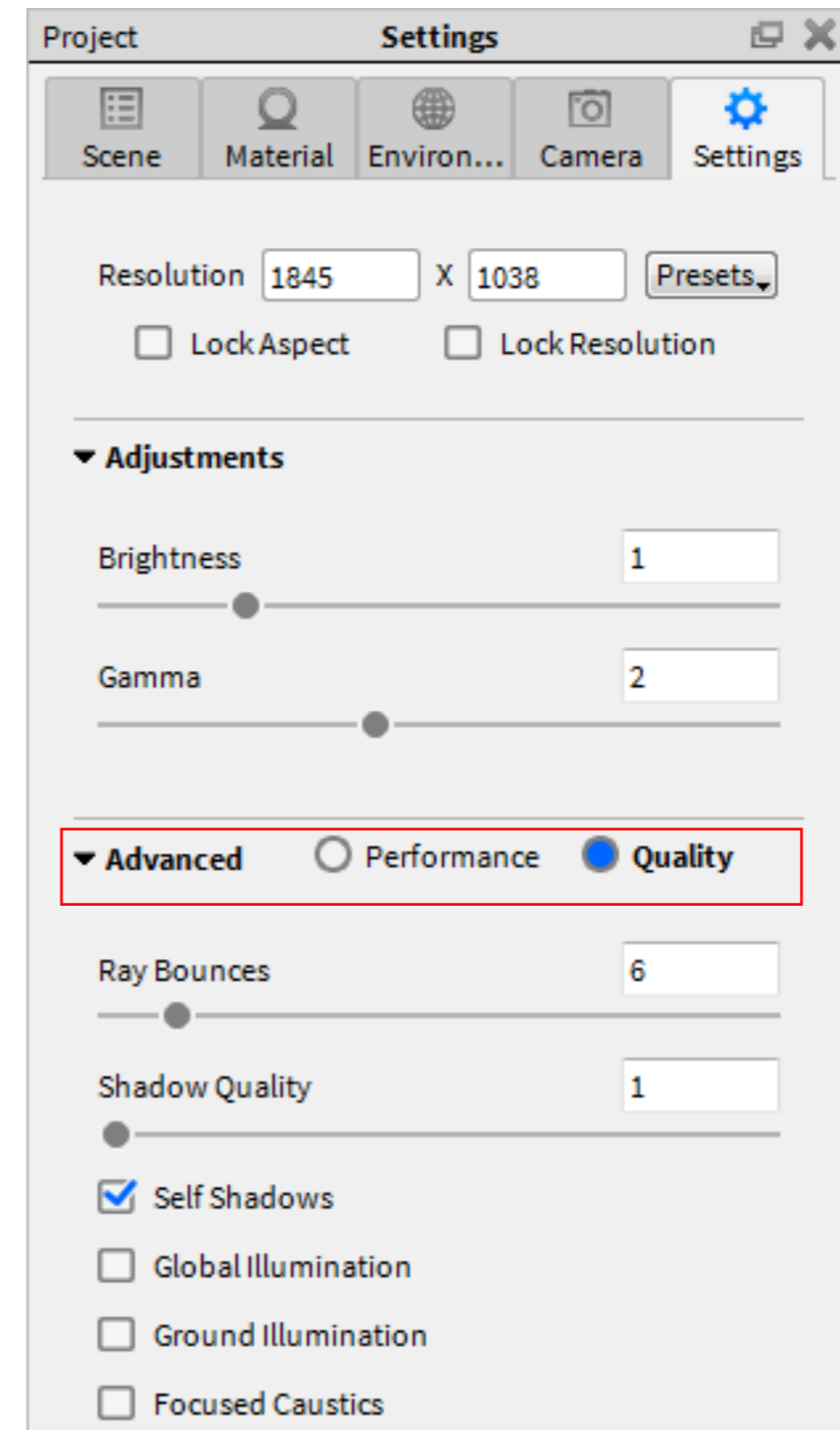
Ray Bounces

Ray bounces are a setting that allow a certain number of rays to be bounced around a scene. In the real world, light rays bounce infinitely, but in the rendering world limits need to be set since everything needs to be calculated. Bounces occur when something is reflected or refracted. For example, when two mirrors are facing each other, light is bounced back and forth generating reflections. When light enters a diamond, the light is slowed down and refracted and reflected back and forth on the facets which creates the look of a diamond. Light will refract any time it passes through a transparent material.

Because of the light bouncing that occurs with reflection and refraction, it is important to have enough bounces to render those types of materials correctly. Sound complicated? Fortunately KeyShot makes it easy. The bounces can be set in realtime and for every bounce that is added or taken away, the realtime view will update and show you the result. If no visual improvement is noticed in the scene when adding a bounce, that means no further bounces are necessary.

The types of objects that will be important for ray bounces are headlight enclosures, diamonds and anything that is reflective or transparent. Those are the areas that should be focused on when determining how many bounces to use.
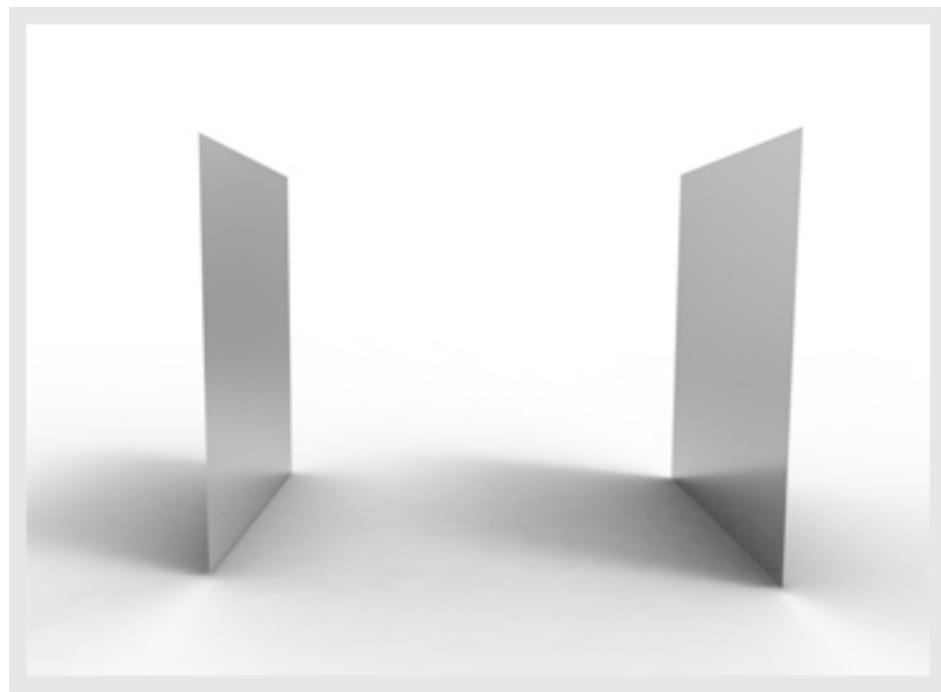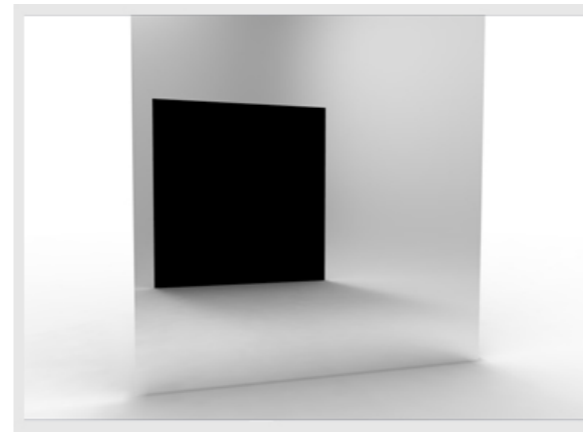
Ray Bounces

Reflections

The examples show reflections rendered at different bounces to help show the effect that different ray bounce numbers have. When more bounces are needed it will be apparent because areas will be black where light has stopped calculating.

Two mirrors facing each other

1 Ray Bounce

2 Ray Bounces

8 Ray Bounces

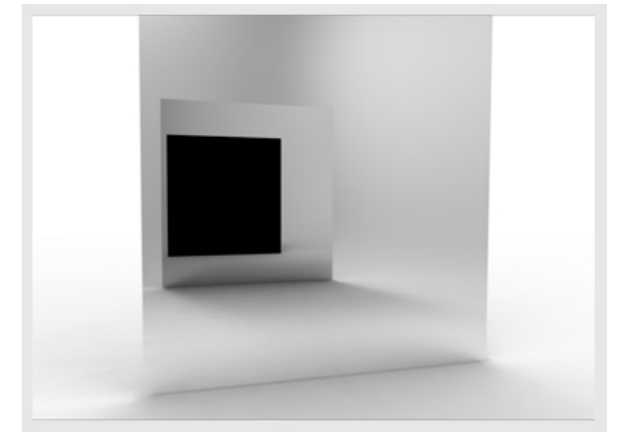**32 Ray Bounces**

Ray Bounces

Refractions

The examples show refractions rendered at different bounces to help show the effect that different ray bounce numbers have. When more bounces are needed it will be apparent because areas will be black where light has stopped calculating.
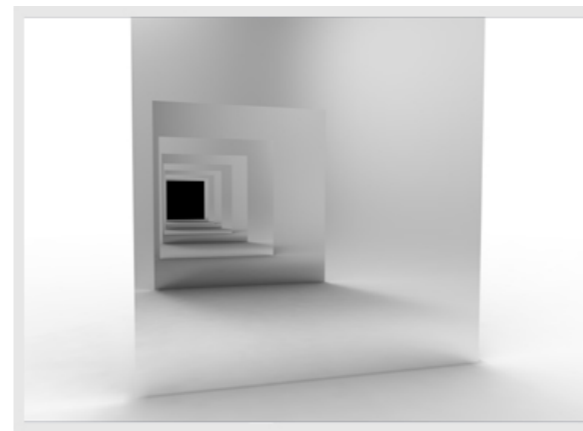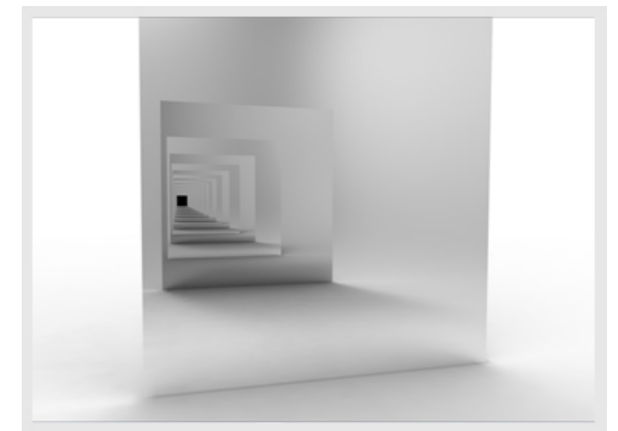

3 Ray Bounces

6 Ray Bounces

1 Ray Bounce

11 Ray Bounces

32 Ray Bounces

Shadow Quality

Refractions

To fully understand the shadow quality setting please see the section that talks about the ground plane. This setting will increase or decrease the amount of subdivisions in the ground plane and will produce a higher quality ground shadow, but it will take more processing power. If a ground shadow appears blocky, increasing this value can improve this but it is recommended to reduce the ground size as much as possible before resorting to shadow quality.

Higher shadow quality

Lower shadow quality
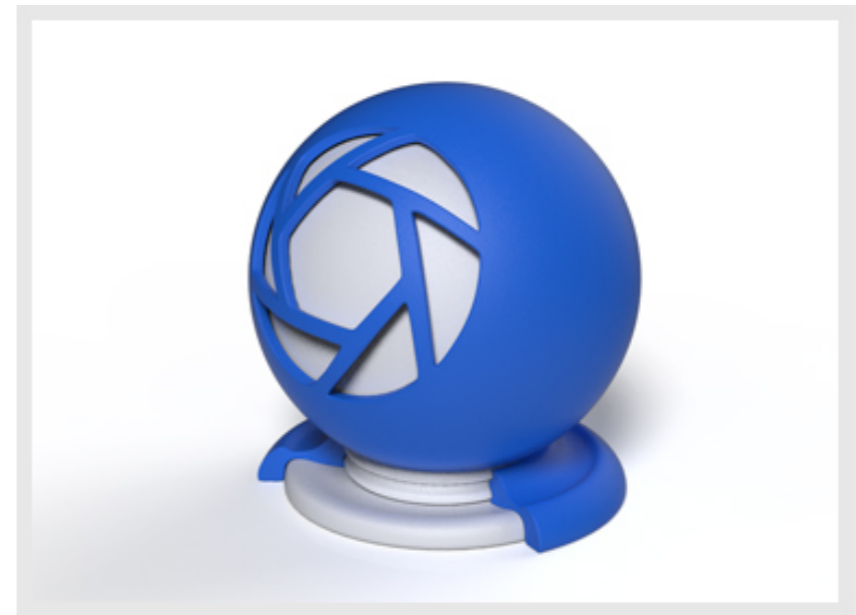
Detailed Shadows

Detailed shadows include any shadowing that is rendered in the realtime view. The option to turn this off is included to improve performance while setting up a scene.

Detailed Shadows Off

Detailed Shadows On

Global Illumination

When this setting is off, there will not be any indirect light bouncing between 3D geometry. In addition, geometry that is under transparent materials will render dark since light is not allowed to bounce through the transparent material and illuminate the object underneath.
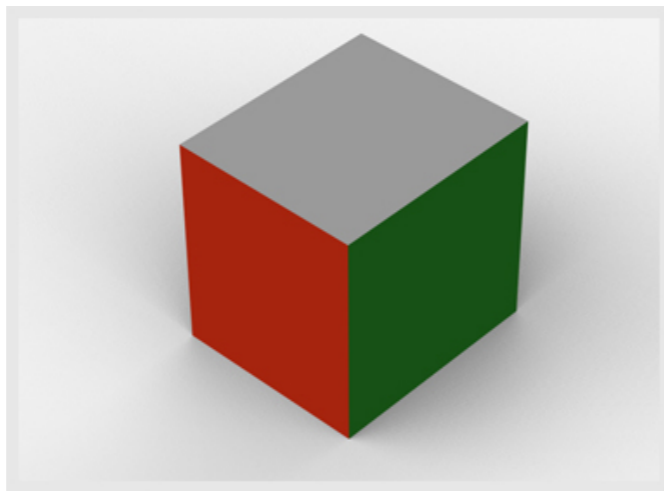
Global Illumination Off
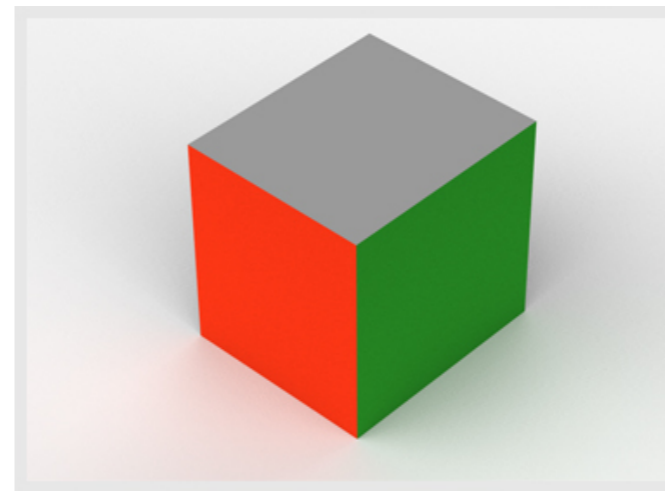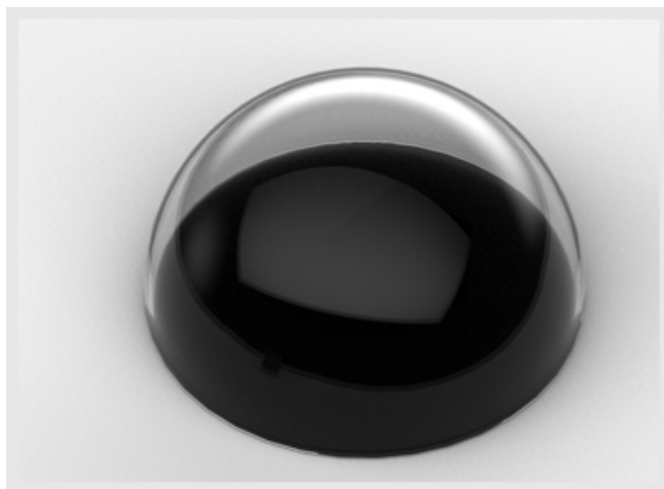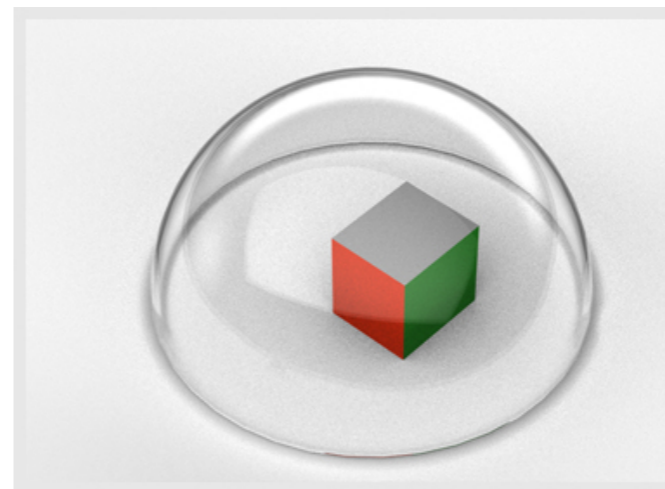
Global Illumination On

Global Illumination Off

Global Illumination On

Ground illumination

This is the same setting and function as detailed indirect illumination but it is specific to the ground plane.
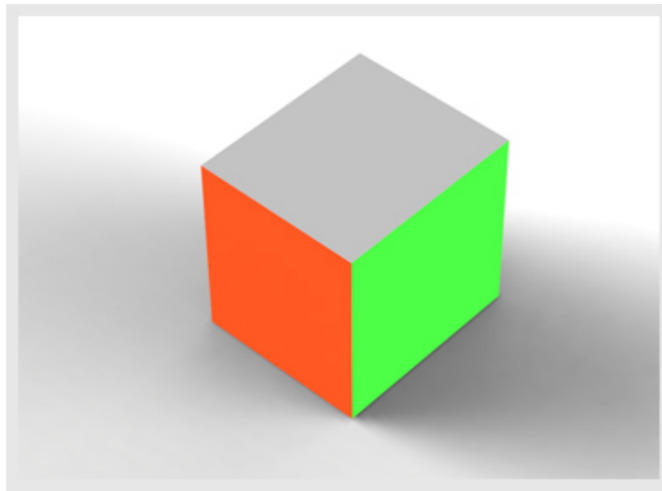
Global Illumination Off
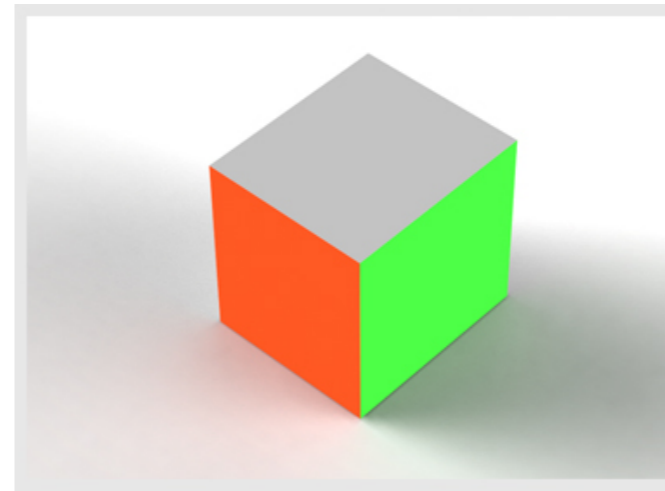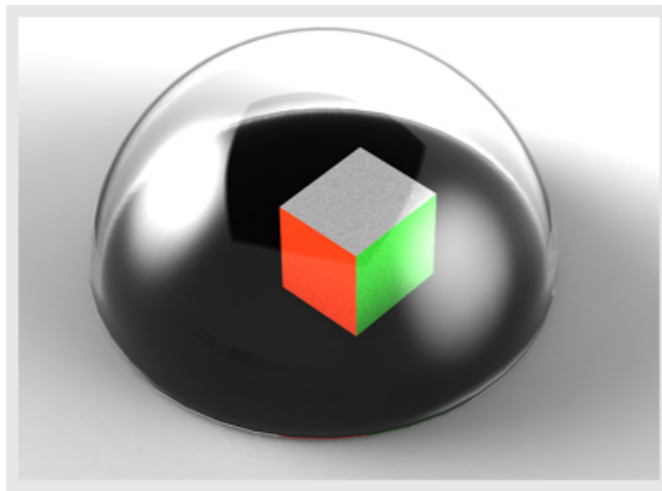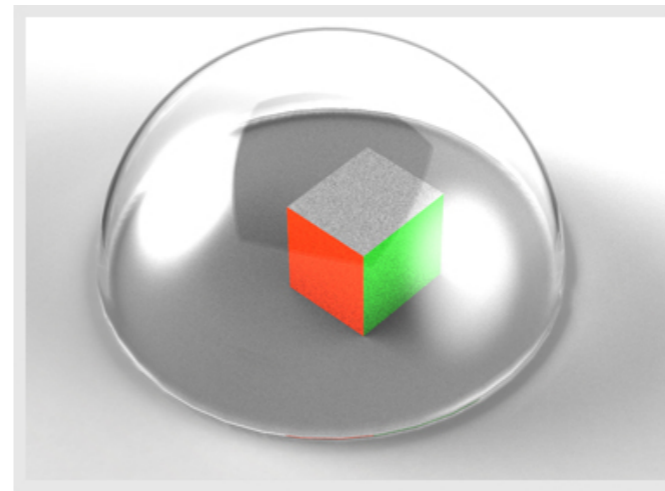
Global Illumination On

Global Illumination Off

Global Illumination On

Effects

Bloom

The bloom feature will soften the entire image and help add glow to emissive materials. The intensity will increase the power of this effect. The radius will control how far out the bloom will extend from the edges of objects. For a subtle effect, try setting a low intensity with a high radius. If the slider range does not allow the desired value, a higher value can be manually typed in.

Vignetting

The vignetting effect will darken the edges of the rendered image to help bring the focus towards the center of the image.
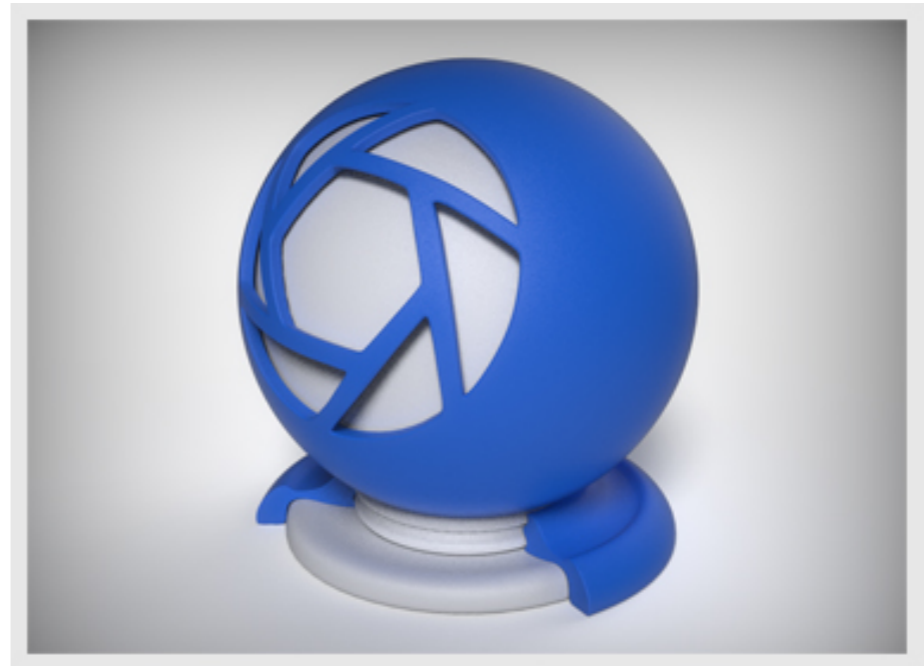
KeyShot® Manual

Materials

- [Overview](#)

- [General Parameters](#)

- [Material Types](#)

Overview

KeyShot material types have been designed to be easy to use with as few parameters as possible for a given material type. For example, metals will have only the parameters needed to create a metal and plastic will have only the parameters necessary to creates plastic. The following sections will cover all of the material types and their parameters.

The first four sections cover some common parameters that are found throughout several material types. Since KeyShot is designed to be able to create realistic materials with little to no experience, an understanding of these concepts is not necessary, but can help gain a deeper understanding of how rendering and material creation works. These properties are: diffuse, specular, refraction index and roughness (glossy).
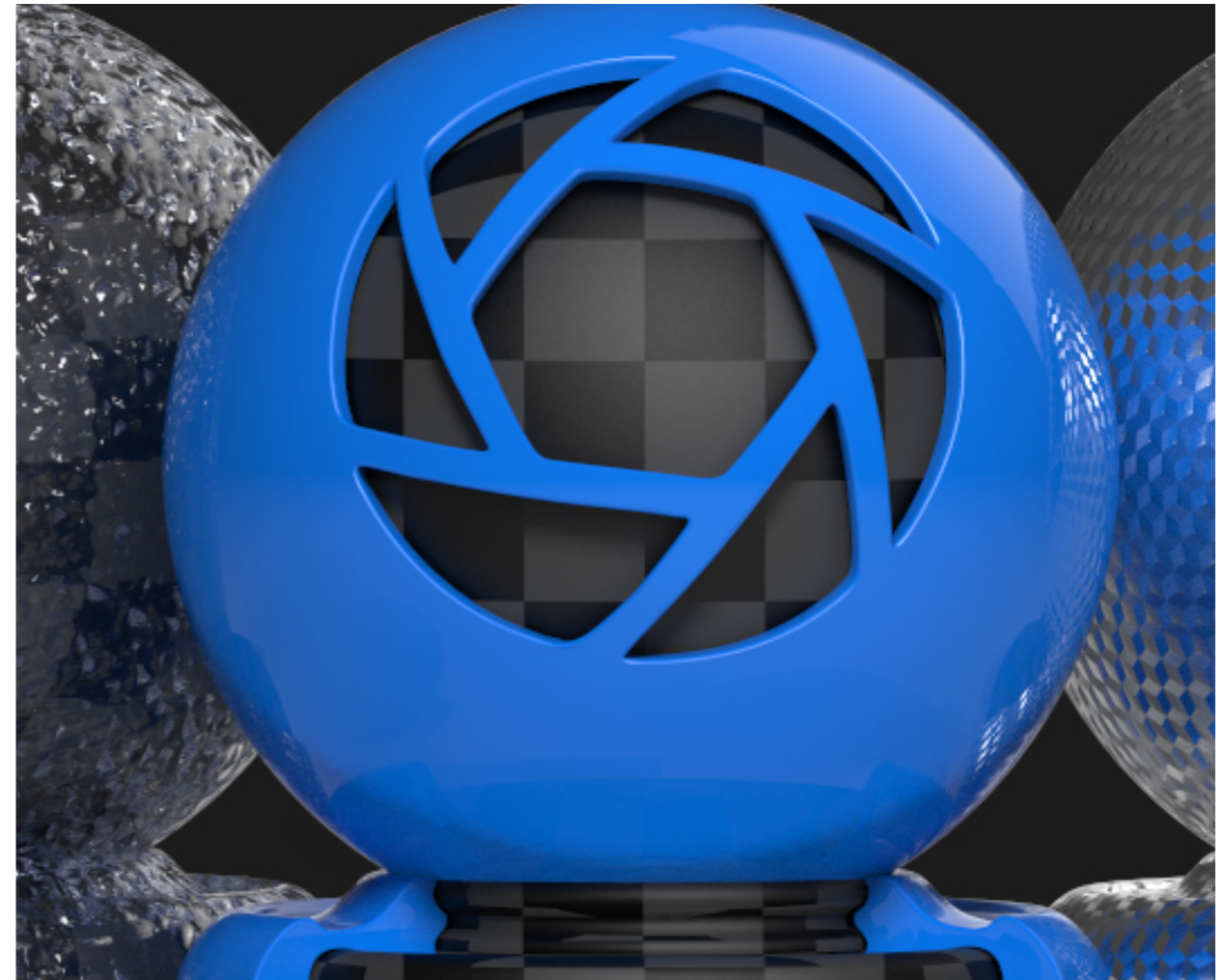
Materials > General Parameters

- **Diffuse Parameter**

- **Specular Parameter**

- **Reflection Index**

- **Roughness Parameter**

Diffuse Parameter

The diffuse parameter will be found throughout many of the material types. The most basic way to think of diffuse when working in KeyShot is a material's overall color. However, there is a more technical explanation of what this is that can help when creating materials:

The word diffuse means "to-scatter" or "spread out". Diffuse in the rendering world refers to how light reflects off of materials. Depending on the surface of a material, light rays will behave differently when they hit the surface. If a surface has little or no imperfections like a polished surface, light rays will bounce straight off. This will produce a shiny or reflective surface. If the surface has many imperfections like concrete light rays will be scattered across the surface creating a matte look. This is why concrete is not reflective or shiny.

The diffuse parameter will control the color of the diffuse rays (left diagram) on a material.

Light rays

Diffuse reflections (rough)

Irregular surface (concrete)

Light rays are scattered creating diffused (scattered)
light reflections

Specular Parameter

The specular parameter is another parameter that will be found on many material types. Specular reflections are reflections that are bounced off a material surface without scattering. Materials appear reflective or shiny when a surface is polished and has little to no imperfections. When the specular color is set to black, a material will have no specular reflections and will not appear reflective or shiny. Specular color set to white will give 100% reflectivity for that material. Metals do not have diffuse color so any color will be derived entirely from the specular color. Plastics can only have white as the specular color.

The specular parameter will control the color and intensity of the specular light reflections on a material.

Light rays

Specular reflections (shiny)

Polished surface (mirror)

Light rays are bounced off polished surfaces creating specular reflections
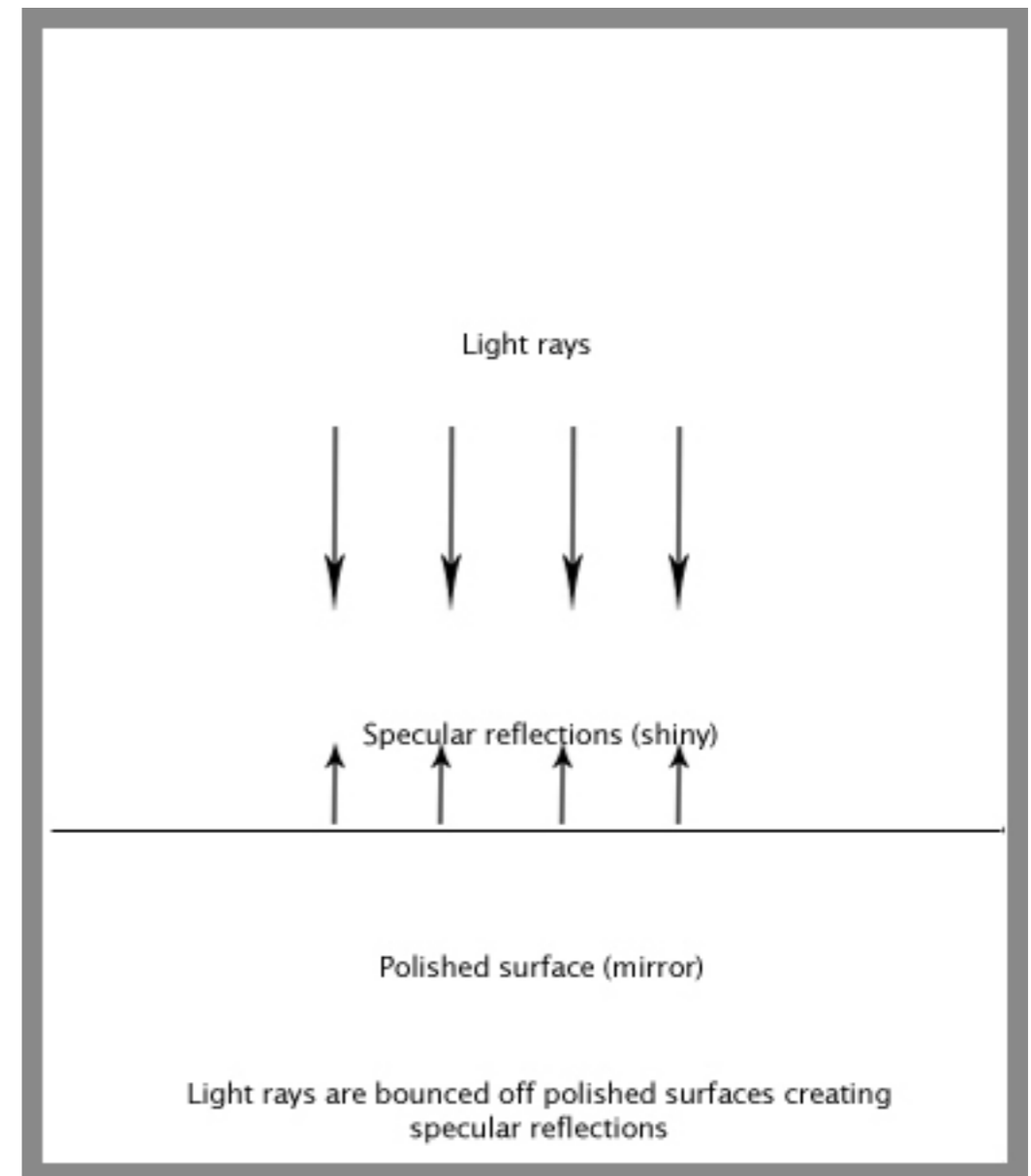
Refraction Index

Refraction index is another material parameter that will be found on multiple KeyShot material types. The term might not be familiar, but refraction is something that is commonly seen every day. A good example is when a person sticks their hand in a pool. The light is bent, or "refracted" and the arm looks broken.

Refraction occurs because light travels through different mediums at different speeds. This reduction in speed is referred to as a material's refraction index and is represented by a number. For example, water has an index of refraction of 1.33, glass has an index of refraction of 1.5 and diamonds have an index of refraction of 2.4. This means that light travels through water 1.33 times slower than it does through a vacuum. Light travels through glass 1.5 times slower, through diamonds 2.4 times slower and so on. The slower light travels, the more it is bent and distorted.

Refraction indexes for different materials can be easily found Online. Once the value is found, it can be entered into the refraction index property of a material, and it will be accurately represented in KeyShot.
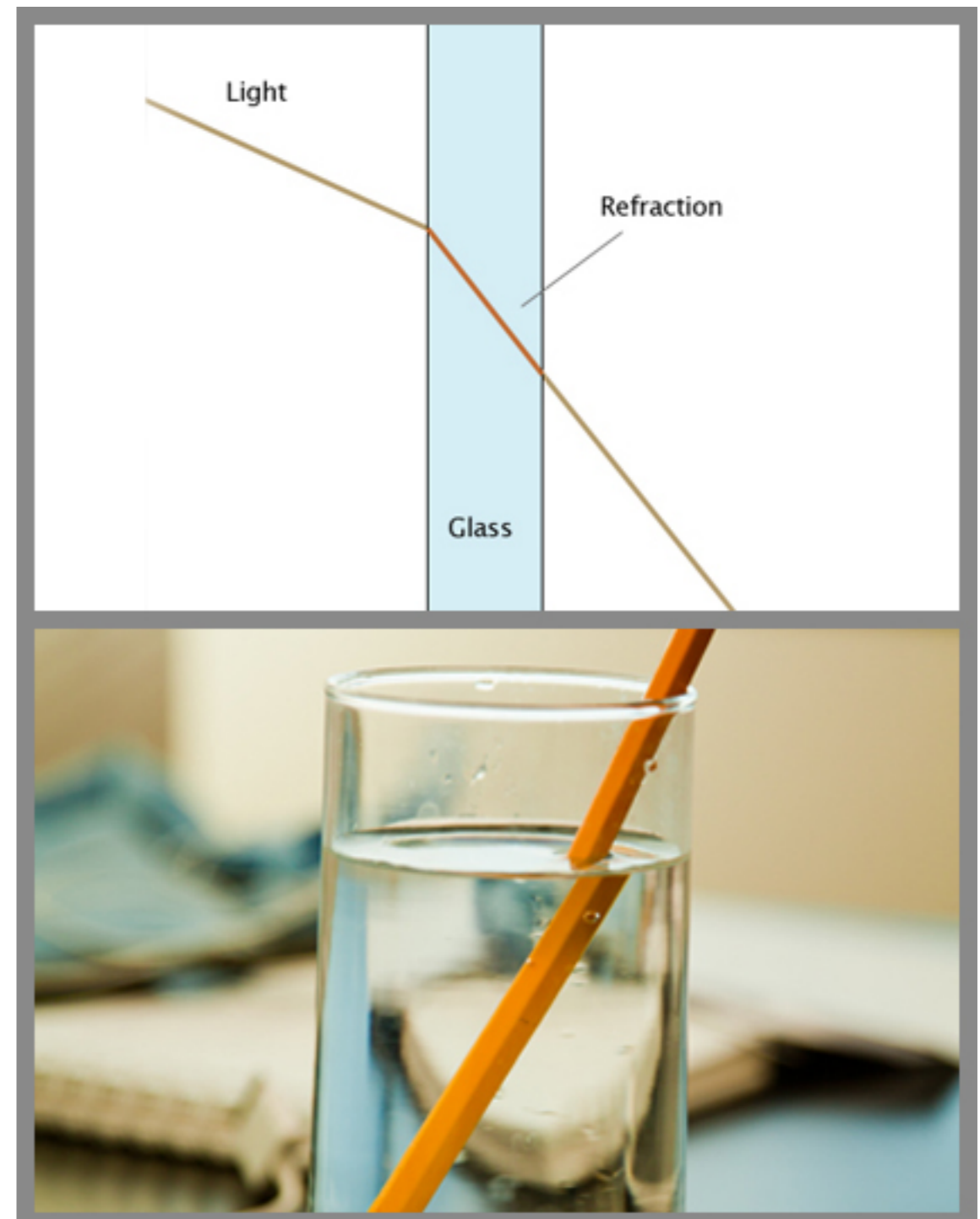
Roughness Parameter (Glossy)

The roughness parameter is another setting that will be found on multiple material types in KeyShot. This is a slider that will add microscopic levels of imperfections to the surface to create rough materials. The diagram that explains diffuse can also help explain why materials appear rough. When roughness is added, light rays are scattered across the surface which causes specular reflections to break up. Due to the additional light scattering, rough materials are more challenging and take more processing power to render than perfectly reflective surfaces.

Glossy Samples

Since rough (glossy) materials are more complex to render, KeyShot has a setting built into materials that can improve the accuracy of these rough materials. This setting is called glossy samples. The samples refer to the number of rays that are shot out from a pixel in a rendered image. Each ray collects information from it's surrounding environment and returns this information back to the pixel to determine it's final shade.
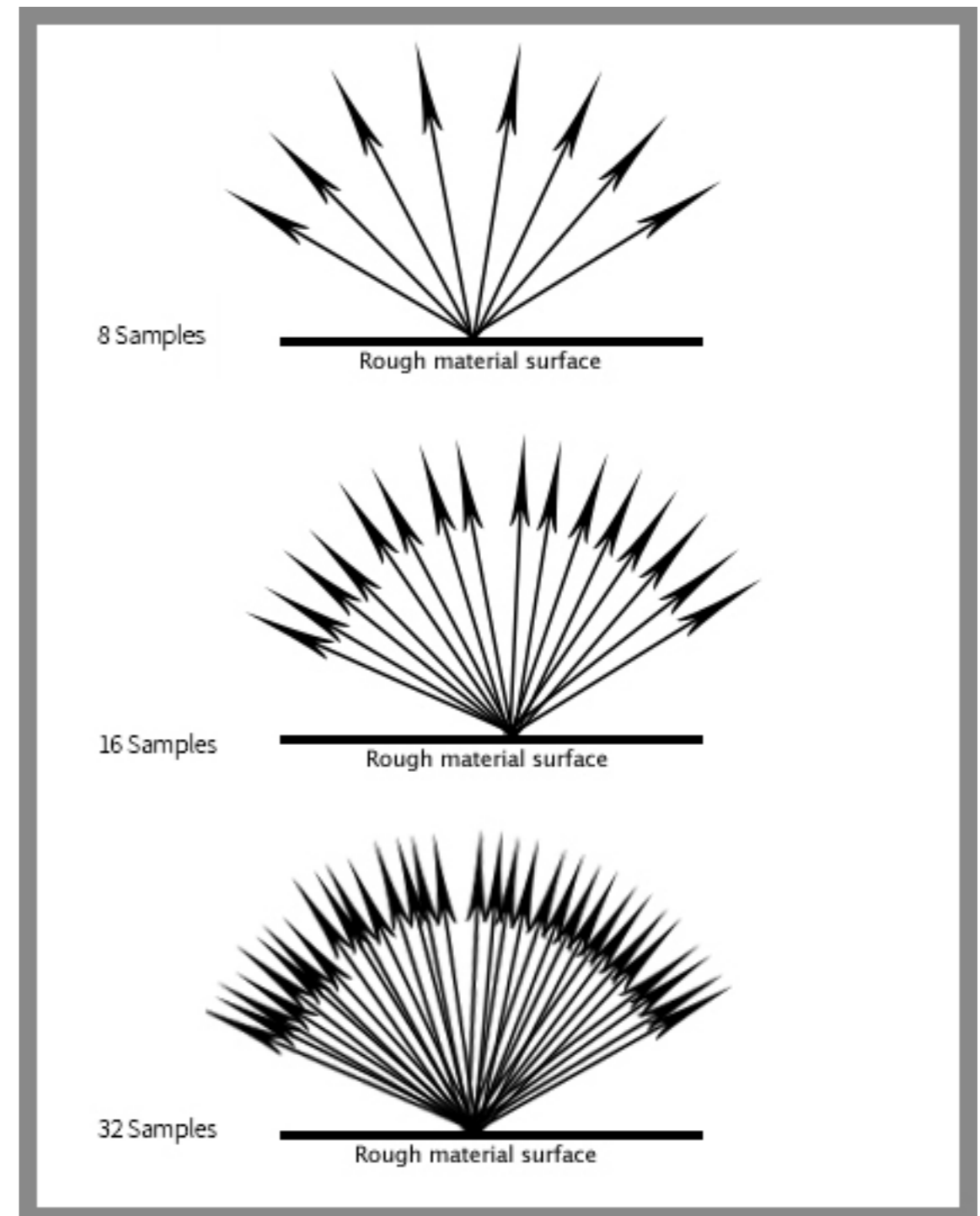
KeyShot® Manual

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- [Diffuse](#)

- [Emissive](#)

- [Flat](#)

- [Gem](#)

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- [Wireframe](#)

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Advanced

The advanced material is the most versatile of all KeyShot material types. There are more parameters in this material than any other. With the variety of parameters, materials such as metals, plastic, transparent or cloudy plastics, glass, diffuse and leathers can all be created from this single material type. Material types that cannot be created are translucent materials and metallic paints.

Diffuse

This can be thought of as the overall color of the material. Transparent materials will have little or no diffuse. Metals will have no diffuse with all the color derived from the specular.

To fully understand this parameter see the section on diffuse.

Specular

This is the color and intensity of the reflection of light sources within the scene. Black will be 0 intensity and the material will not be reflective. White will be 100% intensity and will be completely reflective. If a metal material is being created, this is where the color is set. If a plastic material is being created, the specular color should be white or gray to reduce reflectivity. Plastics will not have color in the specular.

To fully understand this parameter see the section on specular.
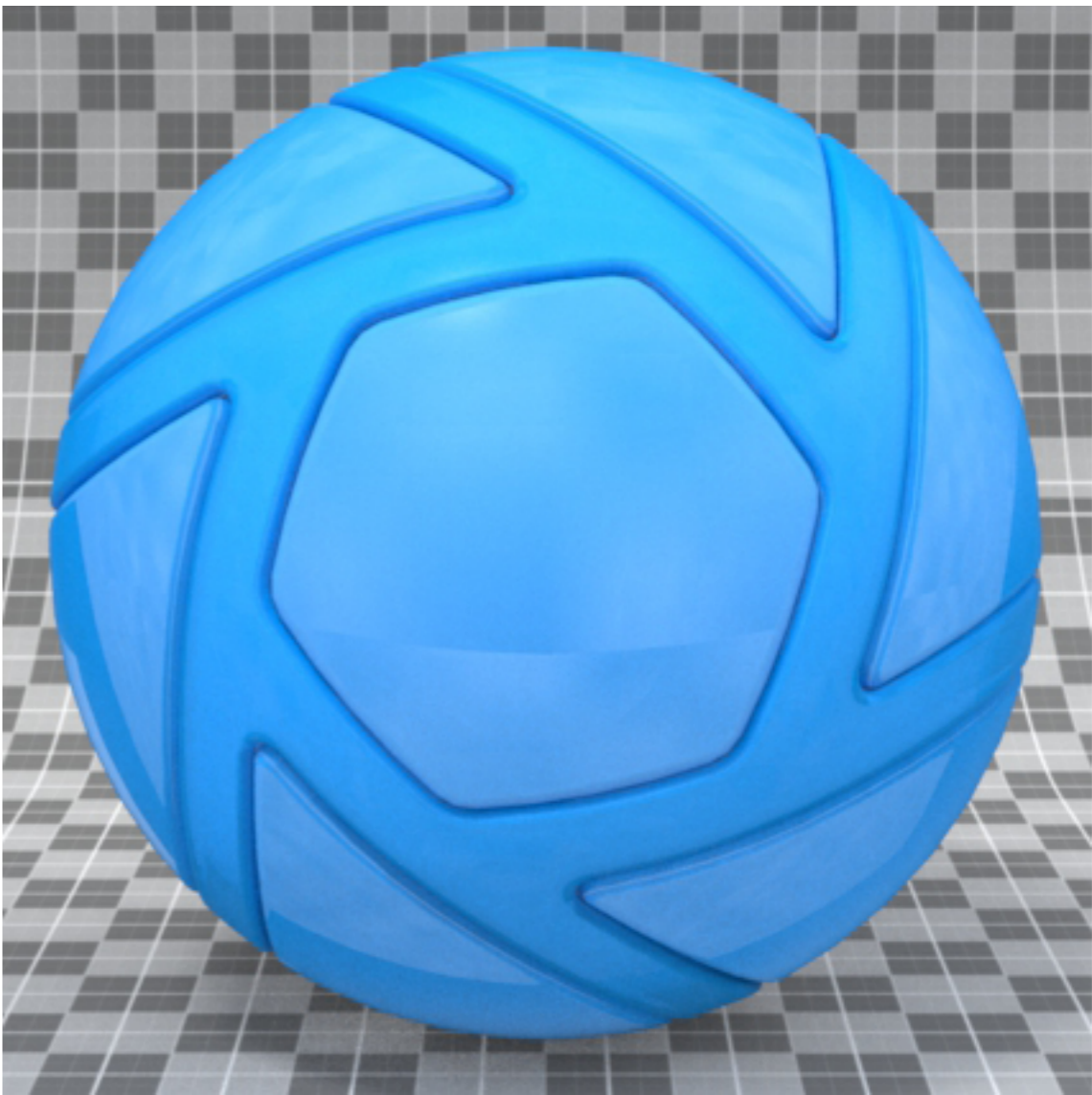
Texture Maps Available

Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Advanced

Specular Transmission

This can be thought of as the transparency of the material. Black will be 100% opaque and white will be 100% transparent.

If a transparent glass or plastic is being created, the diffuse should be black with all the color derived from this parameter. Transparent glasses or plastics should also have the specular set to white. If a cloudy plastic is desired, the diffuse can be set to a very dark version of the color set here.

Diffuse Transmission

This will cause additional light scattering across the surface of the material which can simulate a translucent effect. It will increase render time, so if it is not needed the recommendation is to leave it at black.

Ambient

This will control the color of self shadowing on the material in areas that are not receiving direct light. It can produce unrealistic looks, so it is recommended to keep this set to black unless it is needed.

Roughness

This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased the material will appear more rough as light is diffused across the surface.
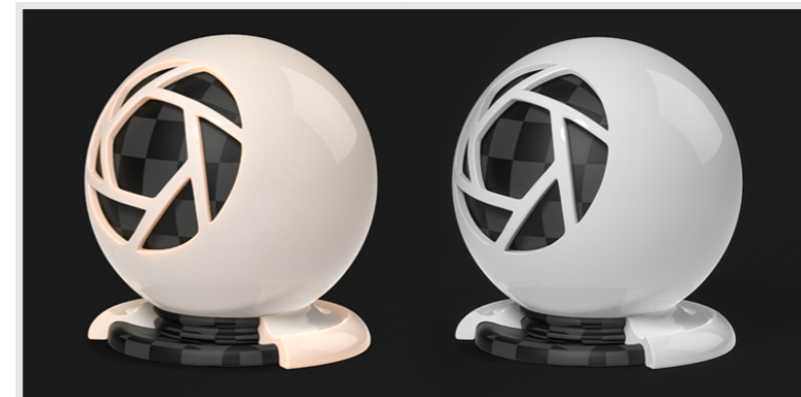
Diffuse Transmission
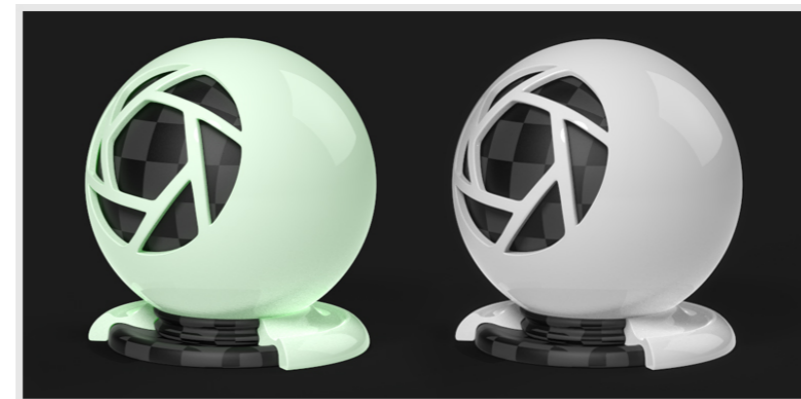
Ambient

Roughness

Advanced

Roughness Transmission

This will control the roughness of the refractions. The main difference between this parameter and roughness is that the roughness is on the internal portion of the material. This can be used to create a frosted look while still maintaining a shiny surface. The material needs to have some transparency through the specular transmission to see any affect.
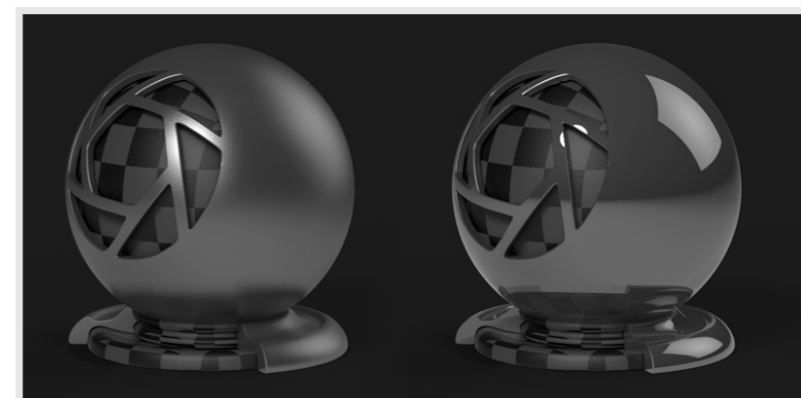
Refraction Index

This will control the level of refraction on the material.

Fresnel (pronounced frah-nel)

This will control the intensity of the reflections that are perpendicular to the camera. In the real world, materials are more reflective around the edges of objects than they are on areas of objects that are directly facing the viewer or camera. It is enabled by default because in it is the accurate setting. Different materials have different Fresnel falloff.

Glossy Samples

This will control the accuracy of glossy (rough) reflections.

Roughness Transmission

Refraction Index

Fresnel

KeyShot® Manual

Anisotropic

The anisotropic material type gives you advanced control over the highlights on the material surface. On other material types that have a single "roughness" slider, as you increase this value the highlights on the surface spread out evenly in all directions. Anisotropic gives you control over the highlight shape by controlling the roughness in two directions with two independent sliders. This material type is often used to simulate a finely brushed metal surface.

Diffuse
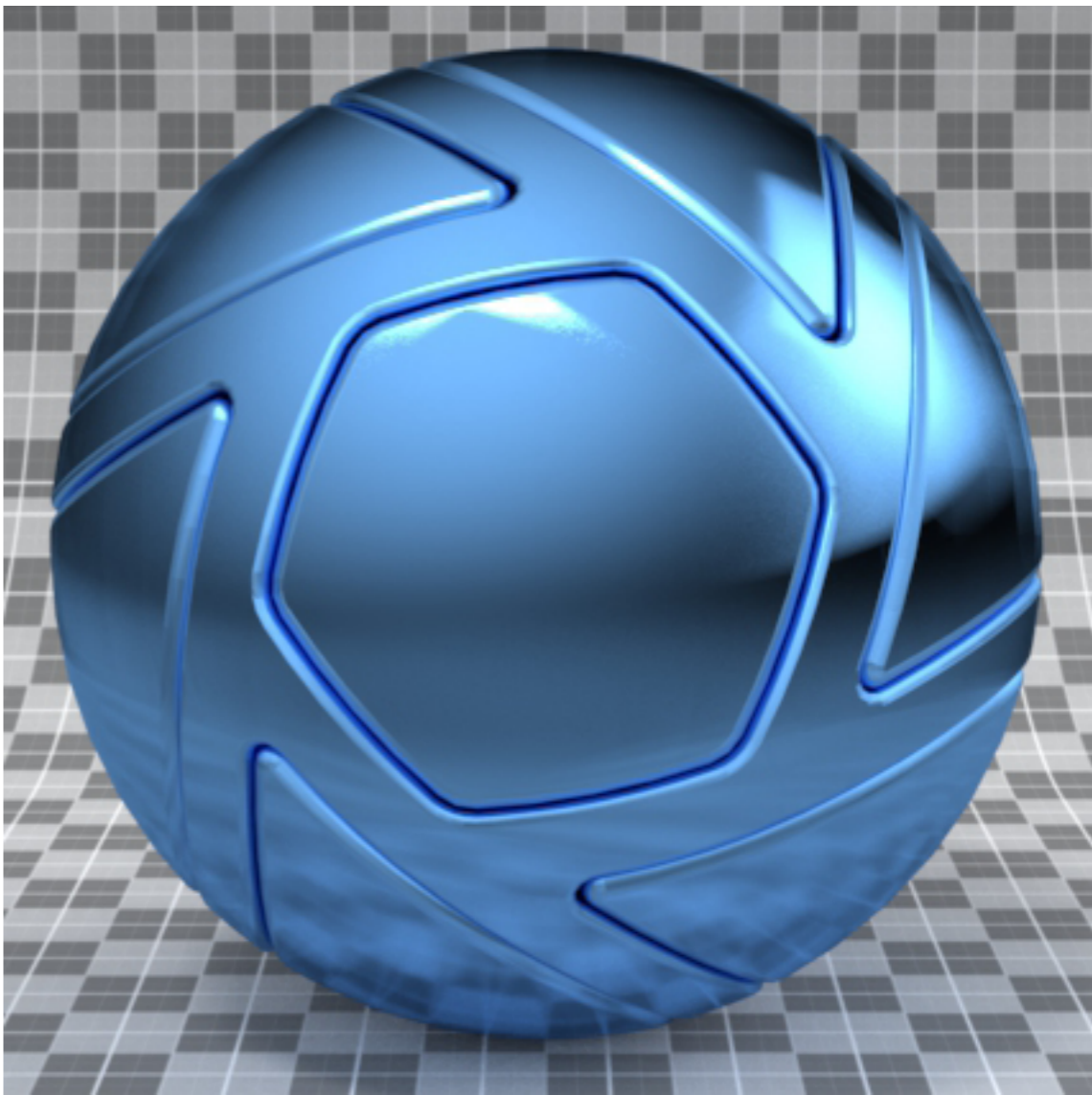To fully understand this parameter see the section on diffuse.

When trying to create a metal the diffuse should be set to black. When set to anything other than pure black, this material type will take on more a plastic look.

Specular
To fully understand this parameter see the section on specular.

This is the color and intensity of the reflection of light sources within the scene. Black will be 0 intensity and the material will not be reflective. White will be 100% intensity and will be completely reflective.

If a metal material is being created, this is where the color is set. If a plastic material is being created, the specular color should be white or gray to reduce reflectivity. Plastics will not have color in the specular.

Texture Maps Available

Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Anisotropic

Roughness X and Y

These sliders control the spread of the highlights on the surface. The X and Y roughness sliders control the highlight spread in independent directions.

As you offset the values the highlights on the surface will stretch out and give a finely brushed effect.

Setting both sliders to the same value will yield reflections that are spread evenly in all directions.

In the image below, the ball on the left has offset values and the right has equal values.

Angle

This rotates the stretched highlights that are produced when the roughness x and y values are offset. The value is in degrees and goes from 0 to 360.
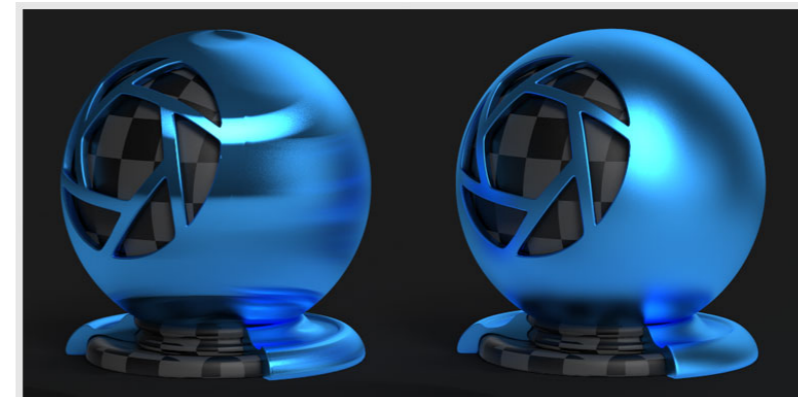
Roughness X and Y

Angle

Anisotropic

Mode

This advanced setting controls how the highlights are stretched. There are three unique modes.

The default mode is 1 which will stretch highlights in a linear way, and is independent of any UV coordinate mapping you may have on the model.
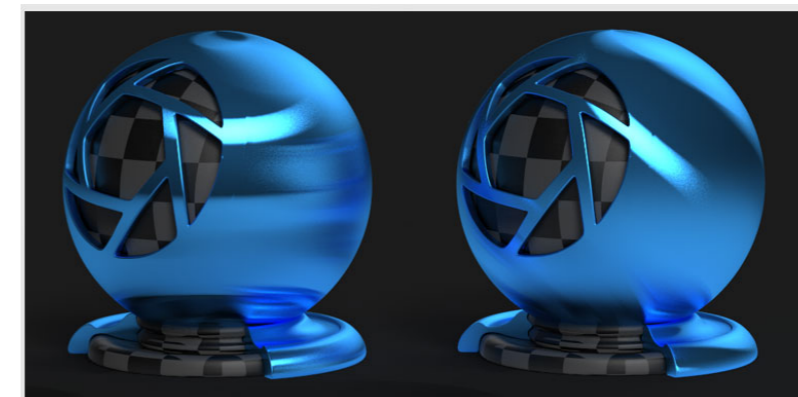
Mode 0 is dependent on your UV coordinates. You can use this to manipulate the anisotropic highlights based on the mapping from your modeling software.

Mode 2 is a radial anisotropic method which simulates the effect you might observe on the play side of a CD.

Samples

To fully understand this parameter see the section on samples. A low samples setting (8 or lower) will tend to make the surface look more noisy which will give a more imperfect and rough look. As you increase the value the noise will even out more and provide a more evenly distributed roughness.

Samples

KeyShot® Manual
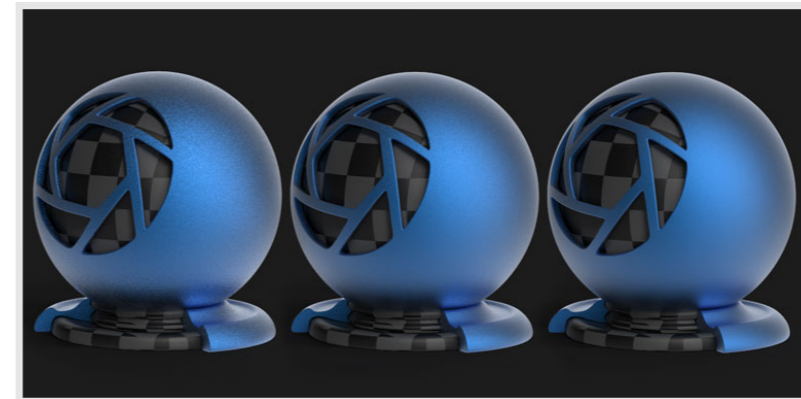
Dielectric

The dielectric material type is a more advanced way to create glass materials. Compared to the solid glass material type, you will find additional settings for dispersion (Abbe number) and it can also be used to create an accurate interface between glass and liquid.

Transmission

This option controls the overall color of this material type. When light enters the surface it will take on the color set here. The amount of color that you see in this material is highly dependent on the "color density" setting as well. If you have set a color in the transmission, but it looks too faint, skip down to the color density section.

Refractive Index

This slider controls how much light will bend or "refract" as it passes through parts on your model that have this type of material. The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.
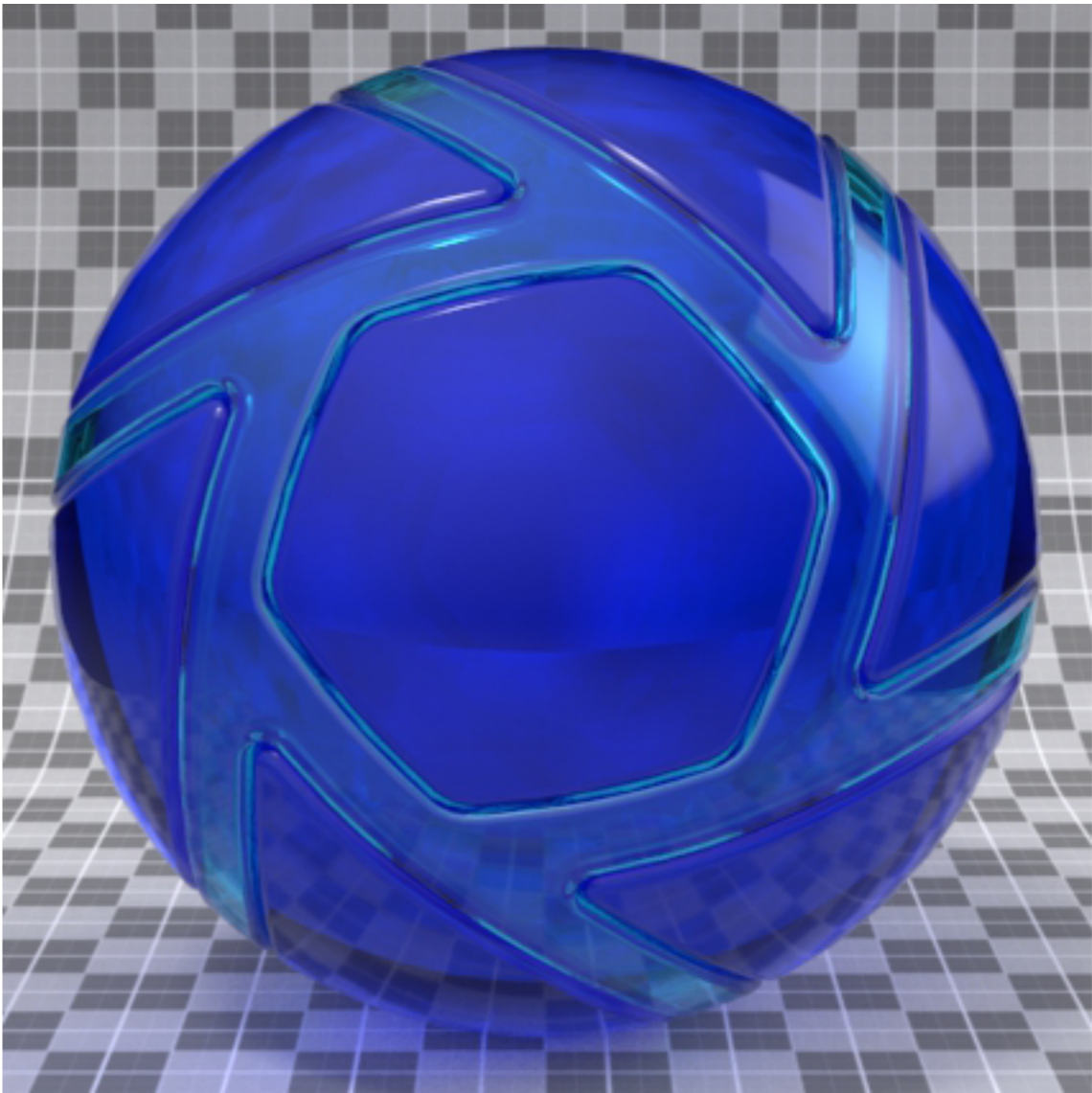
Texture Maps Available

Color	Specular	Bump	Opacity
No	No	Yes	Yes

Dielectric

Transmission Out

This option controls the color of the light on the outside of the material. It is an advanced and complex setting, but is needed when rendering containers with liquid. In the example of a water glass, you will need to have a dedicated surface for where the liquid and glass meet. On this surface, you set the color of the glass with the transmission outsetting then you can control the color of the liquid with the transmission. If the glass and liquid are both clear, set both transmission and transmission out to white.

Refractive Index Outside

This slider is an advanced, but powerful, setting that allows you to accurately simulate the interface between two different refracting materials. The most common use for this is when you are working on a container with liquid inside, like a water glass. In such a scene you will need a single surface to represent where the glass and water meet. On this surface you have the liquid on the "inside" and therefore set the refractive index to 1.33. On the "outside" you have the glass and should set the refractive index outside to 1.5.

Refractive Index Outside

Dielectric

Color Density

This slider controls how much of the color you have set in the transmission property you will see depending on how thick the part is that the material is applied to.

This physically accurate parameter simulates the effect you can observe by looking at the color of the shallow water at a beach versus the deep blue of a deep ocean. Without color density you would see through to the bottom of the deepest ocean as easily as the bottom of a swimming pool.
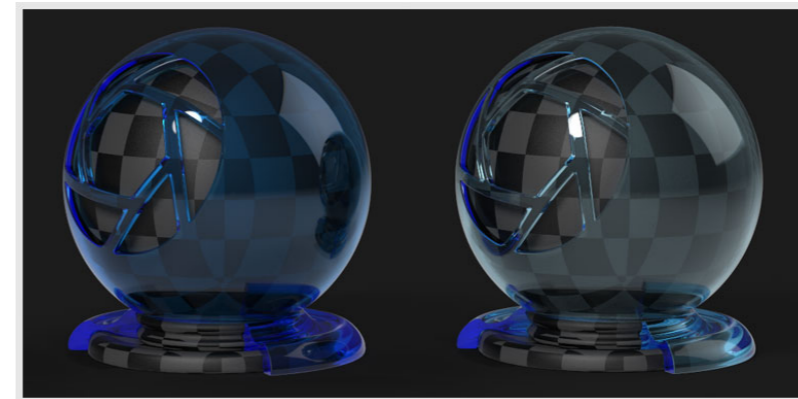
After setting a color in the transmission setting, use the color density setting to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

Roughness

Roughness on this type of material will spread out highlights on the surface similar to what you see on other, non-transparent, materials. However, it also spreads out the light that is transmitted through the material.

This is used to create a frosted glass look.

Expand this parameter and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother frosted look.

Color Density

Roughness

Dielectric

Abbe Number (Dispersion)

The Abbe number slider controls dispersion of light as it is transmitted through the surface and produces a prismatic effect.

This prismatic color effect can be used to create the "fire" effect often desired when rendering gem stones.

A value of zero will disable the dispersion effect entirely. A low value will show heavy dispersion, and as you increase the value, the effect will get more subtle. A setting around 35-55 is a good starting point if a subtle dispersion effect is desired.

Expand this parameter and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother look.


Abbe Number (Dispersion)

Diffuse

The diffuse material has only one parameter and that is the diffuse color. It will be useful for easily creating any kind of matte, or non-reflective material. Since it is an entirely diffuse material, specular maps are not available on the diffuse material.

Diffuse

This parameter will control the color of the diffuse material. To fully understand this parameter see the section on diffuse.
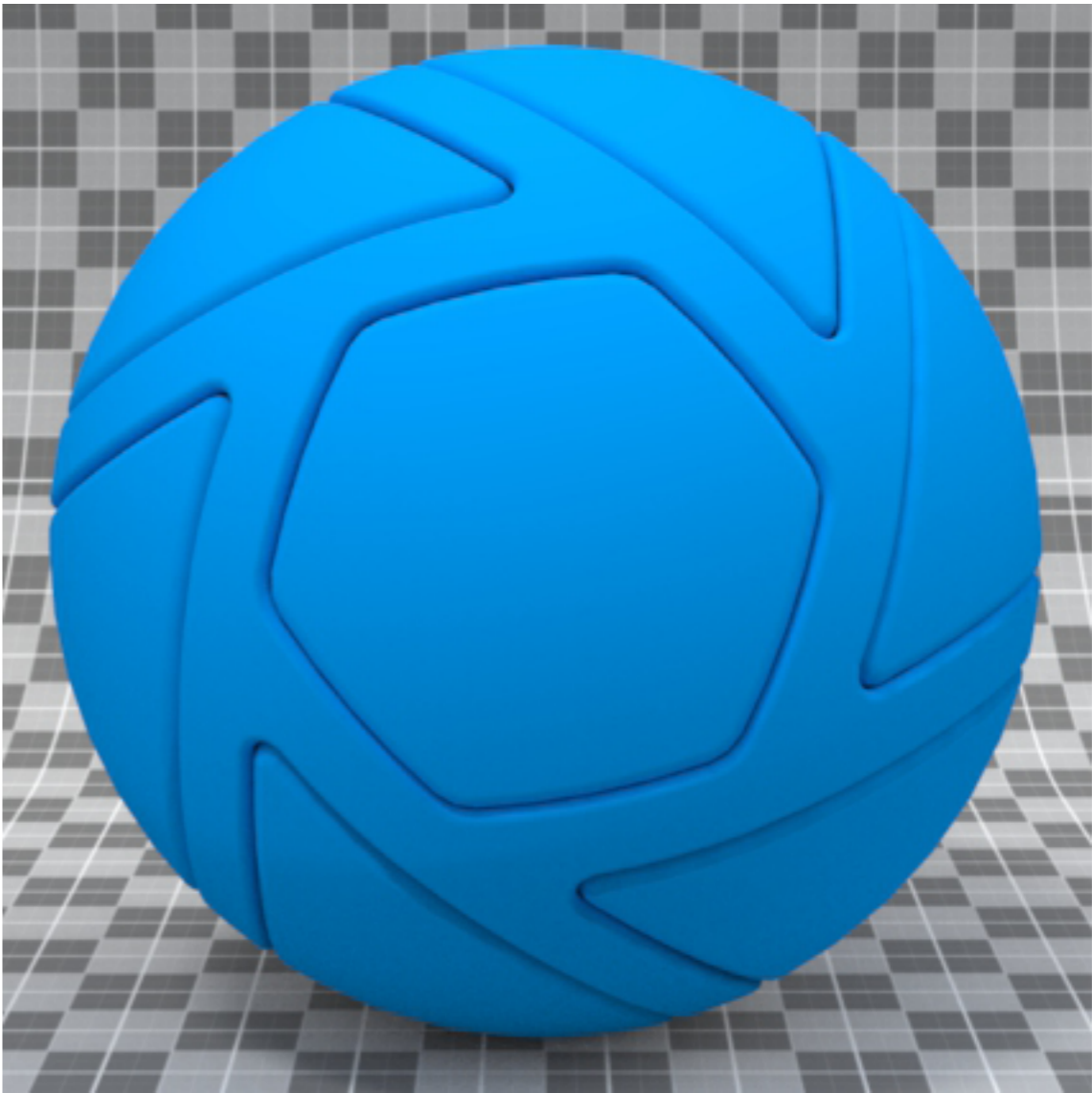
Texture Maps Available

Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Emissive

Emissives can be used for small light sources such as LEDs, lamps or even illuminated screen displays. It is not meant to illuminate scenes as a main light source. The emissive material will need detailed indirect illumination enabled in realtime settings to illuminate other geometry in the realtime view. It will also need ground indirect illumination to illuminate the ground plane as shown below. Color textures can be mapped to the material and any colors included in the texture will be emitted as light. When using emissives, it is a good idea to enable bloom under effects in realtime settings. This will create the glowing effect shown in the image.

Color
This will control the color of the light emitted from the material

Intensity
This will control the intensity of the light that is emitted.

Visible to Camera

Hide the emissive material from the camera but it will still emit light.

Visible in Reflections
Hide the emissive material from any specular reflections. The effect of the emissive will only be seen on the diffuse component of materials

Two-Sided
This will display on both side of the model

Use Color Map Alpha
This will allow you to use the alpha channel on the color map

Texture Maps Available

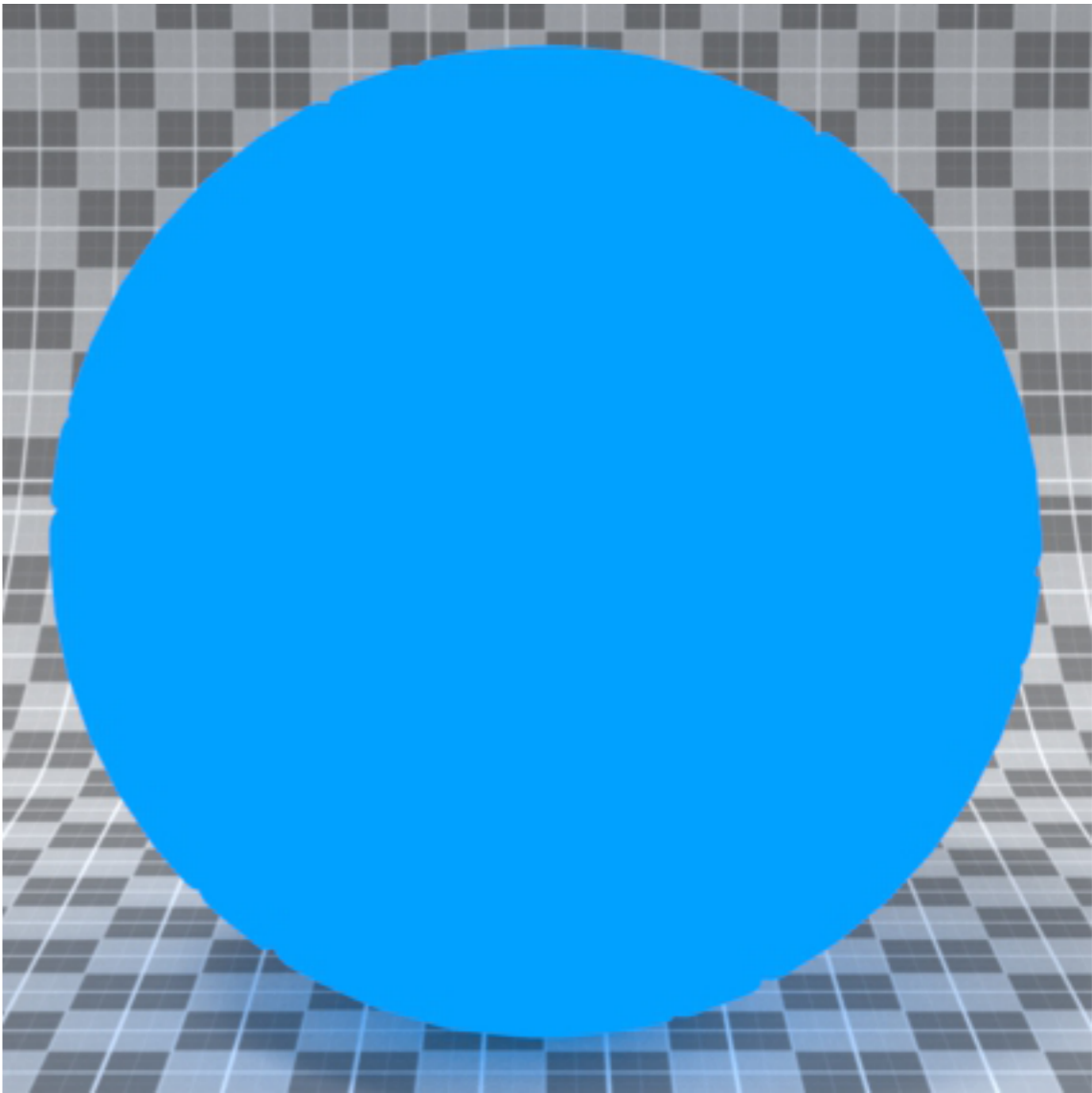| Color	Specular	Bump	Opacity
Yes	No	No	Yes

Flat

The flat material is a very simple material type that produces an unshaded, perfectly even, color over the entire part that it is applied.

This material is often used as a "black out" material behind car grills or other meshes. It is also useful for creating a "clown pass" image which has uniquely colored flat materials applied to each part of the model so that these solid colors can be used to easily create selections in an image editing software.

Color

Click the color thumbnail to launch the color picker to select the color of the material. The flat material has no shading or other surface properties. It will show the solid color you have selected over the entire part that the material is applied to.

Texture Maps Available

Color	Specular	Bump	Opacity
Yes	No	No	Yes

Gem

The gem material is related to the solid glass, dielectric, and liquid material types. The settings have been optimized to be relevant to rendering gem stones.

The Abbe number (dispersion) control is especially important for gem stone rendering as it produces the "fire" effect that is often desired.

The internal culling setting is another specialty of this material type.
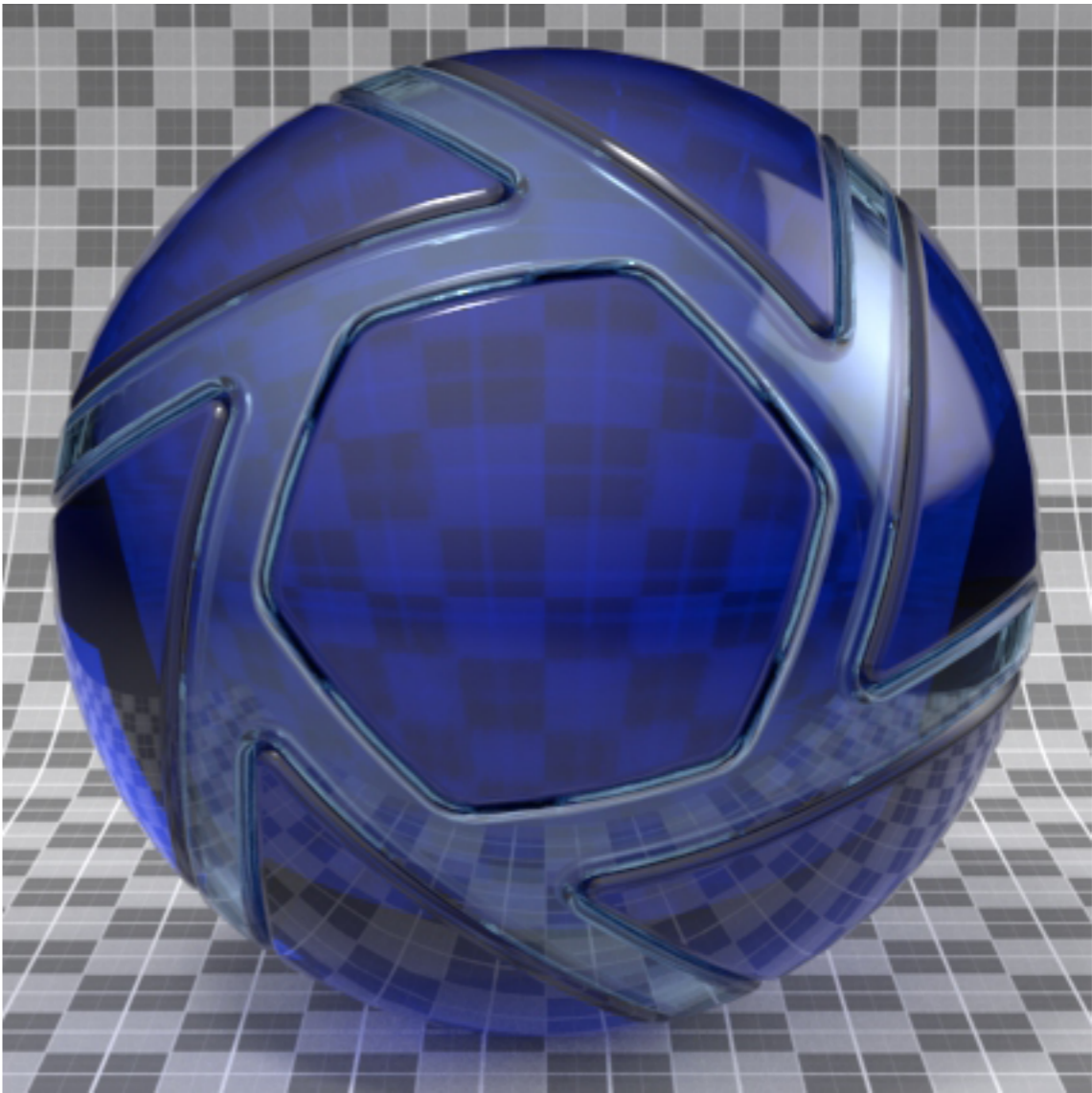
Color
This controls the overall color of this material type. When light enters the surface it will take on the color set here.

The amount of color that you see in this material is highly dependent on the transparency setting as well. If you have set a color, but it looks too faint, skip down to the transparency section.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts on your model that have this type of material.

The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface. Most gem stones have a higher refractive index than 1.5.

Texture Maps Available

Color	Specular	Bump	Opacity
No	No	Yes	Yes

Gem

Transparency

This setting controls how much of the color you have set in the transmission property you will see depending on how thick the part is that the material is applied to.
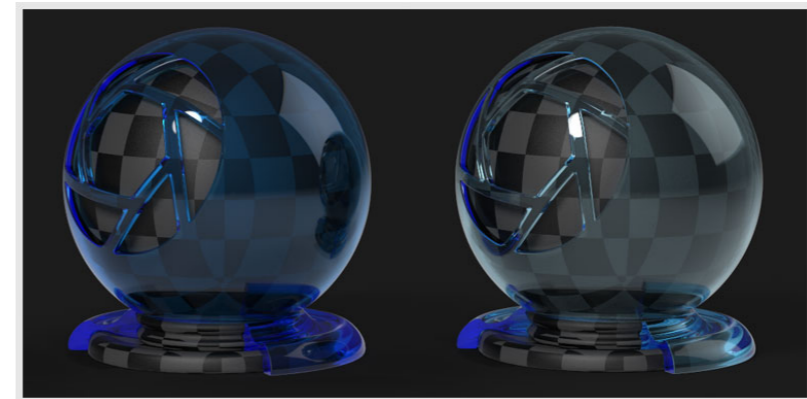
After setting a color in the transmission setting, use the transparency setting to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

Roughness

Roughness on this type of material will spread out highlights on the surface similar to what you see on other, non-transparent, materials. However, it also spreads out the light that is transmitted through the material.

This is used to create a frosted glass look.

Expand this parameter and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother frosted look.

Transparency

Gem

Abbe Number (Dispersion)

The Abbe number controls dispersion of light as it is transmitted through the surface and produces a prismatic effect. This prismatic color effect can be used to create the "fire" effect often desired when rendering gem stones.

A value of zero will disable the dispersion effect entirely. A low value will show heavy dispersion, and as you increase the value, the effect will get more subtle. A setting around 35-55 is a good starting point if a subtle dispersion effect is desired.

Expand this parameter and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother look.

Abbe Number

Glass

This is a simplified material type for creating glass materials.

Compared to the solid glass material, you will notice this material type lacks the roughness and color density settings. However, it adds the two sided option which is very useful when you have a part that is just a single surface (no thickness) and you want to make it reflective and transparent, but not refractive. This is a commonly used for car windshields.
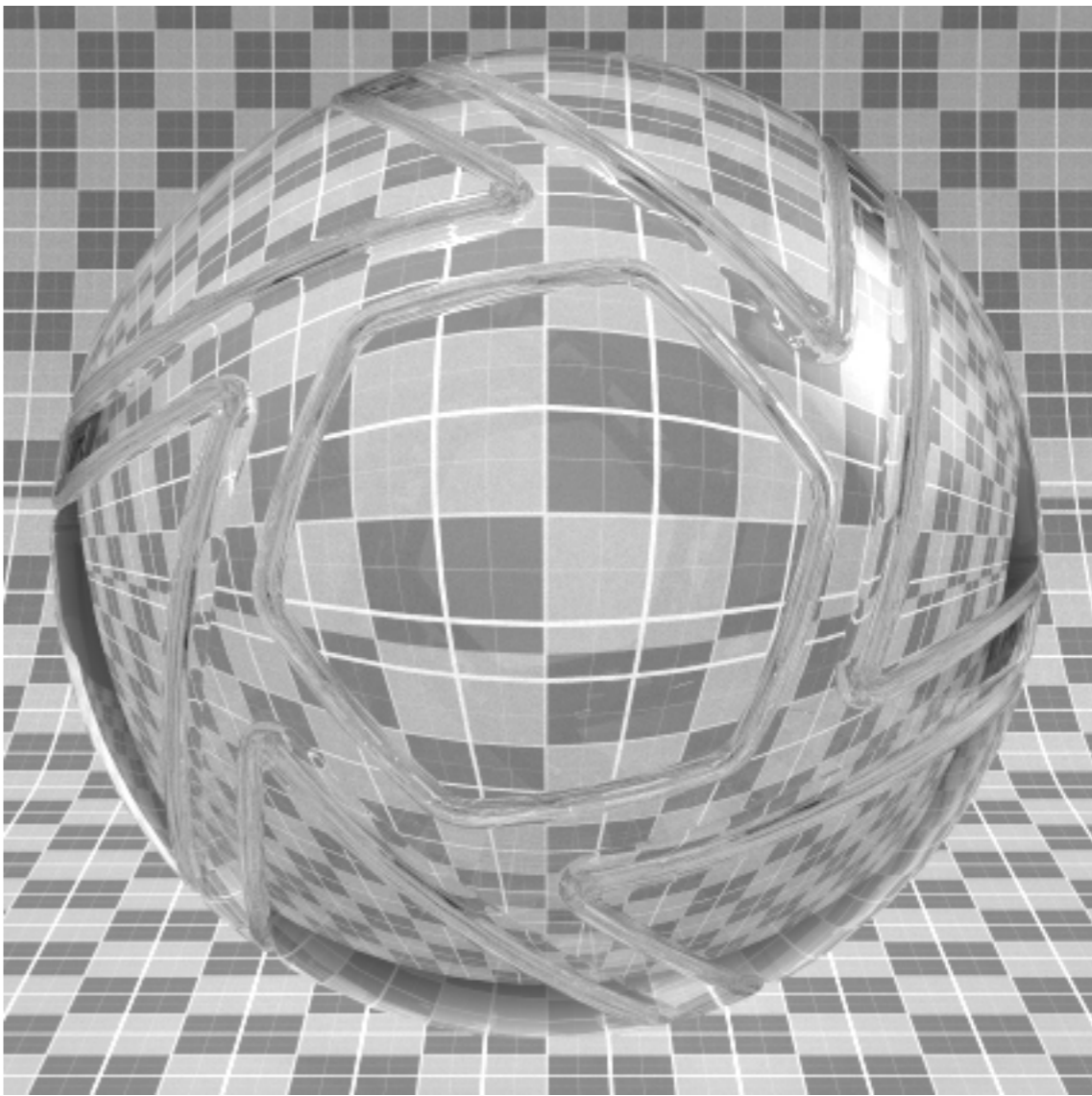
Color

Sets the overall color of the glass material. Click the color thumbnail to open the color picker then select your desired color. Refractive Index This controls how much light will bend or "refract" as it passes through parts on your model that have this type of material.

The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.

Two-Sided

This enables or disable the refractive property of the material. When enabled, the material will appear refractive. When disabled, the material will not be refractive. You will see reflections on the surface and the surface will be transparent, but light will not bend as it passes through the surface. Disabling this option is very useful when you want to see things that lay behind a surface without the distorted effect that results from refraction.

Texture Maps Available

Color	Specular	Bump	Opacity
No	No	Yes	Yes

Ground

This is a simplified material type for creating ground material.

Simply click "Edit" and select "Add ground plane". This will add a ground plane into your KeyShot scene. The ground material can also be applied to imported geometry.

Shadow Color
The shadow that is being casted from the object will be displayed in this color. Clicking the color block will allow you to edit the color.

Specular
The ground material supports specular parameter. Please refer to specular for more information.

Clip geometry below ground
If any geometry is being displayed below the ground plane material. The option will clip the geometry below the ground plane, hiding it from the camera.

Refraction Index
This controls how much light will bend or "refract" as it passes through the ground material surface.

The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.

Leather

The leather material utilizes an automatically generated bump texture to create leather-like bumps on surfaces without any need for mapping texture images.

It is a powerful material type that can be used for effects other than strictly leather materials. Using a very fine scale on the texture and a high reflectivity you can create rough plastic and even metal looking materials.

Color 1 and 2

The automatically generated leather bump texture has hills and valleys and you can use the separate color 1 and 2 settings for offsetting the color of these hill and valleys.

Using highly contrasting values will result in an unnatural result, so generally you will want to set the two colors to the same or very similar values.

Color 1 sets the color of the high points of the leather bumps and color 2 sets the color of the low points.

Reflectivity

This controls the intensity of the reflection on the surface. A high value will make the leather shine and a value of zero will make the material purely diffuse.

Texture Maps Available

Color	Specular	Bump	Opacity
No	No	Yes	Yes

Leather

Roughness

Roughness on a leather material makes a more or less polished looking material. However, it is possible that with a very small scale setting and too high of a height setting your material can look rough when the roughness setting is at zero. This is because the roughness does not affect the prominence of the automatic leather bump texture.

A low value will look more like a polished leather and a high value will look more matte and also helps a leather surface look soft. A samples setting is available within the roughness parameter. This controls overall perfection of the spread out highlights on the surface. A low setting will look imperfect/noisy and a high value will smooth out this noise/grain.

Height

This controls the intensity of the bumps in the automatically generated leather bump texture. A high value will make the surface look rough/ rugged leather while a low value will look more fine and smooth.

Scale

This controls the size of the leather bumps in the automatically generated leather texture. A smaller value actually results in larger scale leather bumps which produces a more rugged looking leather, which a higher value will makes the bumps in the leather smaller and more fine looking.

Roughness

KeyShot® Manual
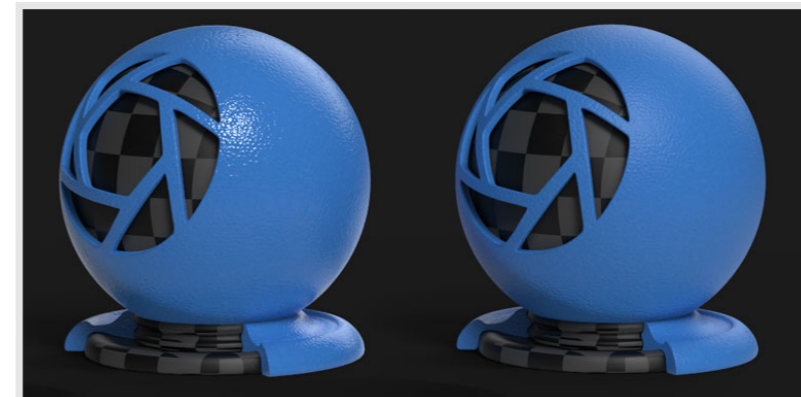
Liquid

The liquid material type is a variant of the solid glass material that has the added ability to set the outside refractive index. This allows you to accurately create surfaces that represent the interface between, for example, a glass container and water.

However, for more advanced liquid in container scenes (if colored liquid is required) you will want to use the dielectric material type.
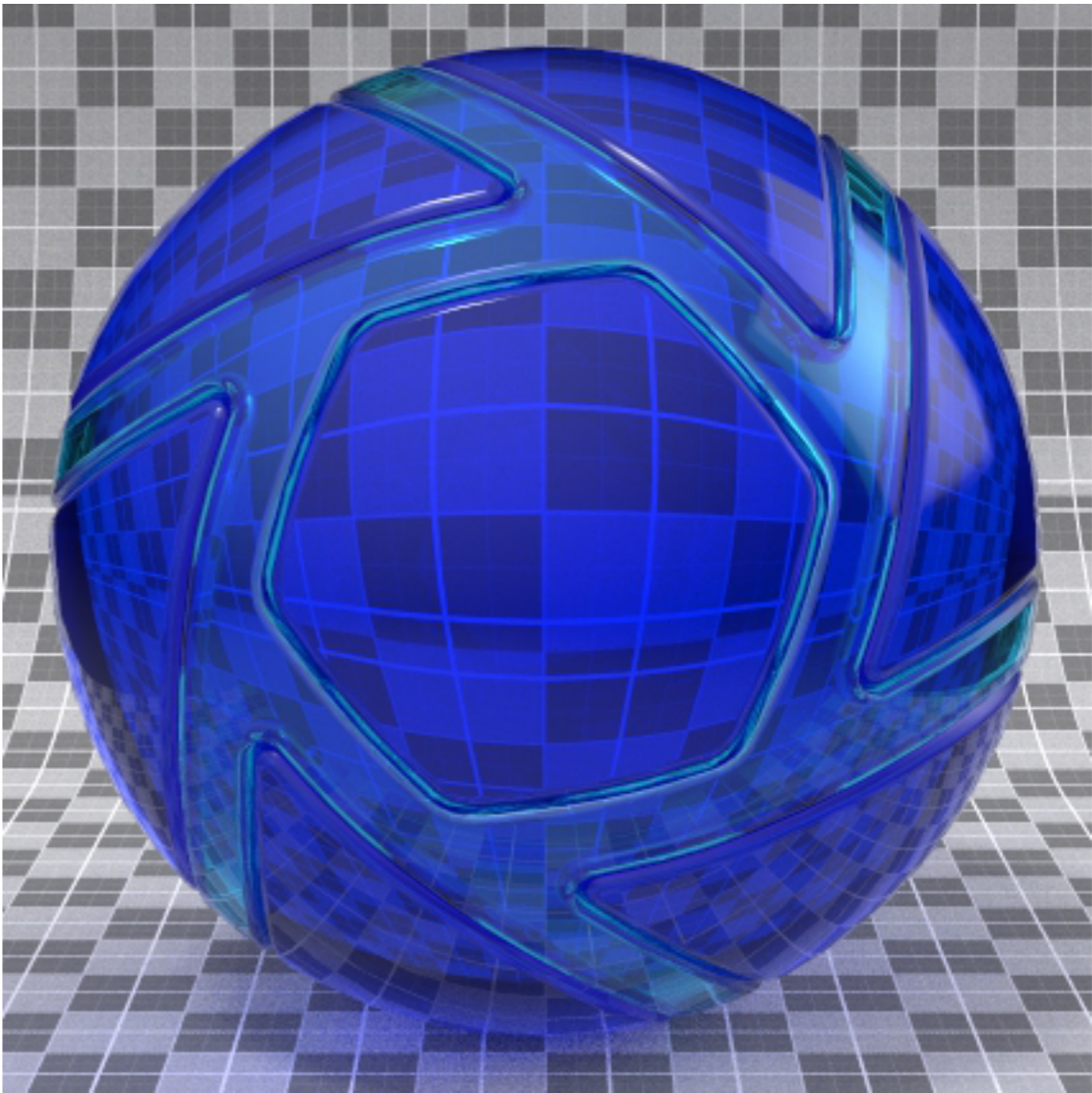
Color
This controls the overall color of this material type. When light enters the surface it will take on the color set here.

The amount of color that you see in this material is highly dependent on the transparency setting as well. If you have set a color, but it looks too faint, skip down to the transparency section.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts on your model that have this type of material.

Texture Maps Available

Color	Specular	Bump	Opacity
No	No	Yes	Yes

Liquid

Refractive Index Outside

This is an advanced, but powerful, setting that allows you to accurately simulate the interface between two different refracting materials. The most common use for this is when you are working on a container with liquid inside, like a water glass. In such a scene you will need a single surface to represent where the glass and water meet. On this surface you have the liquid on the "inside" and therefor set the refractive index to 1.33. On the "outside" you have the glass and should set the refractive index outside to 1.5.

Transparency

This setting controls how much of the color you have set in the transmission property you will see depending on how thick the part is that the material is applied to.

After setting a color in the transmission setting, use the transparency setting to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

Refractive index Outside

KeyShot® Manual

Metallic Paint

The metallic paint material type simulates a three layer paint job. You start with a base layer, then can control how much metal "flake" you want, then on top of it all is a clear-coat that provides a clean reflection over the entire paint.
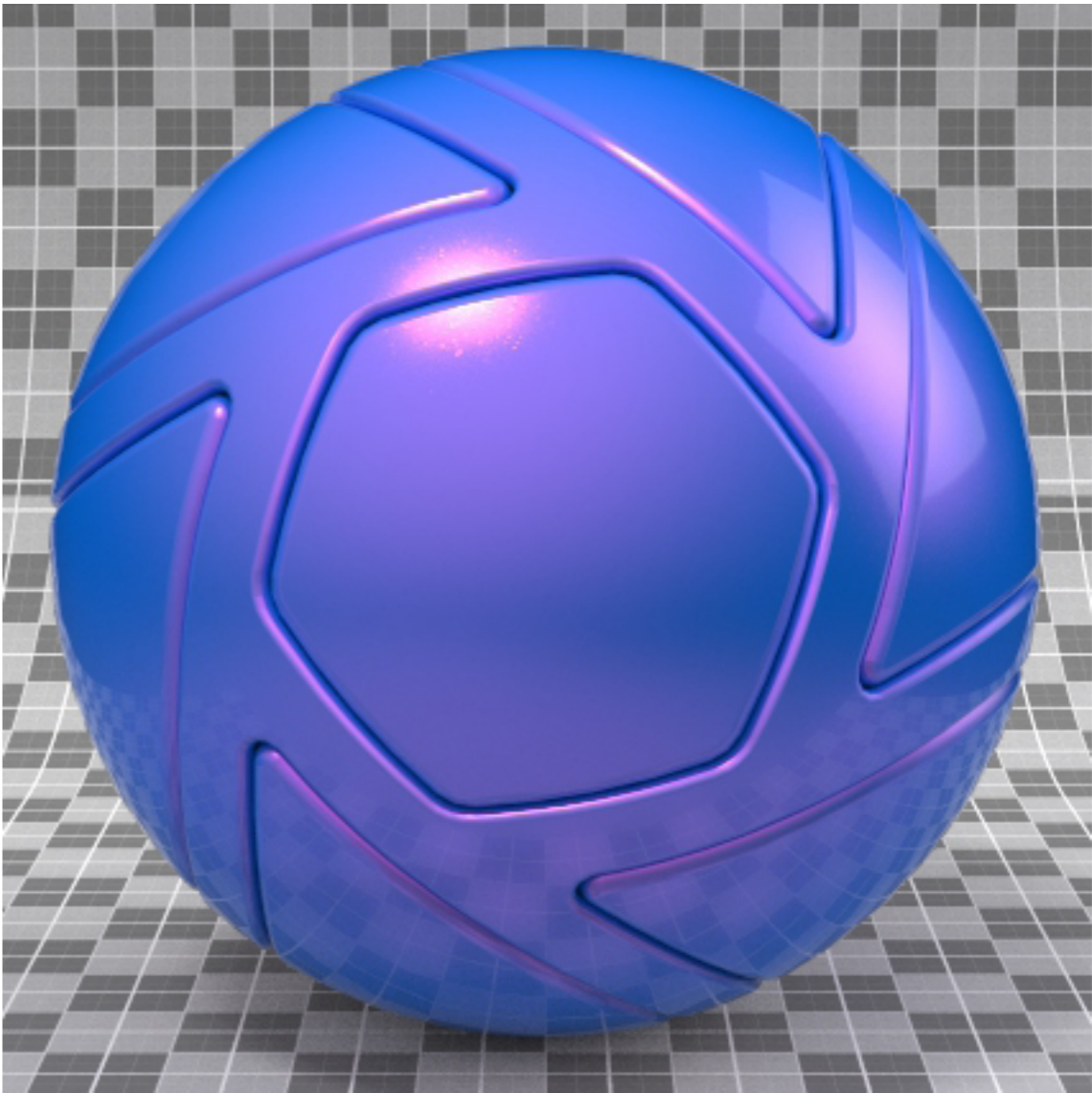
Base Color

This is the overall color of the material and can be consider the base coat of paint.

Metal Color

This can be thought of as a coat of metal "flakes" sprayed over the base coat. You can choose a color that is similar to base color to get a subtle metal flake effect, or you can choose a contrasting color to get some interesting results. A white or gray metal color is also commonly used for realistic paints.

The metal color in the material will show more in the directly lit or brightly highlighted areas of the surface while the base color will show more in the less illuminated areas.

Texture Maps Available

Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Metallic Paint

Metal Coverage

This controls ratio of base color to metal color. When set to 0 you will see only the base color. When set to 1 the surface will be almost entirely covered in the metal color.

For most metallic paint materials you will want this set closer to 0. A setting of 0.2 is a good starting point.

Metal Roughness

This controls the spread of the metal color over the surface. When set to a low value you will see the metal color in only small areas around highlight. When set higher the metal will spread more evenly across the entire surface.

0.1 is a good starting point. Within the metal roughness parameter you will find a samples setting. This will control how imperfect or refined the metal effect in the paint will look. A low setting will result in a more

Noticeable "flake" effect. A higher setting will smooth out the distribution of the metal effect and will have less noise/grain. When seeking a pearl effect, a higher setting is preferred.
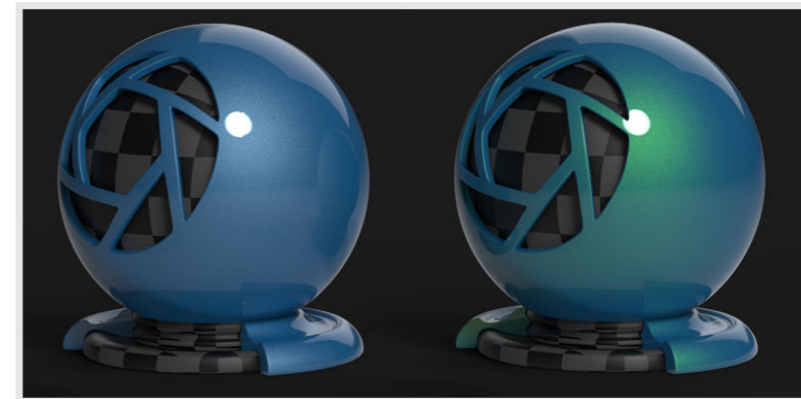
Metal Color

Metallic Paint

Clear-Coat Roughness

The top "layer" of the metallic paint material is a clear-coat that, by default, provides perfectly clean reflections. However, if a satin or matte paint effect is desired the clear-coat roughness value can be increased. This will spread out the reflections on the surface for a matte look.

Clear Coat Refraction Index

This slider controls the intensity of the clear-coat. 1.5 is a good general starting point. If a more shiny paint is desired, increase the value. Bringing the value down to 1 will almost "turn off" the clear-coat. This can be useful for making a matte finish or simulating plastics that have a metallic flake effect.

Metal Flake Size

This controls the size of the physical metal flakes within the paint surface. Increasing flake size makes the metal flake effect more apparent. By contrast, decreasing flake size makes the effect less apparent.

Metal Flake Visibility

This controls the opacity of the metal flake effect in the metallic paint material. A value of 0 causes the flakes to be completely transparent. At higher values the flakes blend in with the base color of the metallic paint material.
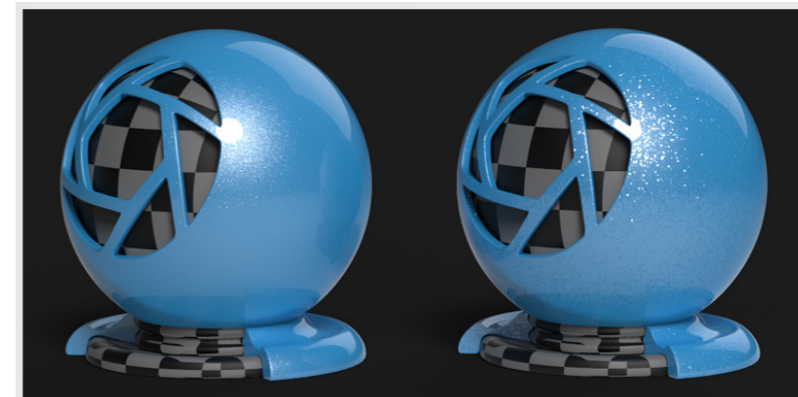
Metal Color
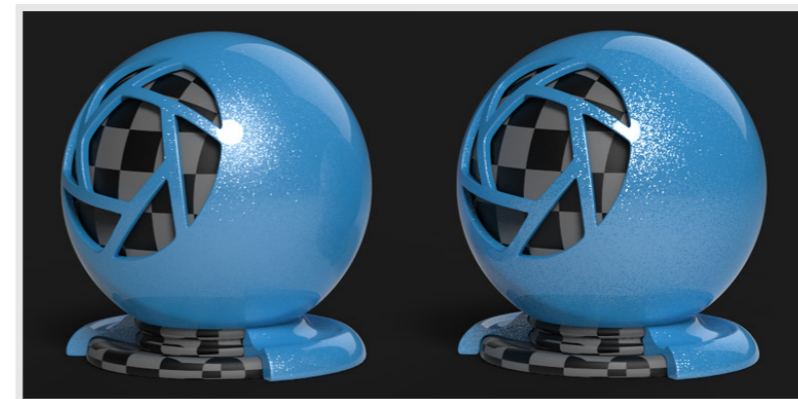
Metal Flake Visibility

Metal

The metal material type is a simple way to create polished or rough looking metal materials. It has very simple settings, just set the color and roughness and you are done.
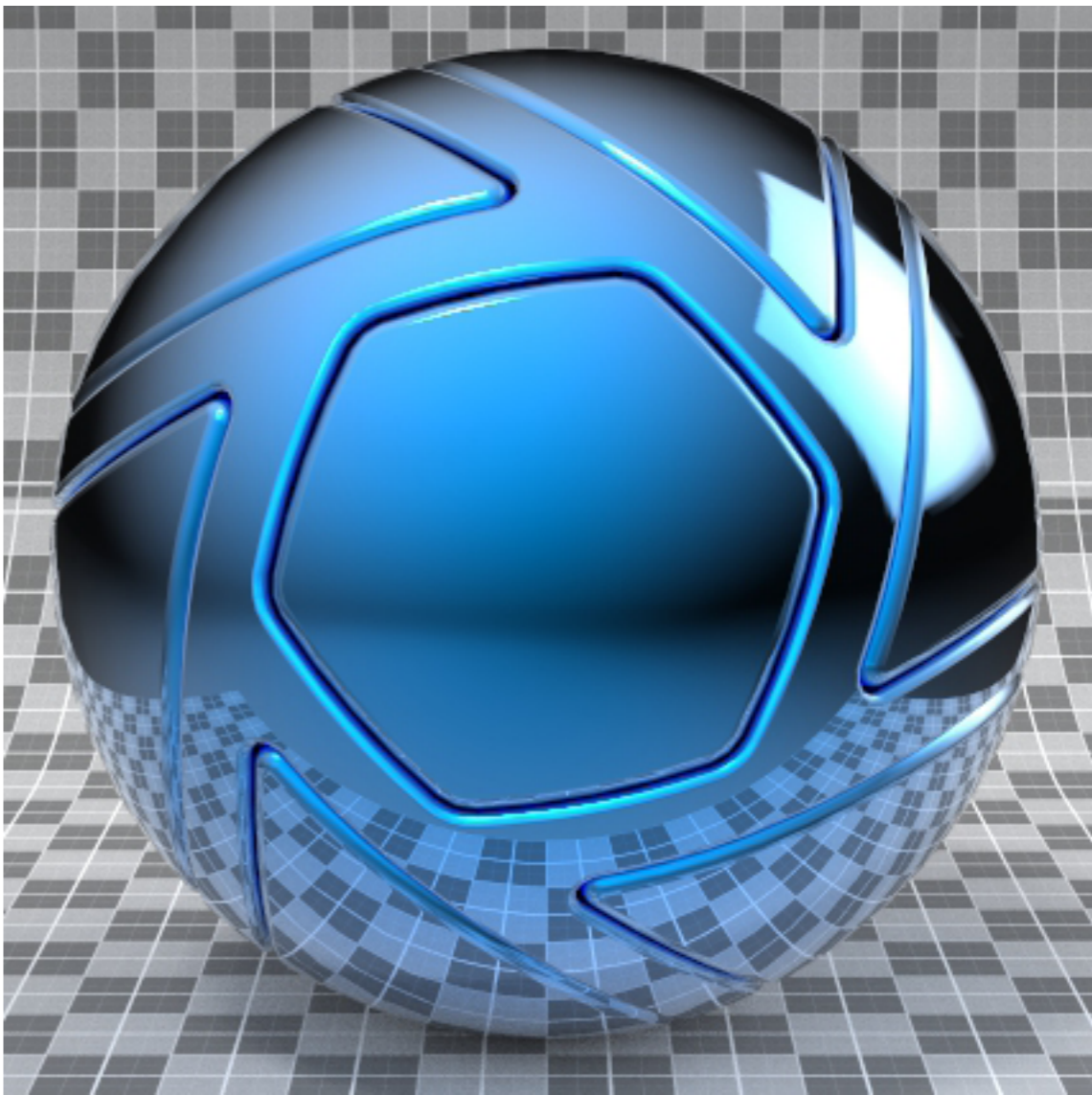
Color
This controls the color of reflected light on the metal surface.

Roughness
This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased the material will appear more rough as light is diffused across the surface.

Samples
To fully understand this parameter see the section on samples. A low samples setting (8 or lower) will tend to make the surface look more noisy which will give a more imperfect and rough look. As you increase the value the noise will even out more and provide a more evenly distributed roughness.

Texture Maps Available

Color	Specular	Bump	Opacity
Yes	No	Yes	Yes

Paint

The paint material is used when a metallic effect is not desired, but rather when a simple "gloss" paint is called for. It provides a quick way to set a color "base layer" then control the clear-coat on top.

Color

Color is your base layer of paint and the overall color of the material. Click the color thumbnail to open the color picker then select your desired color.

Roughness

This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased the material will appear more rough as light is diffused across the surface.

A low samples setting (8 or lower) will tend to make the surface look more noisy which will give a more imperfect and rough look. As you increase the value the noise will smooth out and provide a more evenly distributed roughness.

Refraction Index

This controls the intensity of the clear-coat. 1.5 is a good general starting point. If a more shiny paint is desired, increase the value. Bringing the value down to 1 will almost "turn off" the clear-coat. This can be useful for making a matte finish or simulating plastics that have a metallic flake effect.
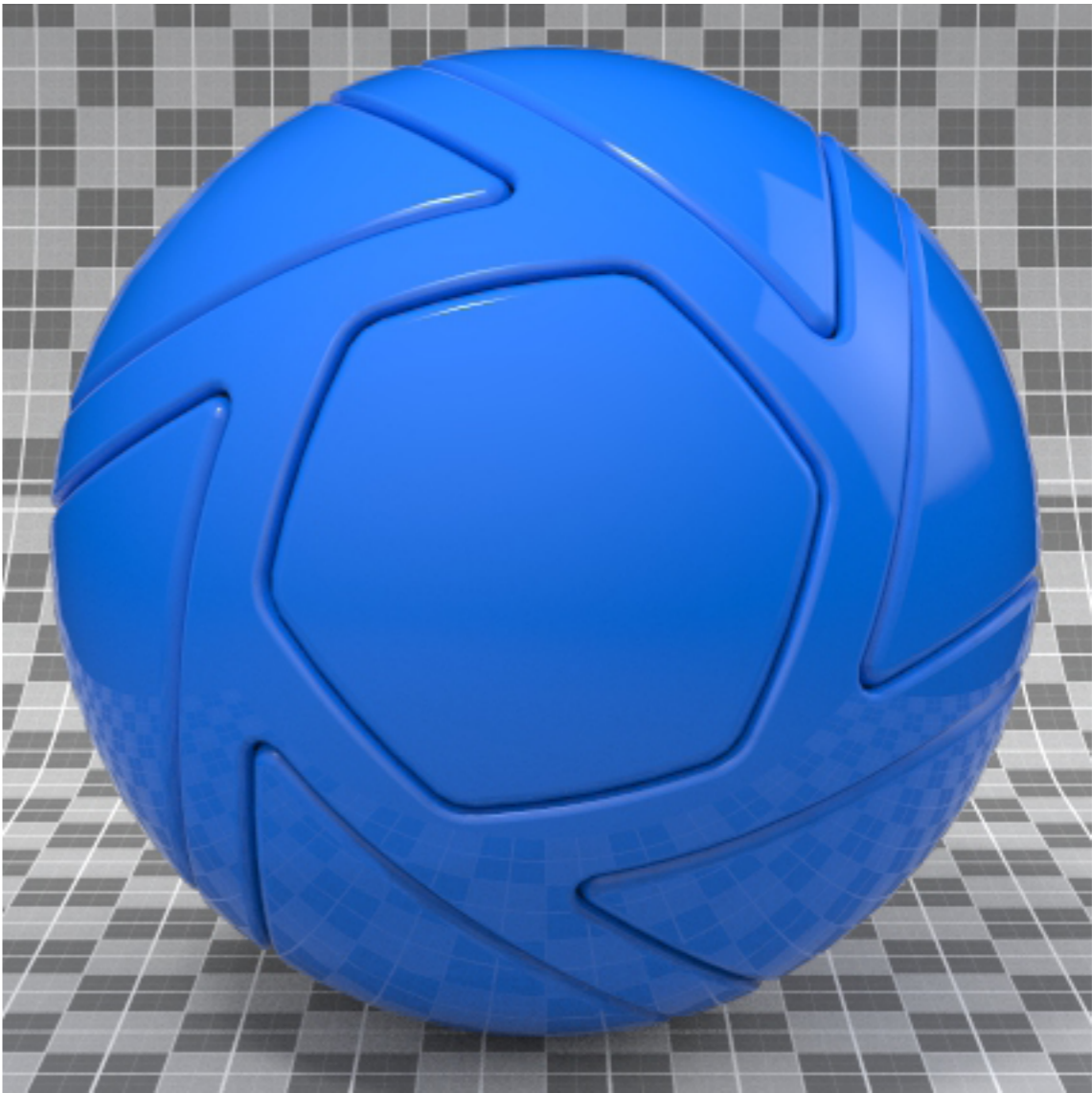
Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Plastic

The plastic material provide the basic settings needed to create simple plastic materials. Set the diffuse (overall color) and add some specular (reflections) then just dial in the roughness.

You can also create transparent plastics by controlling the transmission colors. This is a very versatile material type that is used for anything from concrete to woods.

Diffuse

This can be thought of as the overall color of the material. Transparent materials will have little or no diffuse.

Specular

This is the color and intensity of the reflection of light sources within the scene. Black will completely turn off reflections, while white will provide a very shiny plastic look.

Realistic plastic does not have color in the specular value, so generally you should use some level of gray or white. However, adding color can give the plastic material a metallic effect.
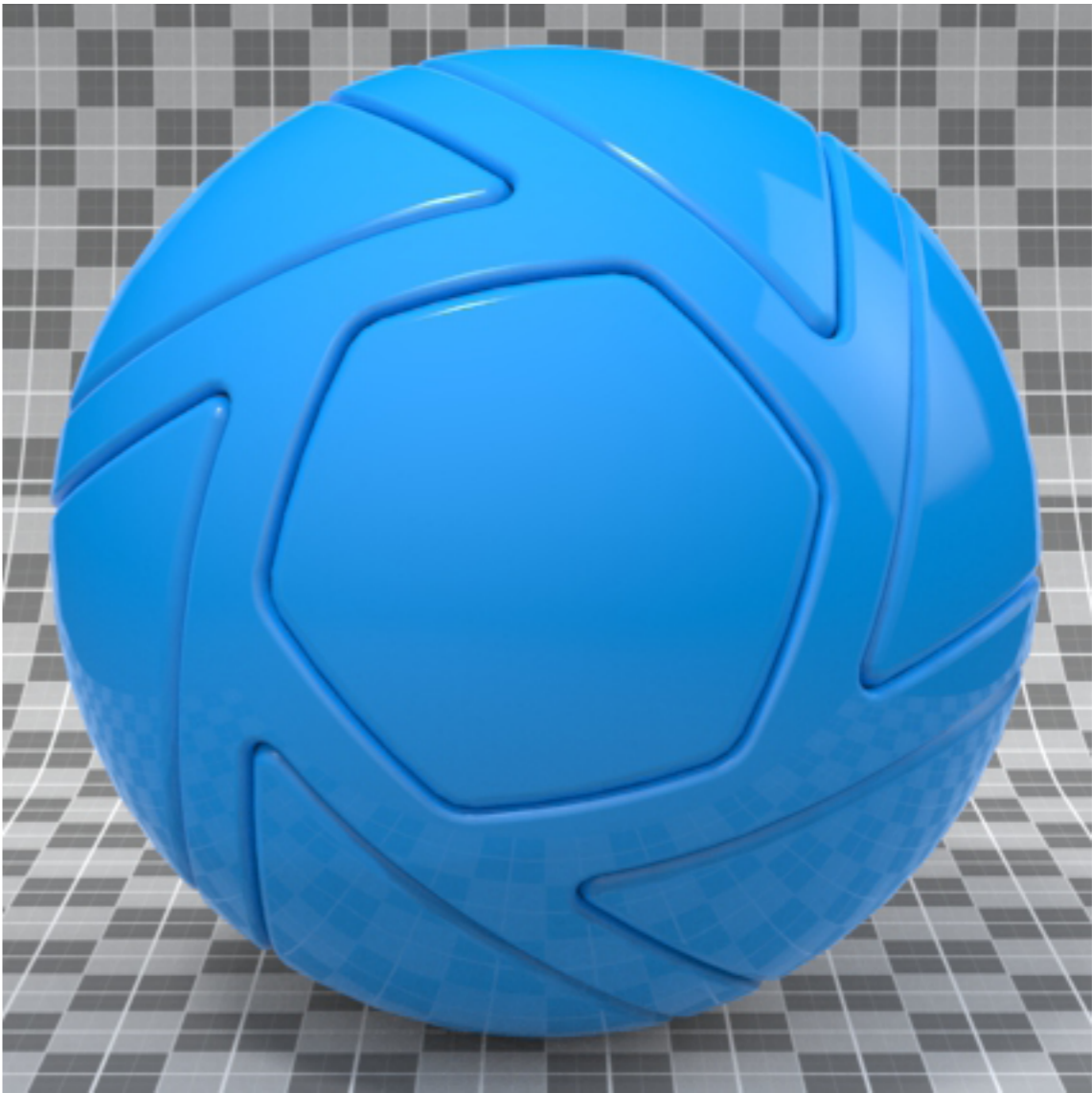
Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Plastic

Roughness

This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased the material will appear more rough as light is diffused across the surface.

Within the roughness parameter you will find a samples setting. To fully understand this parameter see the section on samples.

A low samples setting (8 or lower) will tend to make the surface look more noisy which will give a more imperfect and rough look. As you increase the value the noise will smooth out and provide a more evenly distributed roughness.

Diffuse Transmission

This will cause additional light scattering across the surface of the material which can simulate a translucent effect. It will increase render time, so if it is not needed the recommendation is to leave it at black.

Specular Transmission

This can be thought of as the transparency of the material. Black will be 100% opaque and white will be 100% transparent.

If a transparent glass or plastic is being created, the diffuse should be black with all the color derived from this parameter. Transparent glasses or plastics should also have the specular set to white. If a cloudy plastic is desired, the diffuse can be set to a very dark version of the color set here.

Roughness
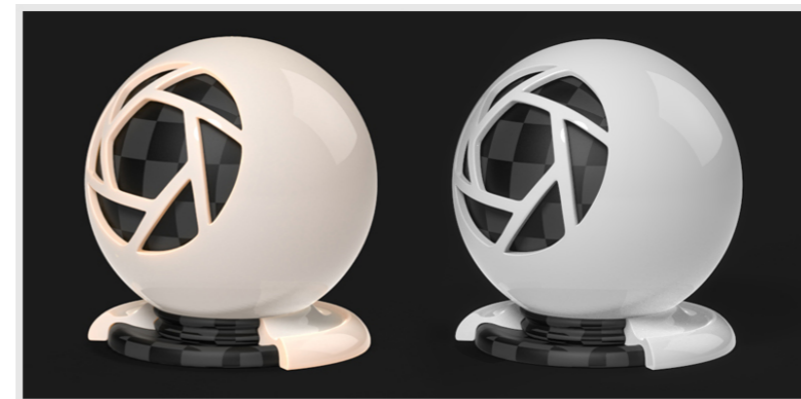
Diffuse Transmission

Solid Glass

The solid glass material type provides a physically accurate glass material. When compared to the simpler glass material type you will find the solid glass simulates the effect color in the glass accurately as it takes into account the thickness of your model.
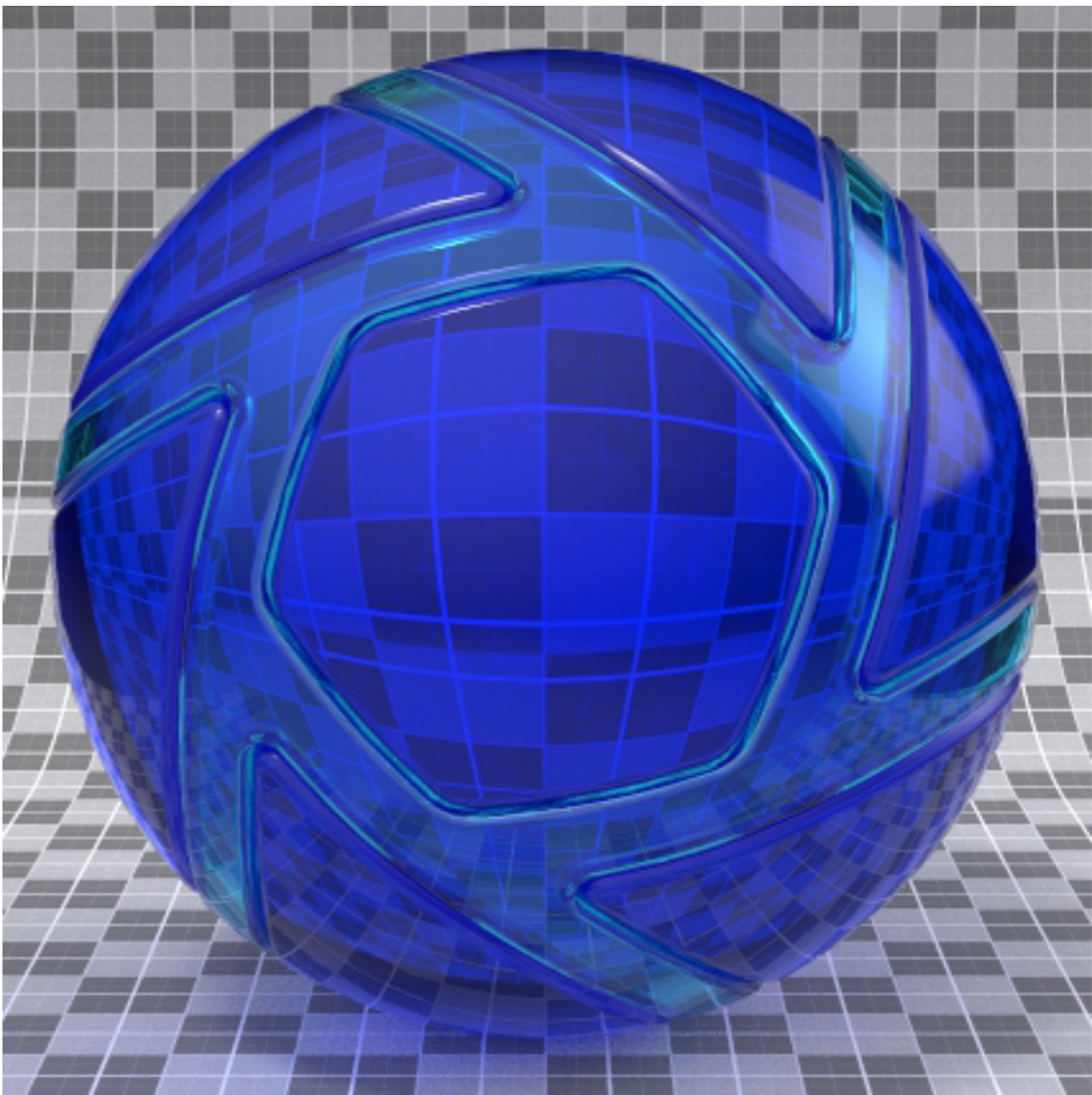
Color

This controls the overall color of this material type. When light enters the surface it will take on the color set here.

The amount of color that you see in this material is highly dependent on the transparency setting as well. If you have set a color, but it looks too faint, skip down to the transparency section.

Color Density

This setting controls how much of the color you have set in the transmission property you will see depending on how thick the part is that the material is applied to. This physically accurate parameter simulates the effect you can observe by looking at the color of the shallow water at a beach versus the deep blue of a deep ocean. Without color density you would see through to the bottom of the deepest ocean as easily as the bottom of a swimming pool.

After setting a color in the transmission setting, use the color density setting to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

Color	Specular	Bump	Opacity
No	No	Yes	Yes

Solid Glass

Refraction Index

This controls how much light will bend or "refract" as it passes through parts on your model that have this type of material.

The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.
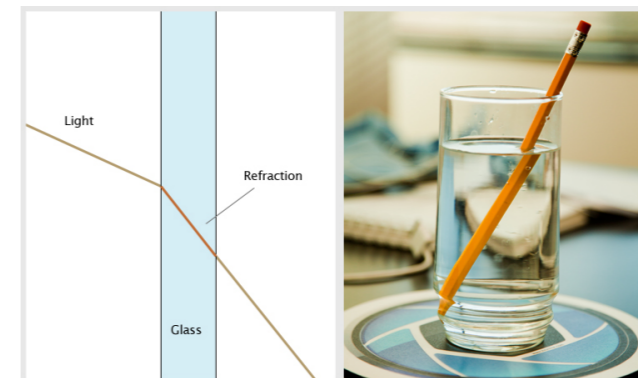
Roughness

Roughness on this type of material will spread out highlights on the surface similar to what you see on other, non-transparent, materials. However, it also spreads out the light that is transmitted through the material.

This is used to create a frosted glass look.

Expand this parameter and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother frosted look.
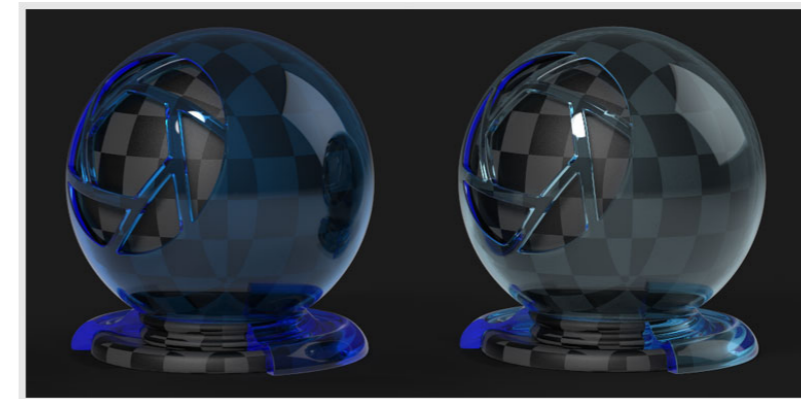
Color Density

Refraction Index
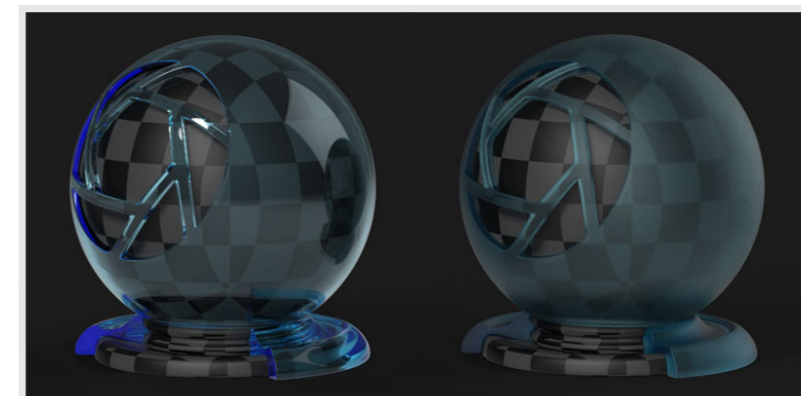
Roughness

Thin Film

The thin film material produces an iridescent effect such that you would see with a soap bubble.

Refraction Index

The refraction index setting for this material provide more or less reflection on the surface. Increase the value to get more reflection intensity.

The actual colors you see in the thin film will also be affected by the refraction index. However, you can shift the colors with the next setting, so typically you will focus only on finding the desired amount of reflection with the refraction index setting

Thickness

Changing the thickness setting will shift the colors that you see on the surface using the thin film material.

Increasing the setting to a very high value will result in the effect of layers of colored rings on the surface.

100-1000 is a generally good range to stay within.
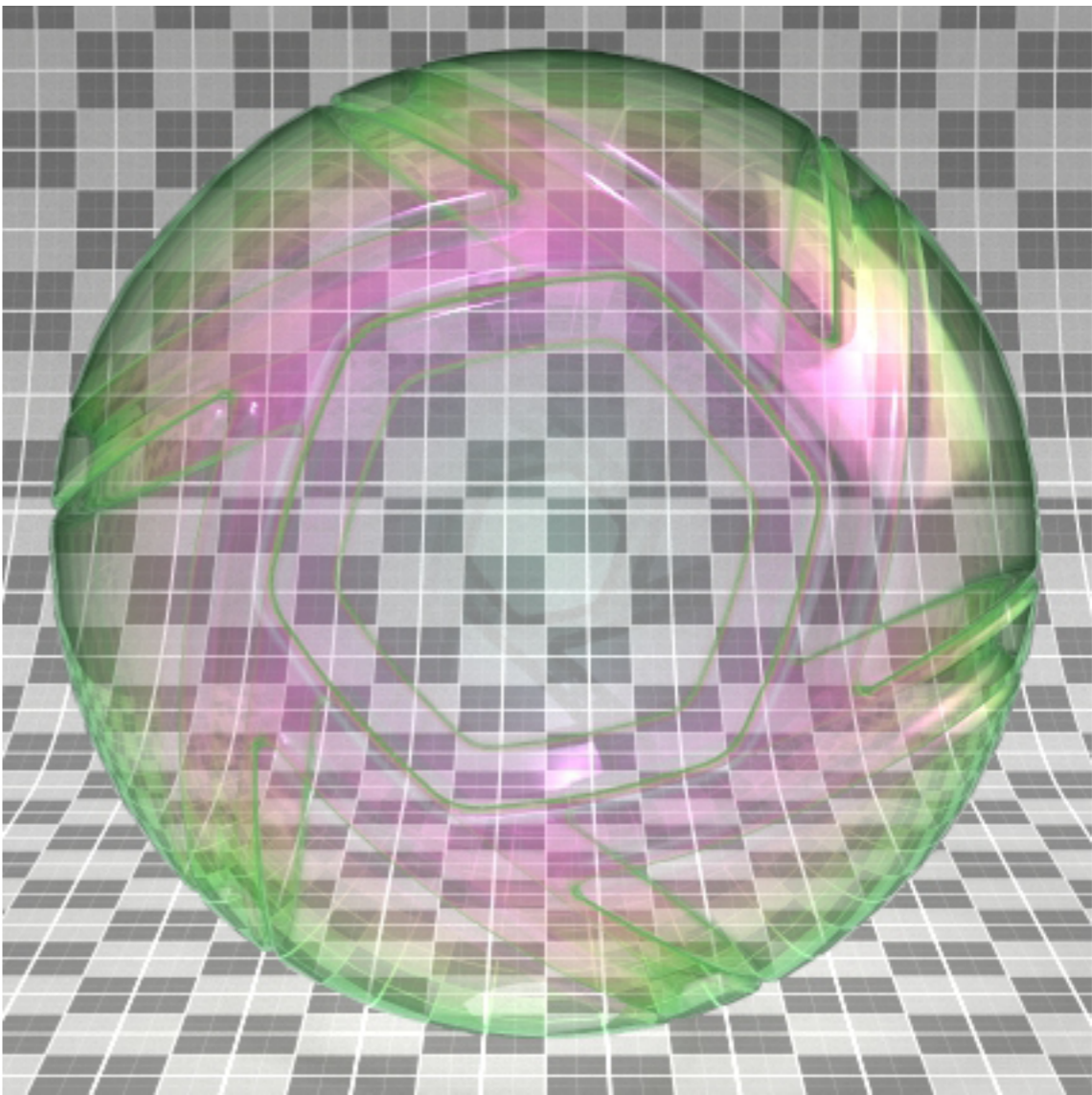
Color	Specular	Bump	Opacity
No	No	Yes	Yes

Toon

The toon material type allows you to create concept art from your 3D model. You are able to control the contour width, number of contour lines, and whether or not shadows are cast onto geometry.

Properties

Color - this will control the fill color of the toon material.

Contour Color - this will control the outline of the model.

Contour Angle - This will control the number of interior contour lines in the toon sketch. A lower value will increase the number of interior contour lines and a higher value will decrease the number of interior contour lines.

Contour Width - This will control how thin or how thick your contour lines will be.

Contour Quality - This will control the quality of the contour lines. Use a lower value to obtain a rough sketch look, or a higher value for a more clean and precise stroke.
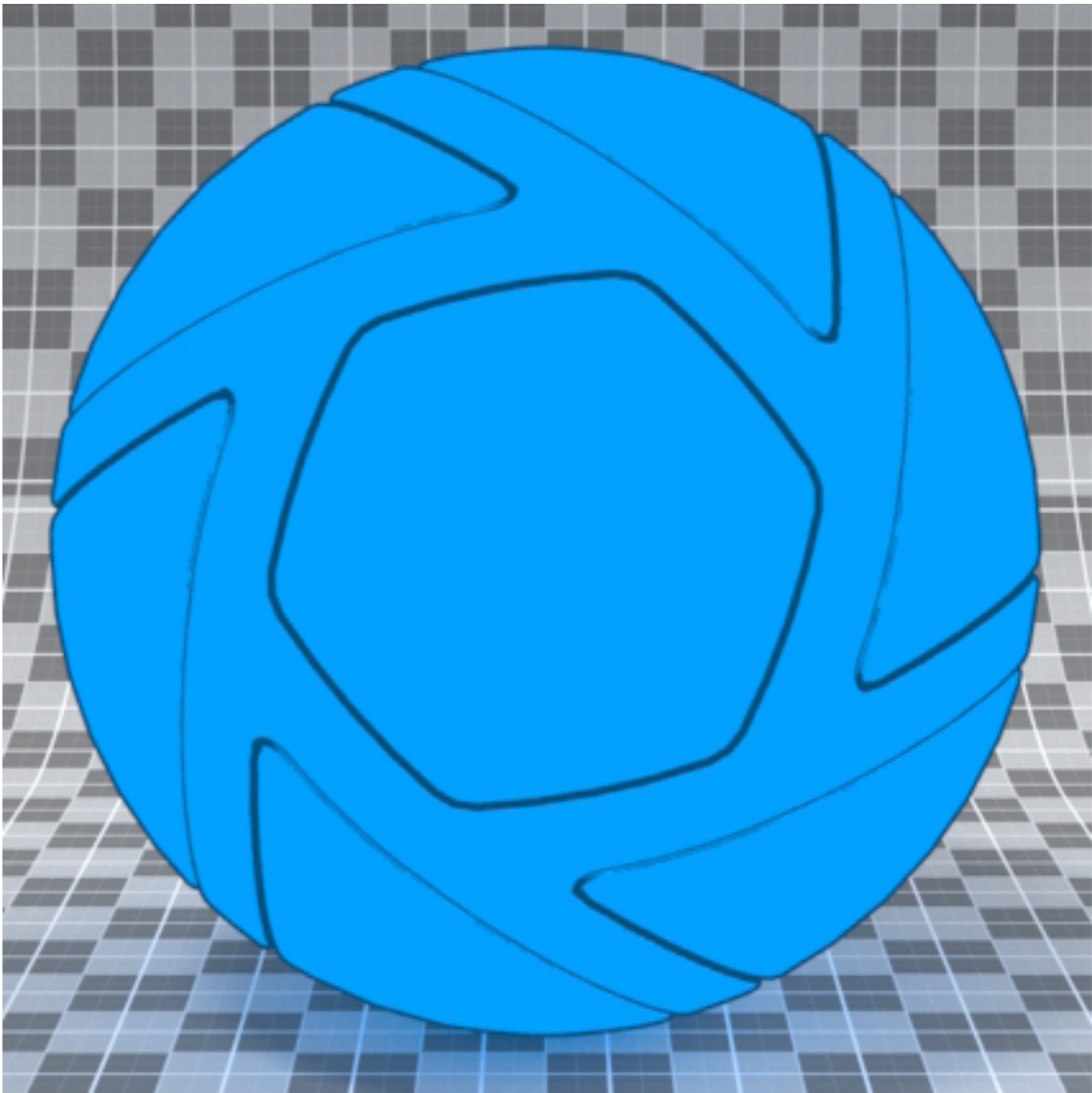
Color	Specular	Bump	Opacity
Yes	No	Yes	Yes

Toon

Advanced

Contour width is in pixels - When this setting is enabled the Contour Width slider is calibrated to allow for finer contour lines. When this setting is disabled the Contour Width slider is calibrated to allow for thicker contour lines.

Outline Contour - This will allow you to show or hide the outline in your sketch.

Interior Edge Contour - This will show or hide the interior contour lines in your sketch.

Material Contour - This will allow you to show or hide the contour line that separates each unlinked toon material. If the toon material are linked this setting will not have an effect.

Environment Shadows - This will reveal the shadows cast by the model onto itself due to the lighting environment.

Shadow Multiplier - When Environment Shadows is disabled, this controls the value of the fill color. When Environment Shadows are enabled, this controls the lightness of shadows cast on the toon material.

Translucent

The translucent material type provides control over subsurface scattering properties that are found in many plastics and other materials.

Surface Color

This controls the diffused color of the outer surface of the material. Consider this the overall color of the material. Something to be aware of with this unique material type is that you will not see the translucent effect of the subsurface color if the surface color is completely black. Refer to the diffuse section for further information.

Subsurface Color

This setting controls the color that light will take on as it passes through the material and comes back out to your eye.

Your own skin is a great example of the subsurface effect. When a bright light shines through the thin parts of an ear or the thin skin between fingers, the light is colored by what lies beneath the surface and comes back more red.

While the light is passing through the surface is bounced around in many random directions. This creates the soft translucent effect rather than the direction refraction effect of a glass type of material.

For plastic materials you will often set this color to something very similar to the surface color. Perhaps just a bit brighter.
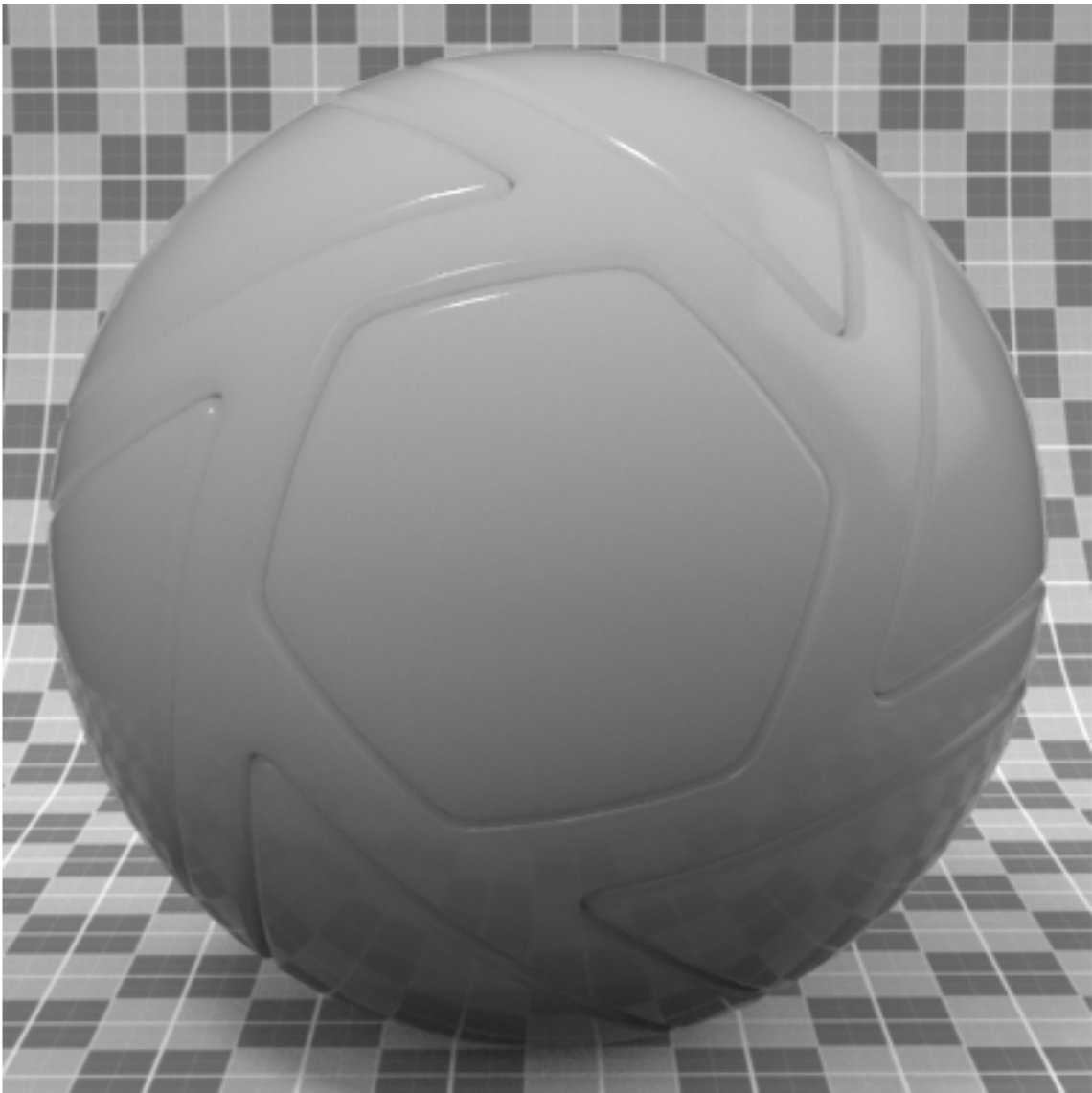
Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

Translucent

Translucency

This controls how deep light will penetrate into and through the surface. The higher your translucency value, the more of the subsurface color you will see coming through the surface.

Higher translucency values will also create a softer looking material.

Roughness

Increasing roughness will spread and distribute reflections over the surface and create a more matte surface.

Specularity

This controls the intensity of the reflections on the surface.

Under the advanced category in this material type you will also find a refraction index setting. This can be used to further increase or decrease the strength of the reflections on the surface.

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Velvet

The velvet material is very useful for creating soft fabrics that have the distinct light catching effects that result from the soft fibers in finely woven fabrics.

This is a complicated material by KeyShot standards, and you will generally be able to do fabric materials well enough with the plastic or advanced material types. However, this material type does provide control over parameter not found in other material types.

Diffuse

This can be thought of as the overall color of the material. A dark color is generally preferred for both the diffuse and sheen settings as this material cab become unnaturally bright when light colors are used.

Sheen

The sheen color is observed as light that appears to be reflected back across the surface from behind. Almost as though the surface is back light.

This setting is combined with the edginess control to add a soft sheen across the entire material. The backscatter parameter also gets its color from the sheen setting.

Generally this should be set to a color very similar to the diffuse color but just a bit brighter.
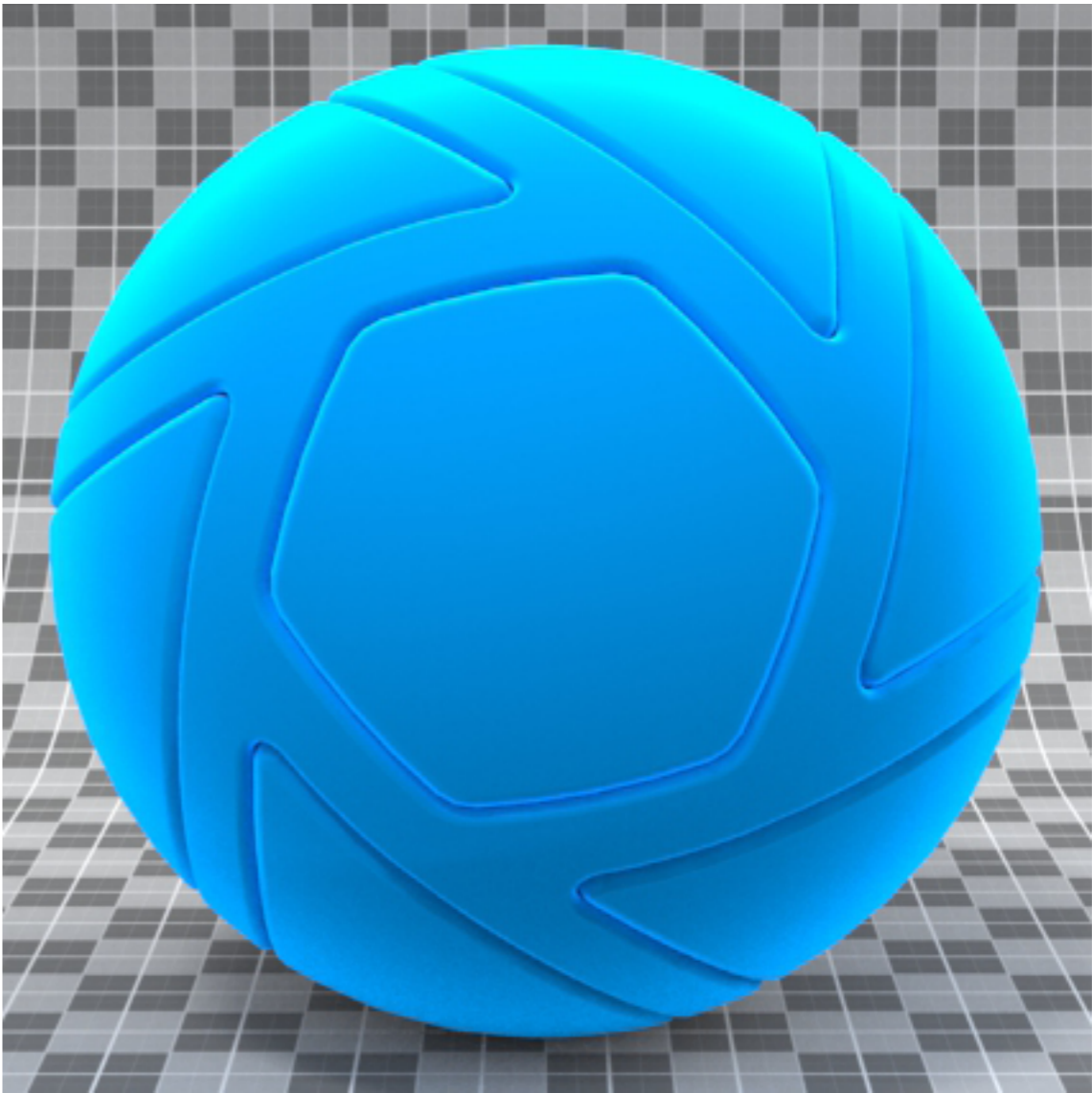
Color	Specular	Bump	Opacity
Yes	Yes	Yes	Yes

KeyShot® Manual

Velvet

Roughness

The roughness setting determines how evenly the backscatter effect is distributed across the surface. When set to a low value the backscattered light will stay contained within smaller areas. A high value will spread the light across the entire object evenly.

Backscatter

This is light that scatters across the entire object and is especially apparent in the shadowed areas of the object. It can be used to give an overall soft look to the surface. The color of the backscatter light is set with the sheen control.

Edginess

This controls how far the sheen effect spreads over the surface. A low value will have the sheen fade out gradually, while a high value will produce a bright border of sheen around the edges of the surface. A setting of zero disabled the sheen effect.

Samples

The samples controls how imperfect or refined the backscatter effect appears. A higher values will smooth out this scattered light and will appear more even. A low value will show a coarser grain/noisiness in the backscattered light.

A higher setting, around 32, is often preferred for this setting as it provides a smoother result.

Wireframe

The wireframe material exposes the lines and vertices of each polygon of the surface.

Wire Color

This controls the color drawn to each line in the wireframe

Base Color

This controls the overall color of material, excluding the lines(Wire).

Base Transmission Color

This value controls the base color transmission. A lighter color will give the appearance of transparency.

Backside Base Color

This controls the backside of the base color. On a cube this would be the inside of the cube base color.

Backside Wire Color

This controls the backside of the wire color.
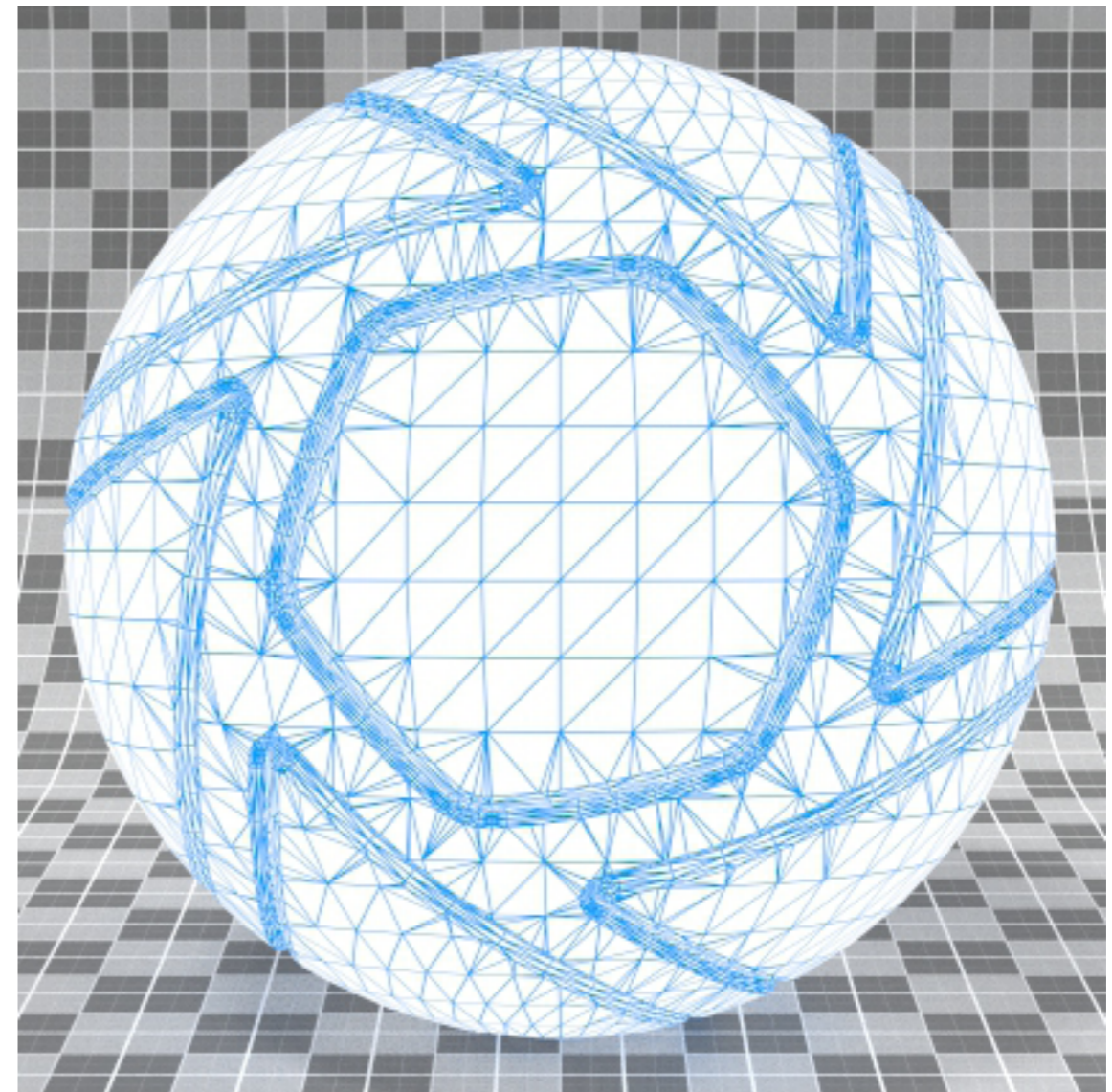
Color	Specular	Bump	Opacity
No	No	Yes	Yes

X-Ray

The X-ray material provides a useful tool for illustrative renderings. It is often used to create a faded view through an outer shell of a product for viewing the internal components.

When applied to a surface the x ray effect works by showing more of the material color on areas of the surface that are being viewed a more of an angle. The surface is nearly completely see through where it is viewed at a direct angle.
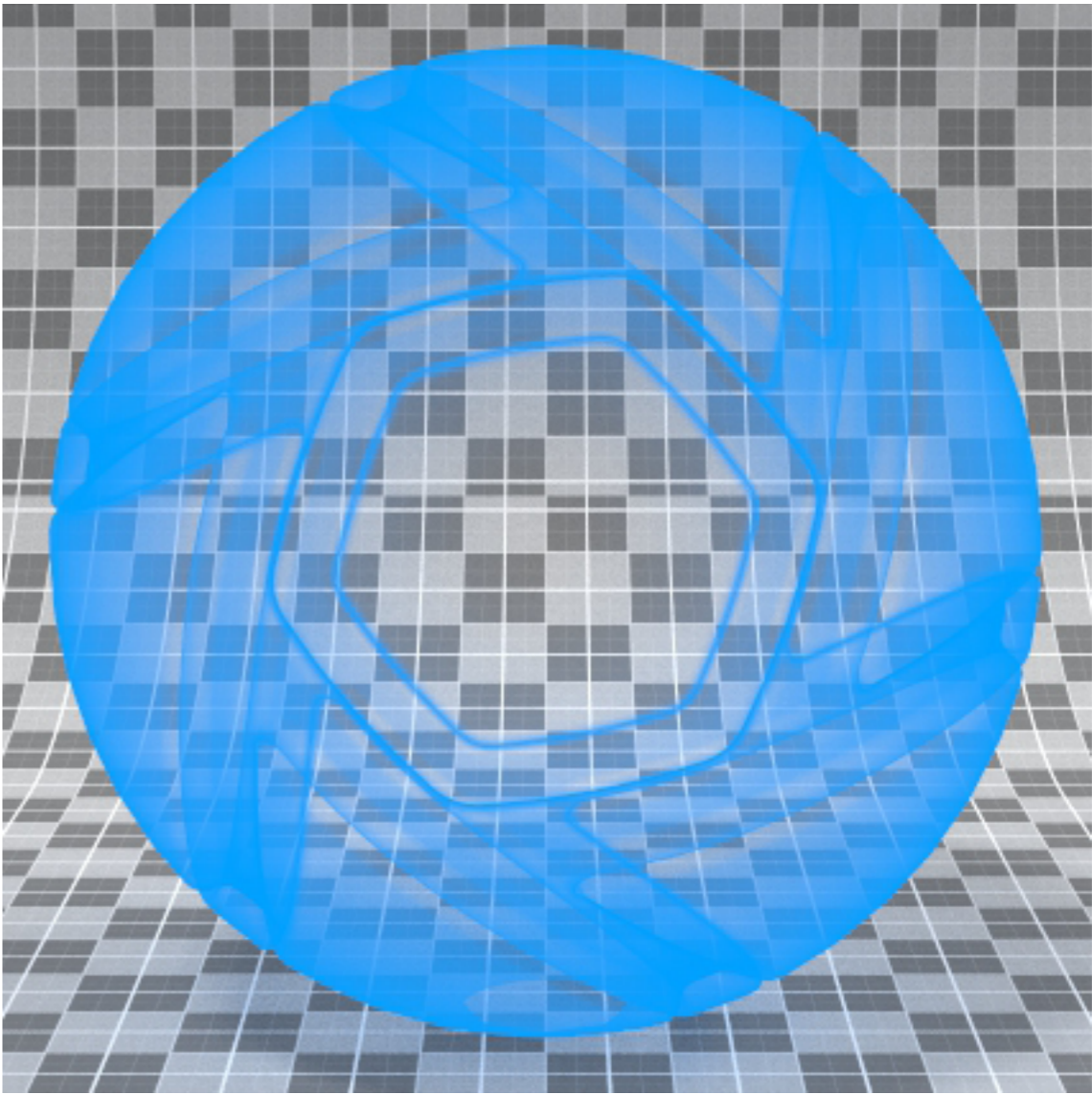
Color	Specular	Bump	Opacity
No	No	Yes	Yes

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- [Concepts](#)

- [Animation Wizard](#)

- [Timeline](#)

Overview

The KeyShot animation system has been designed to make simple animations of moving components simple and easy to use. The animation tools are focused towards designers and engineers rather than entertainment professionals.

Animations are not created using a traditional keyframing system. Rather, they are applied as individual transforms to a model or part. Multiple transforms can be added to single parts and all transforms will be represented in the timeline as shown below. These transforms can be interactively moved and scaled in the timeline to adjust timing and change duration of animations.
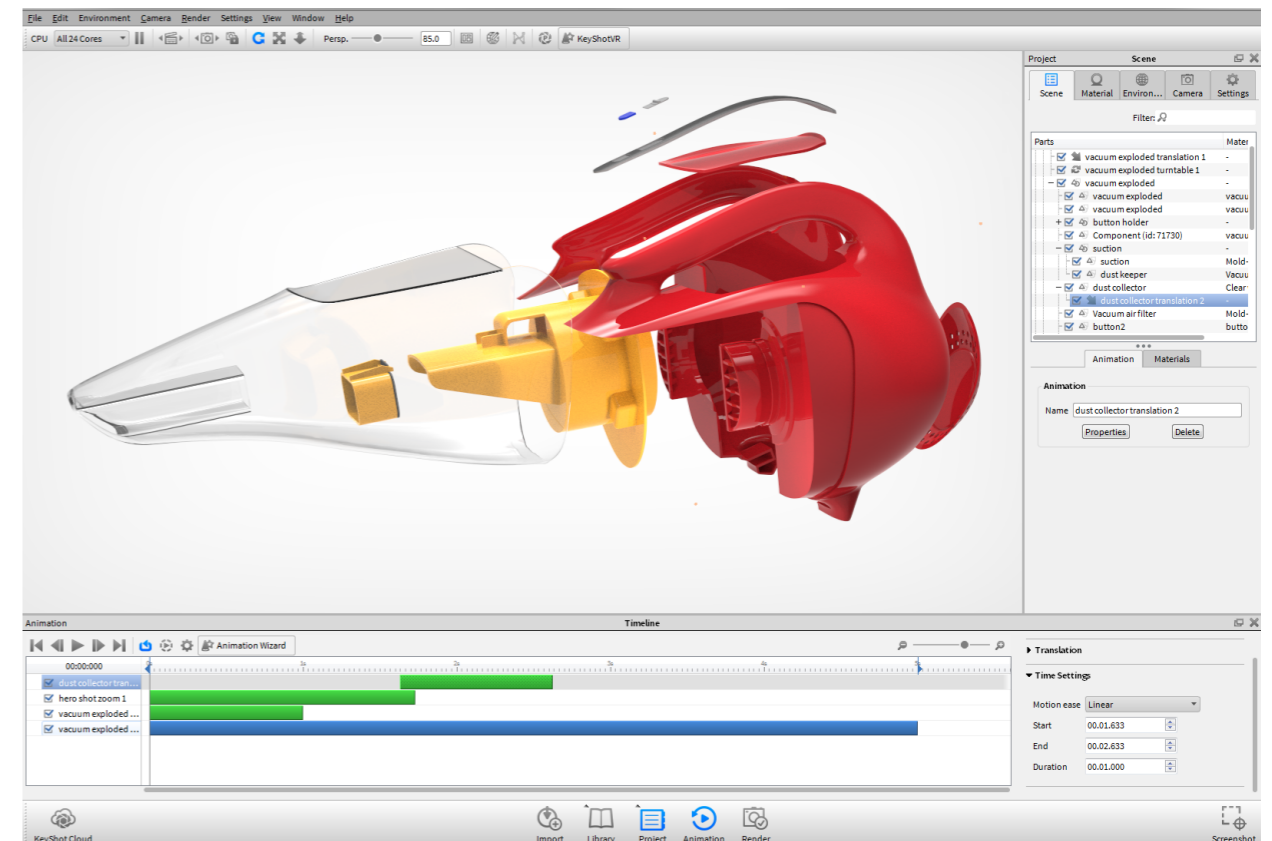
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- [Translation](#)

- [Rotation](#)

- [Pivot Points](#)

- [Local and Global](#)

- [Fade](#)

- [Camera Orbit](#)

- [Camera Zoom](#)

- [Camera Translation](#)

- [Motion Ease](#)

- [Camera Switch Event](#)

- [Motion Blur](#)

Translation

A translation is an animation where an part or model is moved on the XYZ axis to another location. Translations can be applied to parts or models by right clicking them in the scene tree and selecting "add translation," or through the animation wizard. Hierarchies from CAD systems will be maintained, allowing translations to be applied to entire assemblies and their individual components. When a translation is added, a translation by 1 unit on the Y axis will be created for a 1 second duration in the timeline. The translation will be displayed as an icon in the scene tree under the component it has been applied.
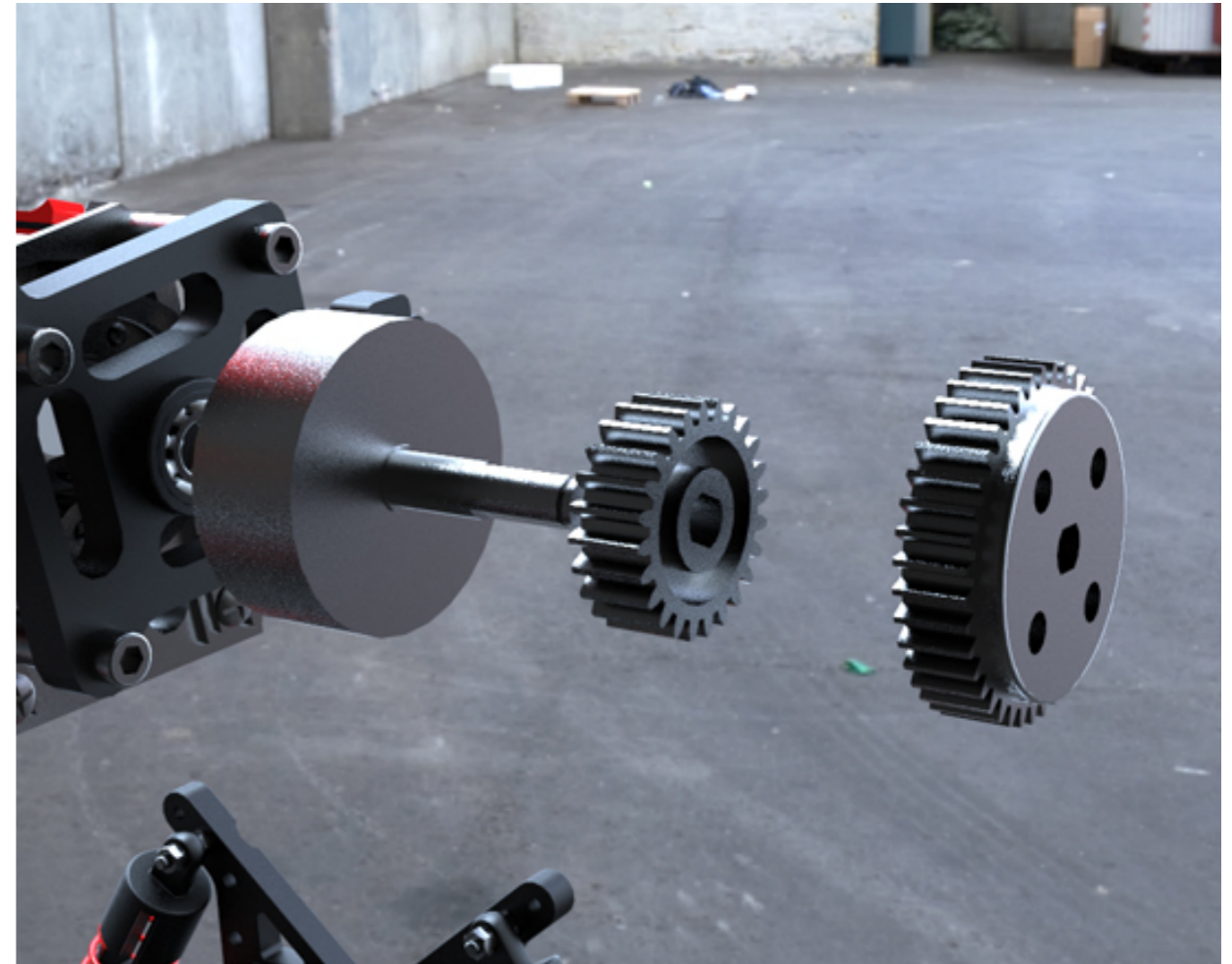
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Rotation

A rotation is an animation type where a model or part is rotated along an axis. This axis can be defined by the model/part using the local axis, by using the overall global axis of the scene, or by assigning a helper object to rotate around. There are also dynamic pivot points (see pivot points for more information.)

Rotations can be applied to parts or models by right clicking them in the scene tree and selecting "add rotation," or through the animation wizard. Hierarchies from CAD systems will be maintained, allowing rotations to be applied to entire assemblies and their individual components. When a rotation is added, a rotation by 90 degrees on the X axis will be created for a 1 second duration in the timeline. The rotation will be displayed as an icon in the scene tree under the component it has been applied to.

Pivot Points

A pivot point is the point that a part/model will rotate around when a rotation animation is applied.

Center and Origin
By default your pivot point is the center point of the part/model that the animation is applied to. Changing to origin mode if your model has an origin point that coincides with the proper hinge point for the movement you desire.

Helper Object
A helper object gives the rotation a new point to rotate around. You can click "pick" and select any part of your model or bring in another model and use that as a helper object. Reset sets the helper object back to "self".

Tip: Want to freely control the pivot point? Just bring in a simple model(you can find some primitive shapes in the menu under Edit > Add Geometry), then use right click>move object to position this new model and use it as a helper object for your rotation animations. Continue to move the model and the animations will update their rotation based on the new position of the helper object.

Pivot Points

Dynamic Pivot Points

This will allow the rotating part or model to follow a moving helper object. Dynamic pivot points should also be enabled when there are two or more rotations (each with different helper objects) applied to the same part or model. Not all moving helper objects will need the dynamic pivot points checkbox to be enabled. If a part orbits a helper object while the second is translated, the dynamic pivot point check box should remain unchecked unless the translation's axis orientation is "Original Local" and the rotation animation is applied at a higher hierarchy level. In that case the check box should be checked.
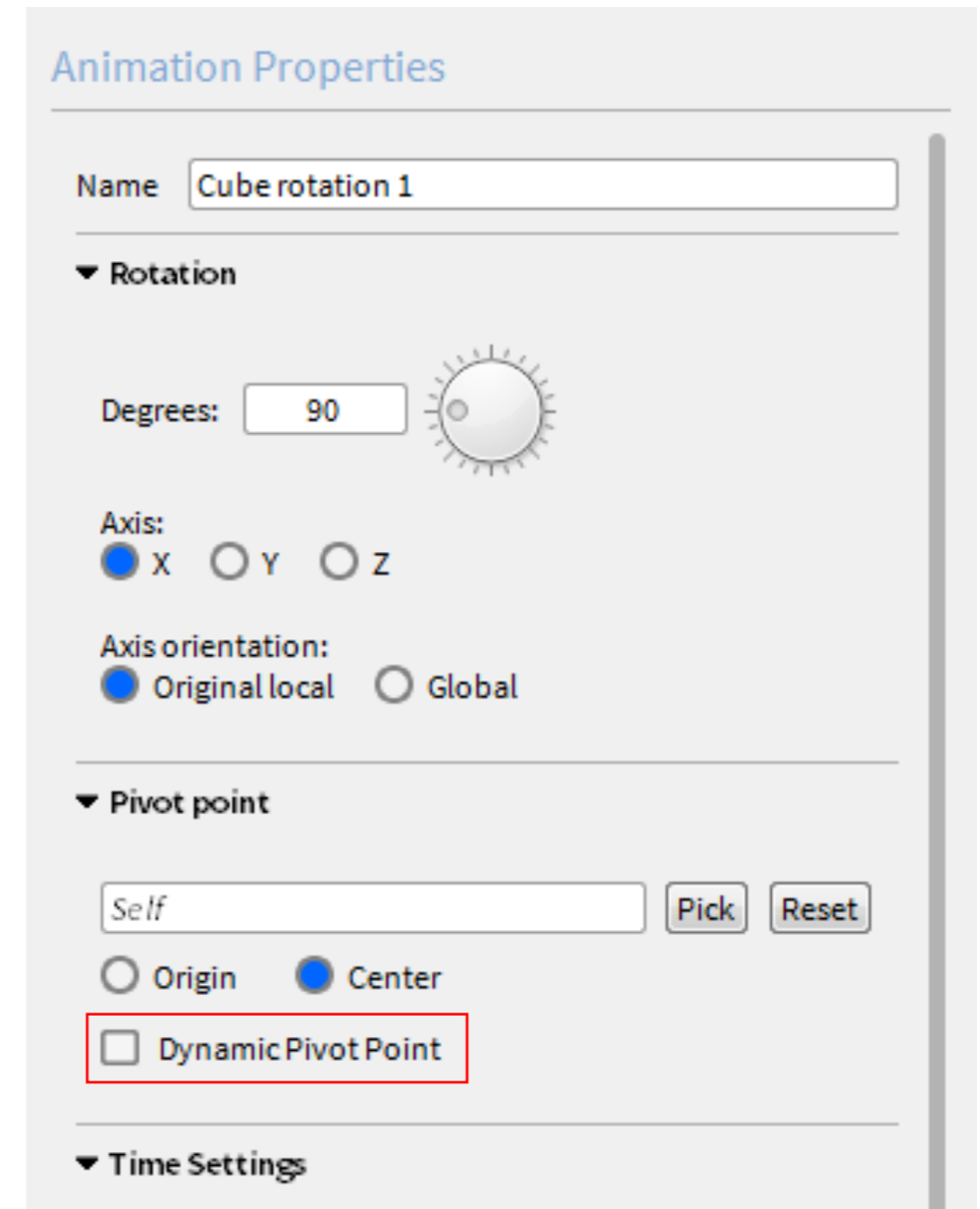
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Local and Global

Axis Orientation

When an animation is applied to a model or part you choose the X, Y, or Z axis for the movement to happen on. However, there are two states that these axes can be in.

In global mode the Y axis always points up. Even if you had rotated a part back in your modeling software, or even in KeyShot, when you animate this part and set the axis orientation to global the movement will be in this static, Y pointing up, state.

Local is not a static state. If you move a part, (ex. rotated it 45 degrees either in the modeling software or in KeyShot), then the local axes actually rotate and move with the part. If Y pointed up originally, rotating the part over 45 degrees means that Y axis is now also tilted 45 degrees.

Think about an assembly held together by several screws. These screws were likely modeled on their own and lets say originally the Y axis pointed straight up from the head of the screw. The screw was copied several times and used in various places on a model. You can easily unscrew all of these screws with a translation set to move on the local Y axis and each screw will actually move up based on its own Y axis.

Setting these screws to use a global Y translation would mean they would move up in the same exact direct (straight up from the ground).

The diamonds in the image all use exactly the same setting, but notice how they have moved out from the ring each on their own local axis.

Fade

Quickly apply an animation that fades parts from one opacity level to another. Adjust opacity of parts and groups on-the-fly and see it update in real-time as animations are built.

The fade effect on a part or group of parts is created just like any other part animation. Right-click on the part or group of parts in the Project, Scene tree and select Animation, Fade. Adjust the Fade From/Fade To values to the desired setting along with easing and duration of fade through the properties to the right of the Animation Timeline. Using the Animation Wizard, select the Fade option as the Animation Type, then continue through the wizard selecting parts and adjusting fade settings.

Camera Orbit

Camera orbit rotates the camera around it's current "look at" point. Camera orbits can be added by right clicking on the camera in the scene tree and selecting "add orbit". This will apply an orbit that can be set in degrees. For information on setting the camera "look at" point see the section that covers cameras.
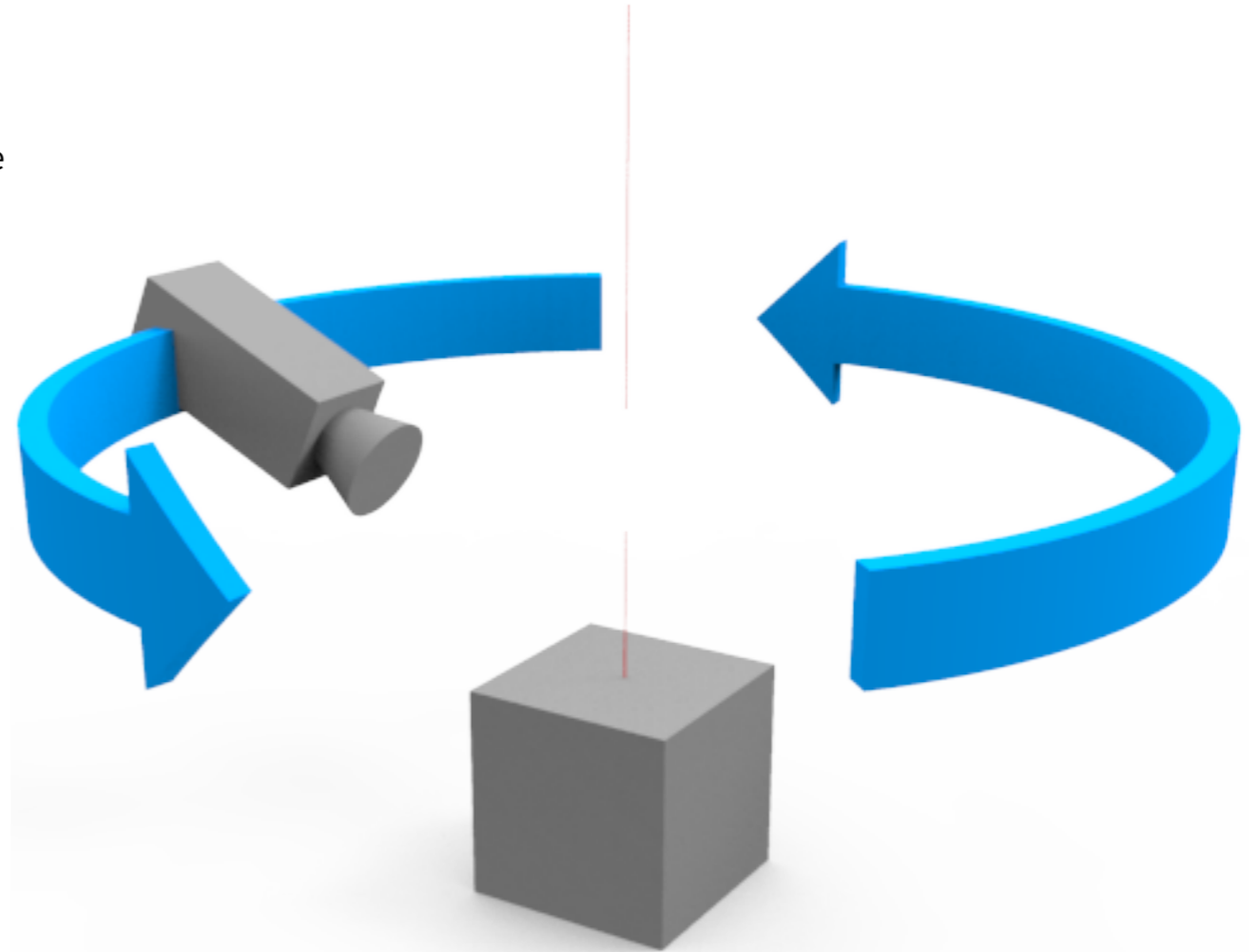
Zoom

Camera zooms dolly a camera in and out towards its current "look at" point. Camera zooms can be added by right clicking on the camera in the scene tree and selecting "add zoom". For information on setting the camera "look at" point see the section that covers cameras.

KeyShot® Manual
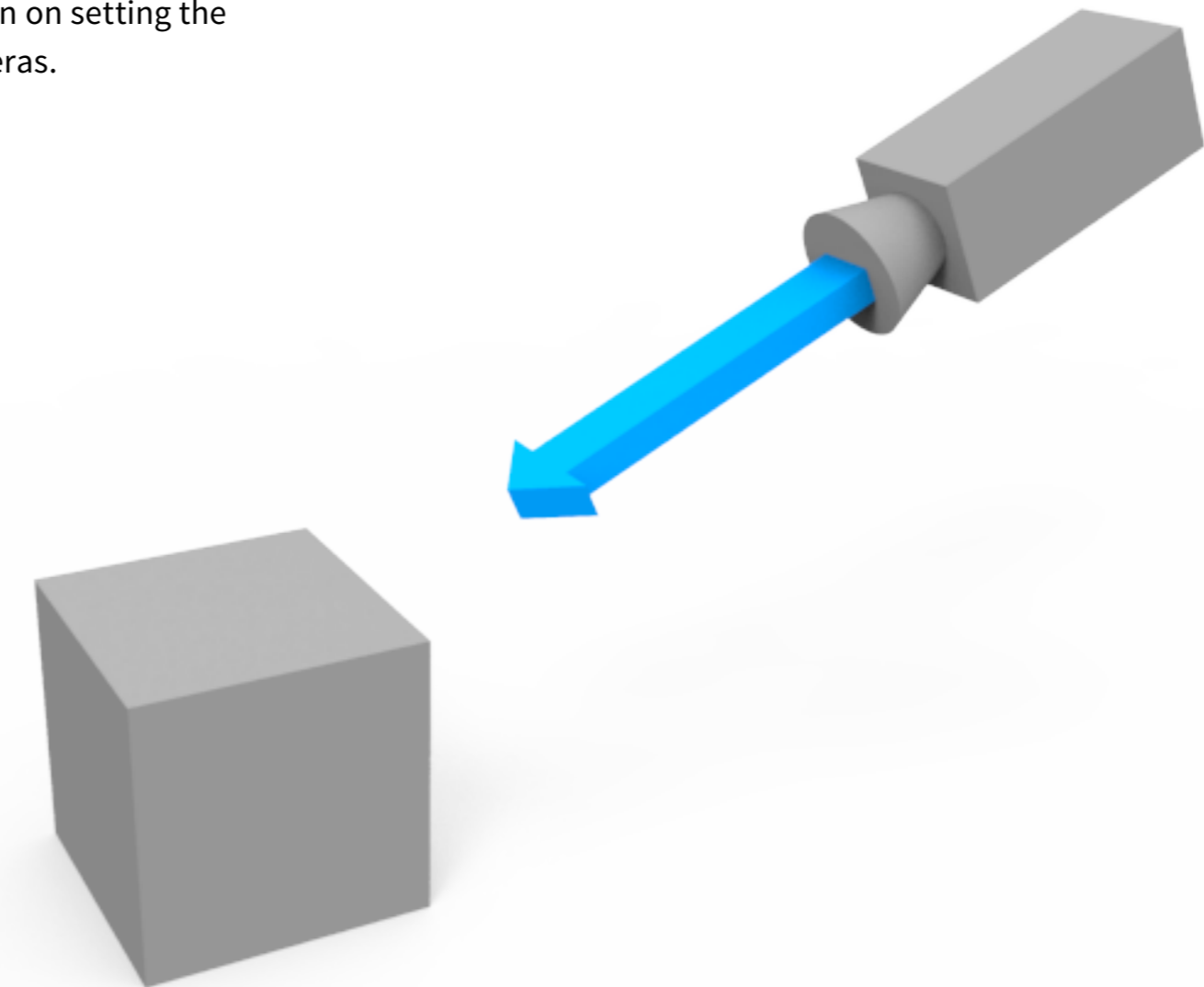
Translation

Camera translation allows the camera to move on the X, Y and Z axes.
Camera translations can be added by right clicking on the camera in
the scene tree and selecting "add translation".

KeyShot® Manual
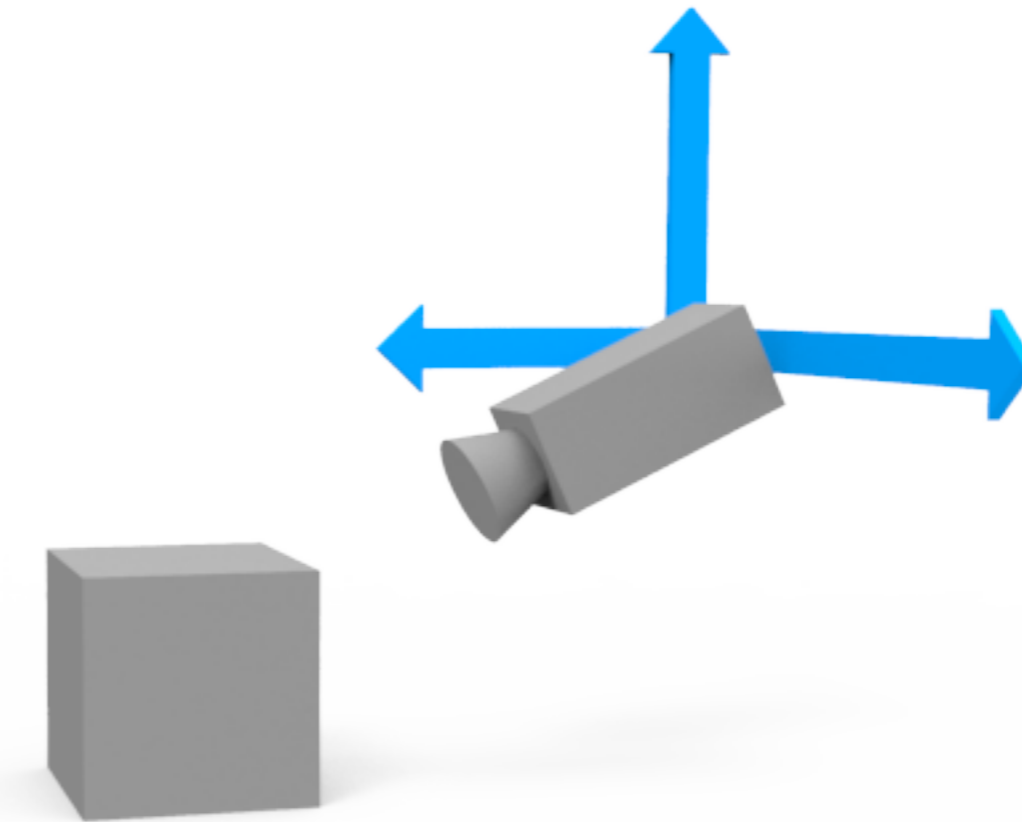
Motion Ease

Motion easing will create a more natural look when applied to rotations, translations and camera animations. This will add acceleration and deceleration to motion. For example, if a car goes from one stop sign to another and reaches a maximum speed of the 35 miles per hour, it is not traveling that speed for the entire time. The car has to start moving, accelerate to it's top speed and then slow down as it reaches the next stop sign. Without motion easing, the car would start, travel and stop 35 miles per hour the entire time.

Linear

Ease In

Ease Out

Ease in/Ease Out

Camera Switch Event

Switch cameras in your animation with the click of a button. KeyShot Animation users can now add camera switch events to change cameras on the animation timeline to easily incorporate other view angles without having to stitch together separate animations afterwards.

With two camera animations set up, right-click on the camera you will start with and select Camera Switch Event to select the camera you want to switch to. This will add the event to the timeline, shown as an orange marker on a separate line. Select and drag the marker to the point where you want to switch to the other camera. Hit play, and watch as the animation switches cameras automatically.

Camera 1
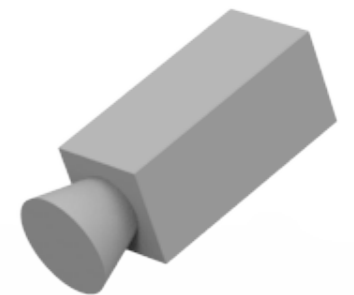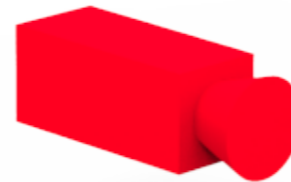
Camera 2

Motion Blur

KeyShot Motion blur provides a real-time preview of motion applied to models where movement is blurred. Capture the motion of objects as they rotate or move across the screen before you even play an animation or render an image.

To apply Motion Blur to objects in motion, check Motion Blur in the Project, Settings, Advanced options. If you already have objects with animations applied which move the object, the real-time view will update to show the object in motion.

Motion Blur can be seen quickly after turning the option on, by adding a Translation animation to an object or an Orbit animation to a Camera. The amount of motion blur is controlled through the Animation settings by adjusting how fast and how far an object or camera is moving. When Motion Blur is enabled, the real-time preview of the motion is dependent on the FPS setting.
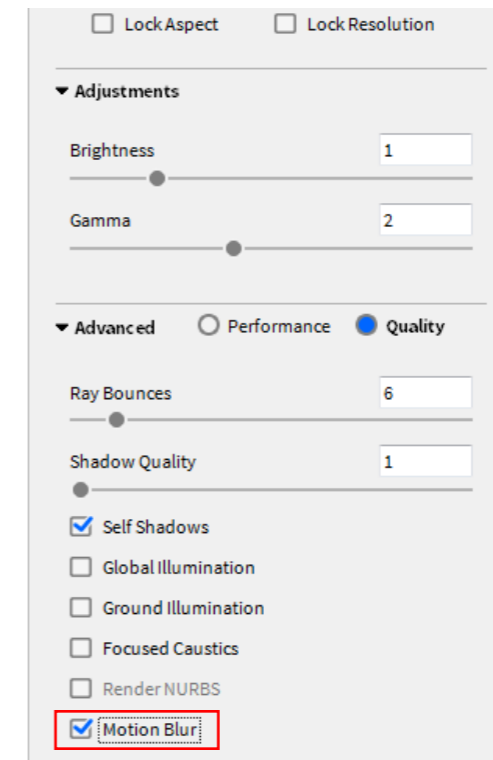
KeyShot® Manual

Animation > Animation Wizard

- Overview

- Turntable

- Translation

- Rotation

- Fade

- Camera Orbit

- Camera Zoom

- Camera Inclination

- Camera Translation

- Camera Switch Event

KeyShot® Manual

Overview

Animation Wizard

For beginners, the easiest way to create an animation is via the animation wizard. The animation wizard can be found in the animation timeline toolbar.

When you open the animation wizard, you are presented with 8 options, 4 model/part animations and 4 camera animations.

Model Part Animation

This type of animation deals with moving or altering the geometry in the scene. The 4 types of model/part animation are:

Turntable
Translation
Rotation
Fade

Camera Animation

This type of animation is relegated to the movements of the camera. Before creating camera animations, it is suggested there are saved cameras already. The 4 types of camera animation are:

Orbit
Zoom
Inclination
Translation

Animation Wizard

Turntable

Turntable animation rotates the model part along the global Y axis. Imagine placing the model or part on a turntable and turning it while taking video. After selecting turntable and clicking next, Choose the model/parts that you would like to be included in this animation.

Rotation

You can set how much the model/part turns in this animation. It can be set to be a partial turn such as 15 degrees, or multiple complete rotations like 1080 degrees and more.

Center of Rotation

The default setting for the center of rotation is the local model Y axis. You can change the center to be the environment global Y axis if you want the model/part rotating around the center of the scene.

Direction

Choose the direction of rotation from clockwise or counter-clockwise.

Time Settings

Set the time the animation starts and ends, as well as setting the duration. Choose a motion ease setting here. See the section on motion ease for more information.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
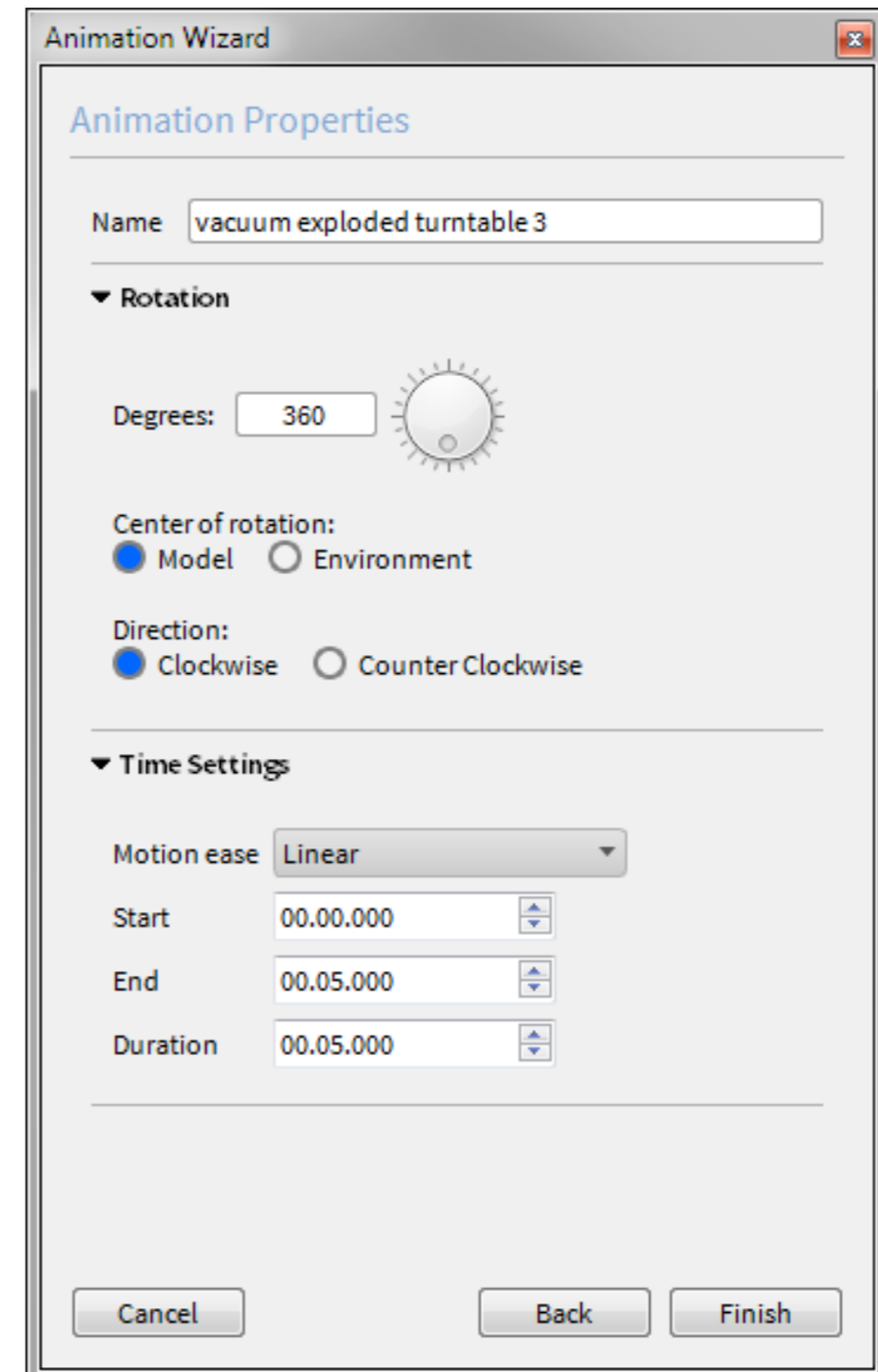
Animation Wizard

Translation

This animation type moves the model part changing its XYZ coordinate location. Choose the model/part to be animated after selecting translation from the animation wizard.

Translate X/Y/Z

Set the distance traveled on the XYZ coordinates during the animation.

Axis Orientation

The default setting uses the model/part local axis to calculate translation animation. You can select global to move the model/part in relation to the XYZ coordinates of the scene.

Time Settings

Set the time the animation starts and ends, as well as setting the duration.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
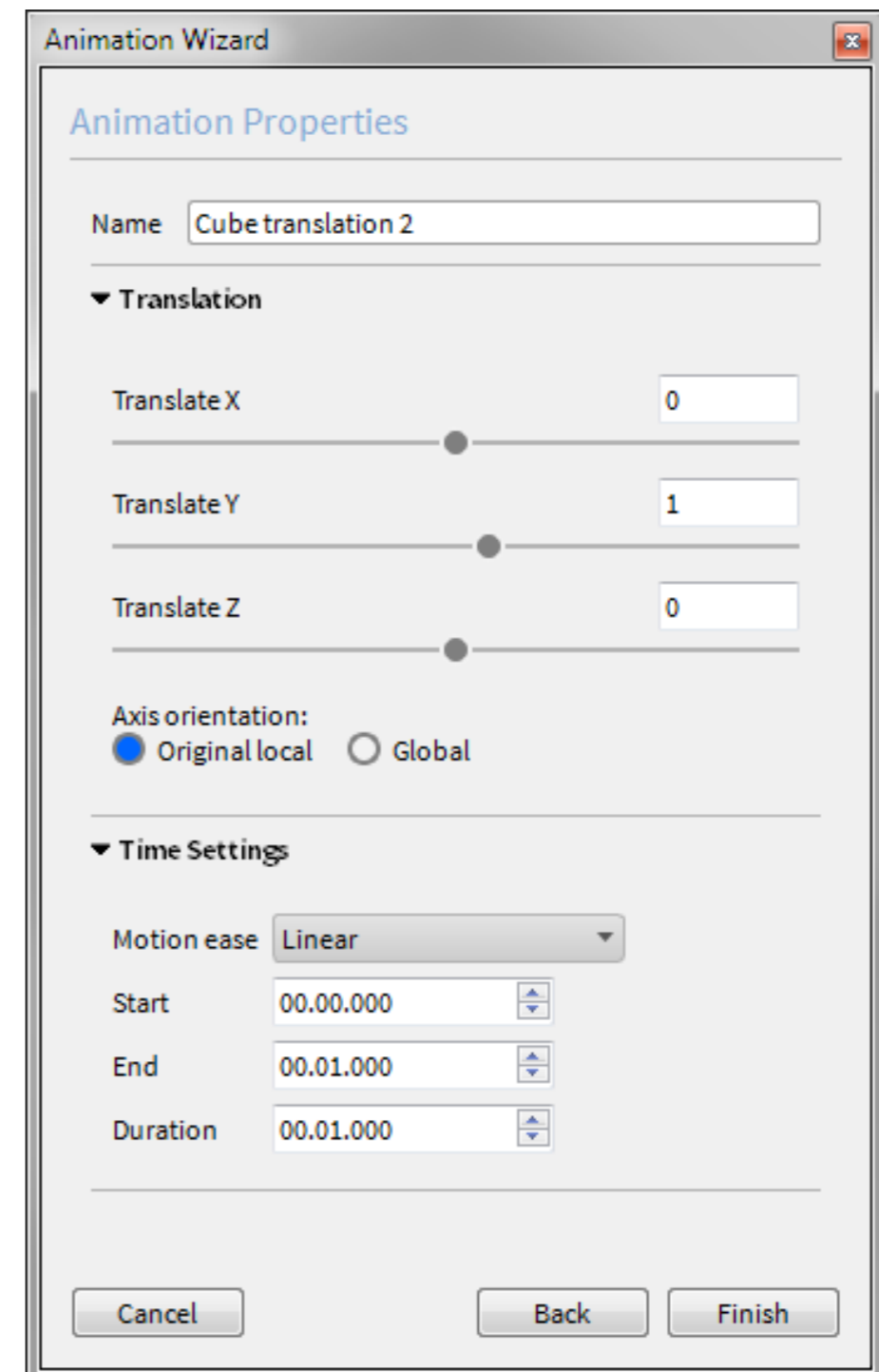
KeyShot® Manual

Animation Wizard

Rotation

This animation type rotates the model/part around the X, Y or Z axis. Choose the model/part to be animated after selecting translation from the animation wizard.

Rotation

Set how much the model/part turns in this animation.

Axis Orientation

Use the model/part origin or global origin for correct XYZ axis.

Pivot Point

Select an object to use as a pivot point (the default is self), and choose either origin or center as where it is located in relation to the part. Enable dynamic pivot point if using more than one rotation animation. For more information, see pivots.

Time Settings

Set the time the animation starts and ends, as well as setting the duration. Choose a motion ease setting here. See the section on motion ease for more information.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
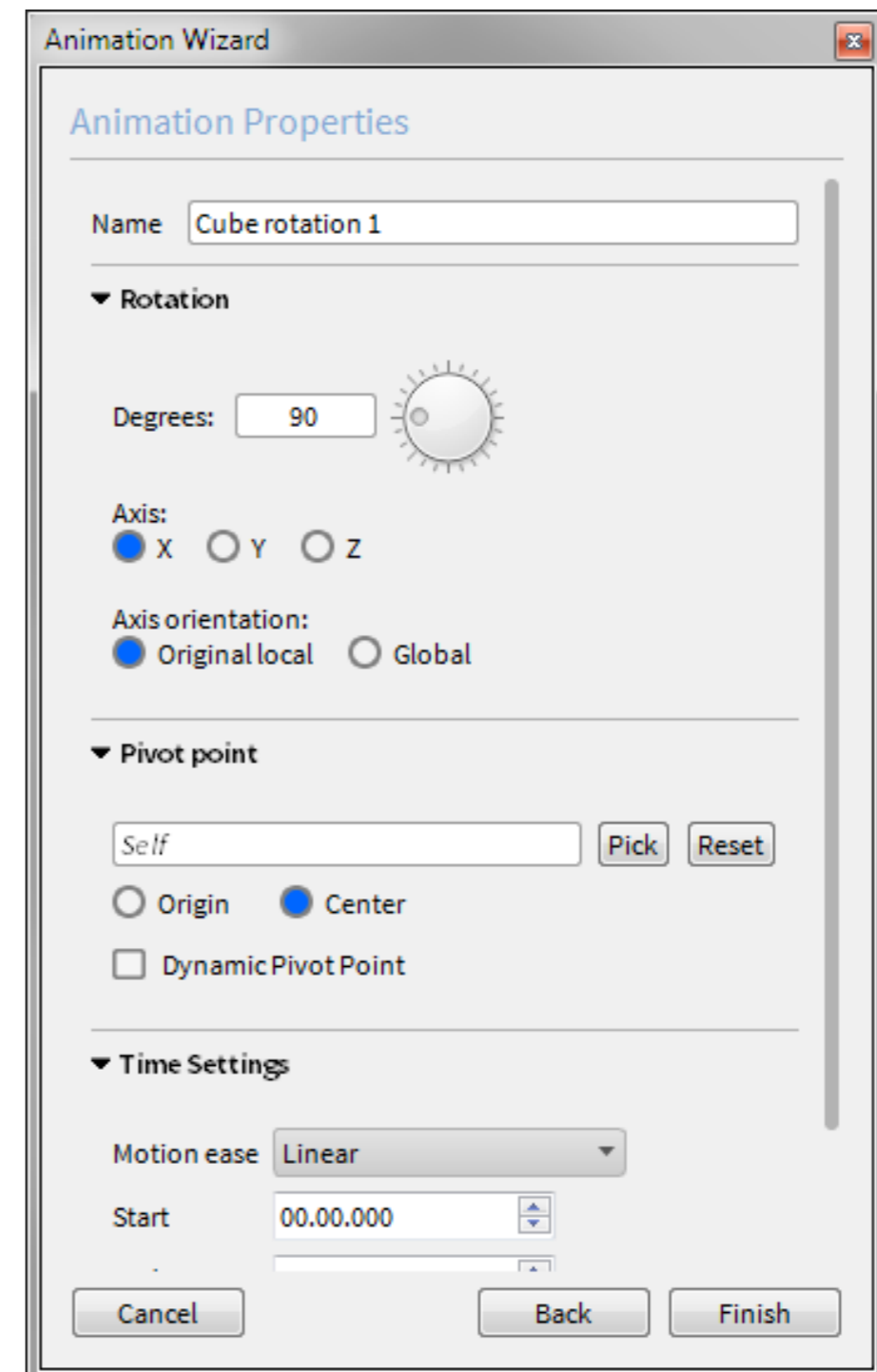
Animation Wizard

Fade

After selecting fade in the animation wizard, choose the part or model that you would like to fade in or out in the animation.

Fade From

Choose the opacity level to start the animation at. If you want to fade in the part, start the opacity at 0. If you want to fade out, start the animation at 100.

Fade To

Set the final opacity level will be at the end of this animation node. To completely fade out, set the opacity to 0. To partially fade out, choose a number less than the "fade from" value.

Time Settings

Set the time the animation starts and ends, as well as setting the duration. Choose a motion ease setting here. See the section on motion ease for more information.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
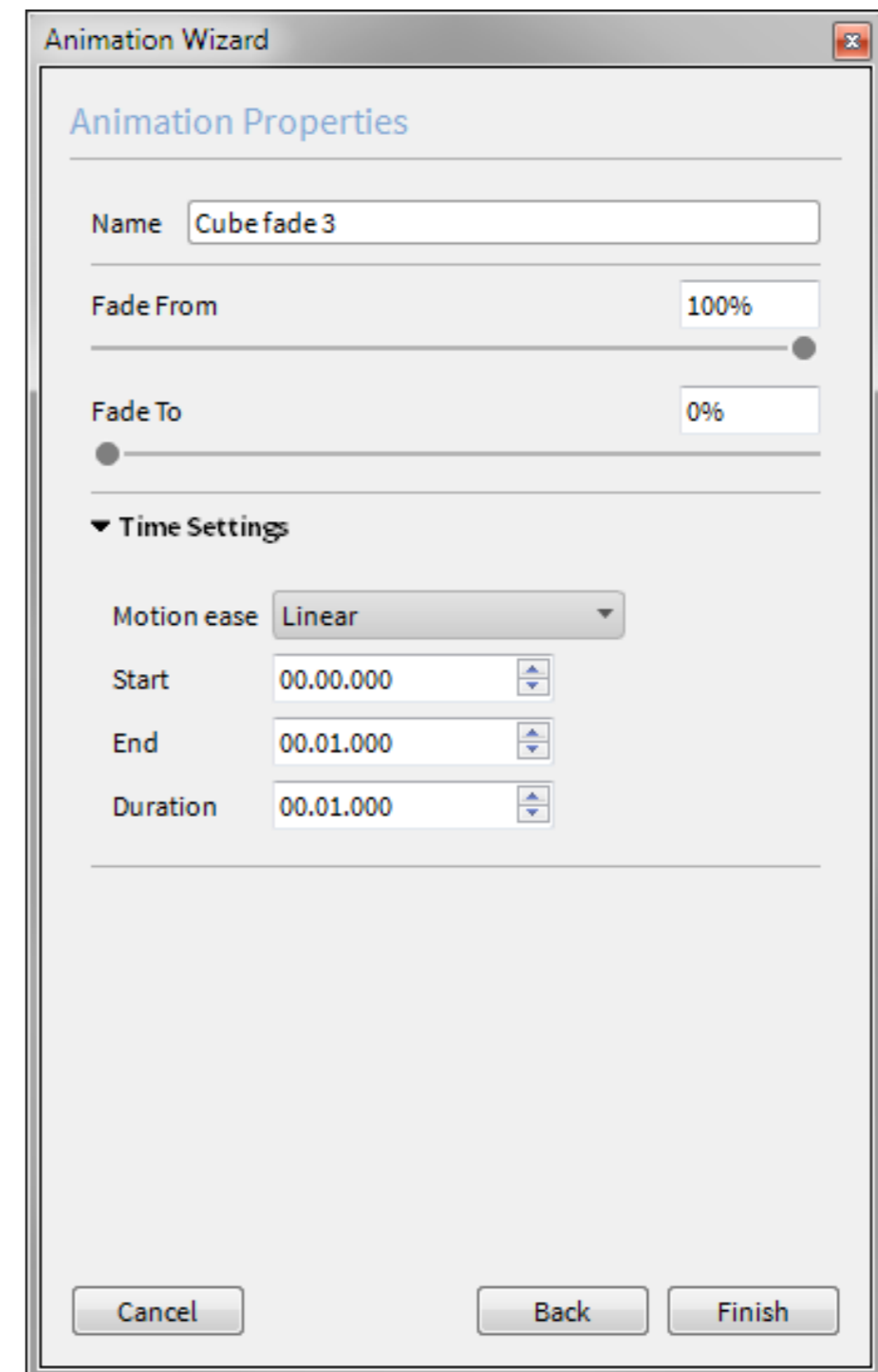
Animation Wizard

Camera Orbit

Camera orbit animation rotates the camera around the "look at" point assigned to that camera. After selecting Orbit animation, select a saved camera to animate.

Rotation

Set how much camera rotates in this animation.

Time Settings

Set the time the animation starts and ends, as well as setting the duration. Choose a motion ease setting here. See the section on motion ease for more information.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
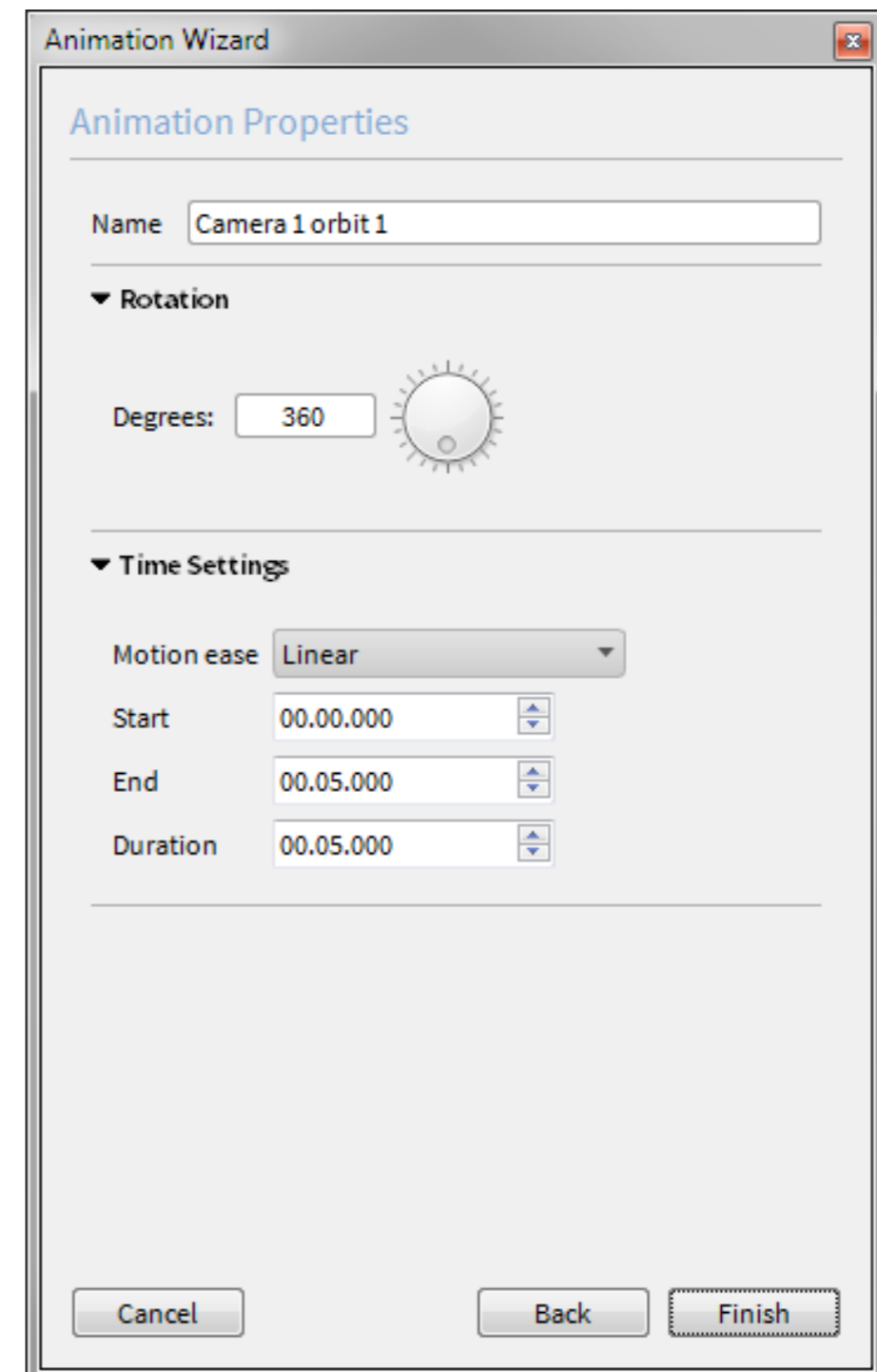
Animation Wizard

Camera Zoom

This Animation type brings the camera closer to the model. After selecting zoom, select a saved camera to apply the zoom animation.

Distance

Set the distance traveled during the animation.

Time Settings

Set the time the animation starts and ends, as well as setting the duration. Choose a motion ease setting here. See the section on motion ease for more information.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
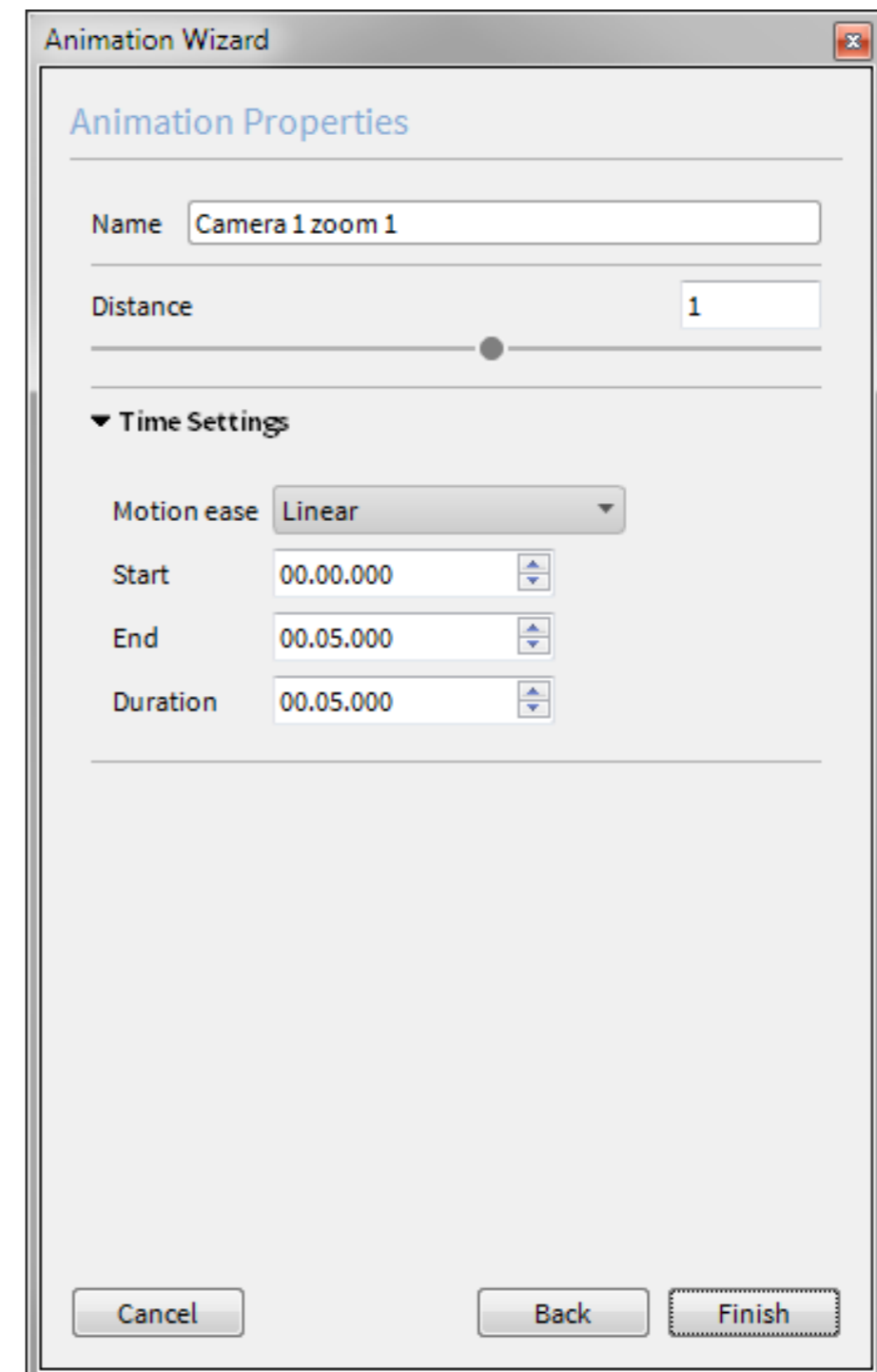
Animation Wizard

Camera Inclination

This animation type rotates the camera along the X axis, while keeping the "look at" point focused on a part. Select a saved camera after selecting inclination in the wizard.

Rotation

Set the amount of vertical rotation around a part the camera travels.

Time Settings

Set the time the animation starts and ends, as well as setting the duration. Choose a motion ease setting here. See the section on motion ease for more information.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
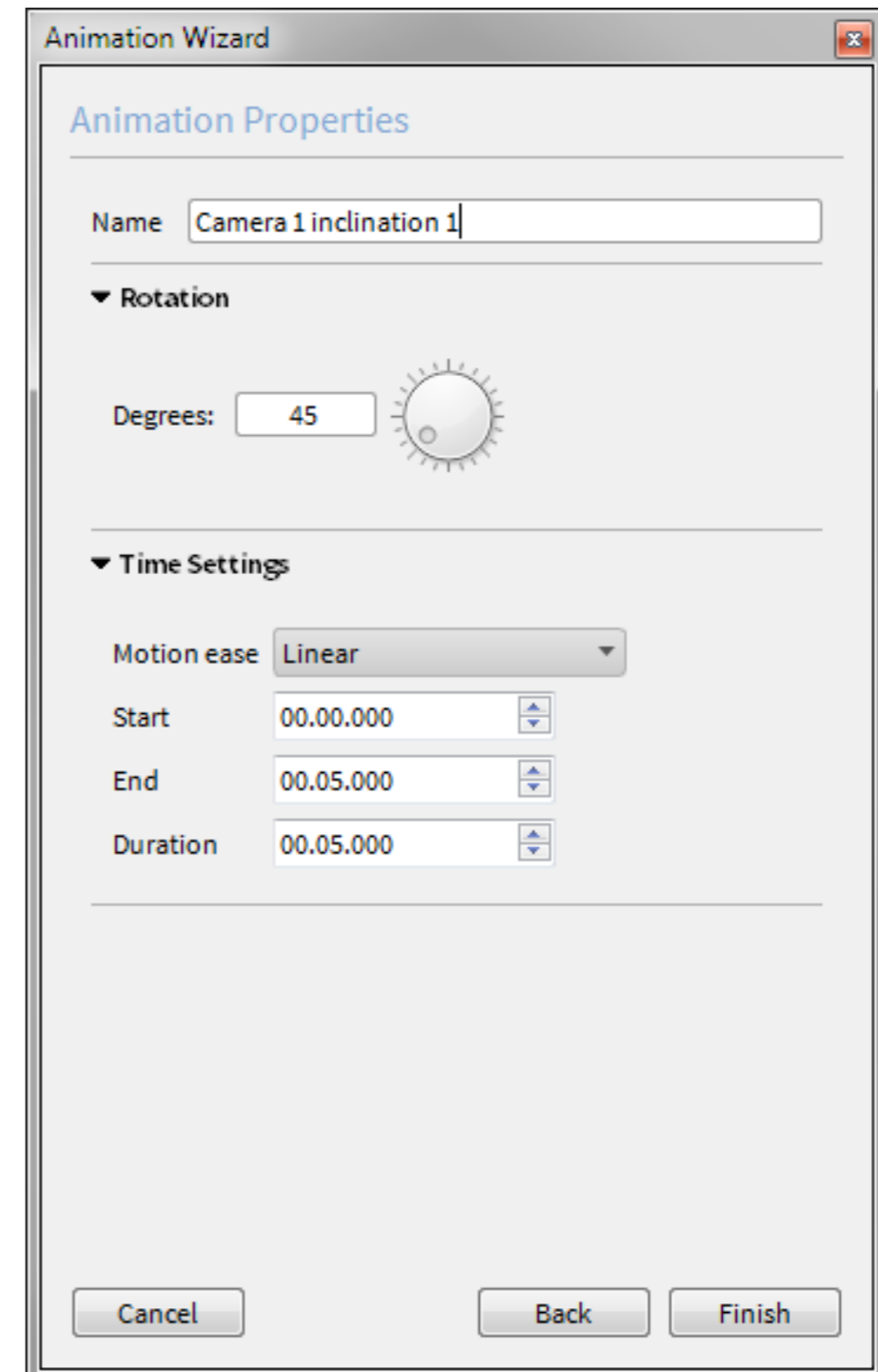
Animation Wizard

Camera Translation

This animation type moves camera changing its XYZ coordinate location. Choose the saved camera to be animated after selecting translation from the animation wizard.

Translate X/Y/Z

Set the distance traveled on the XYZ coordinates during the animation.

Axis Orientation

The default setting uses the camera local axis to calculate translation animation. You can select global to move the model/part in relation to the XYZ coordinates of the scene.

Time Settings

Set the time the animation starts and ends, as well as setting the duration.

Motion Ease

Motion ease will control the acceleration/deceleration of a translation. When an option is hovered over in the drop down list, a preview of the acceleration/deceleration will be shown in the list. For more information on motion easing please see the section on motion ease.
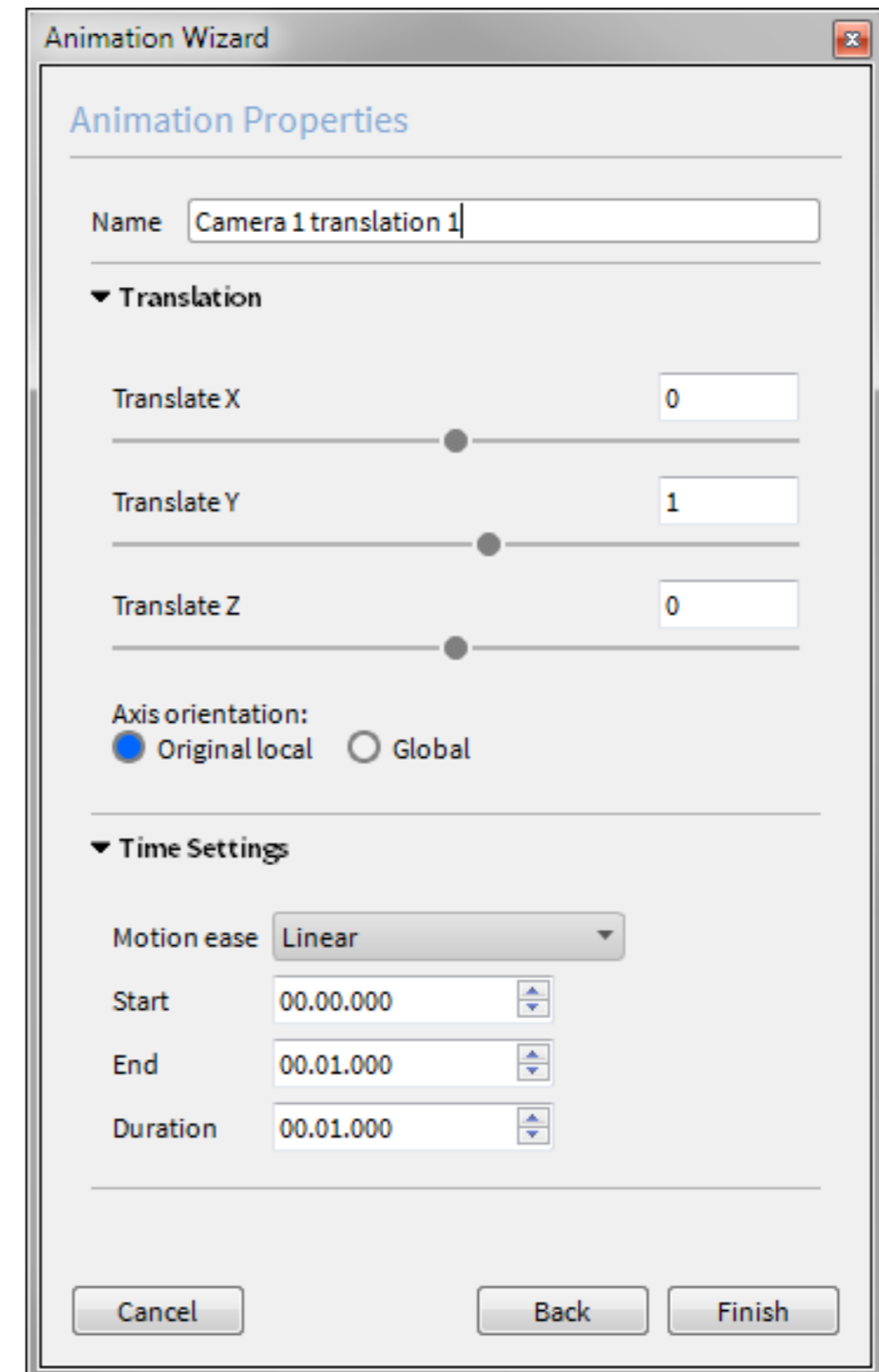
Animation Wizard

Camera Switch Event

This event switches between two cameras instantly in the animation timeline. Choose a saved camera it is switching from after selecting camera switch event from the animation wizard.

From Camera
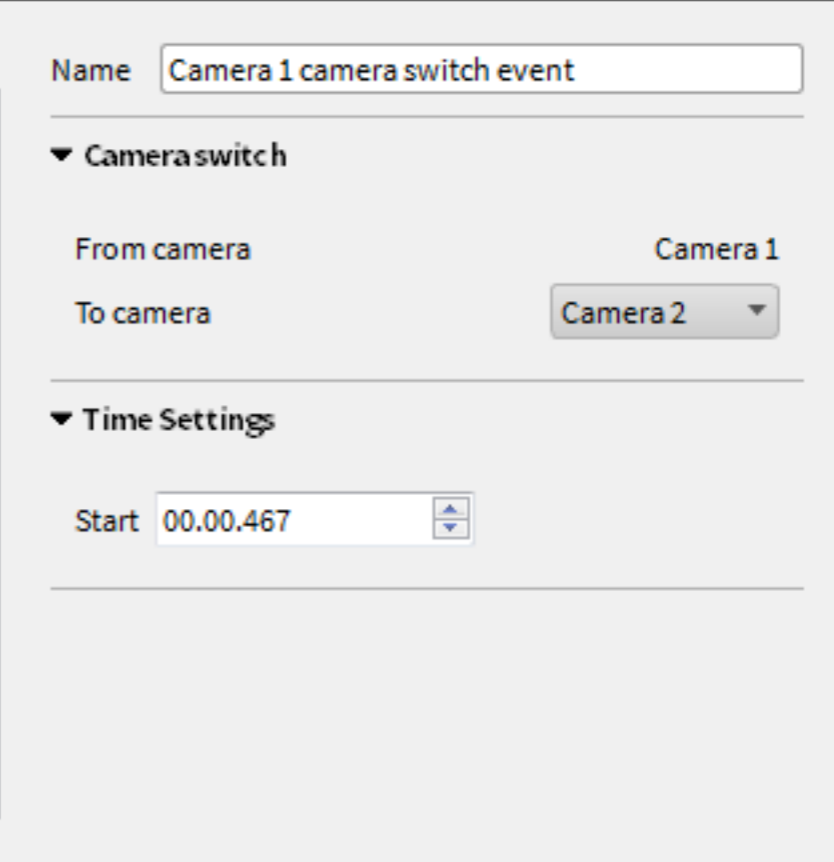
The origin camera the event is placed on.

To Camera

Select from the list of saved cameras to switch to.

Time Settings

Set the time event occurs in the timeline.

KeyShot® Manual

- [Overview](#)

- [Timeline Toolbar](#)

- [Timeline UI](#)

- [Managing Nodes](#)

- [Animation Properties](#)

KeyShot® Manual

The Timeline

Animations are represented in the timeline and labeled according to the name set in the animation properties for translations, rotations and camera animations. When an animation node is clicked in the timeline, the properties will be displayed. Animations, can be shifted in time and scaled interactively to control timing and duration. Groups of animations can be consolidated in a single folder for organization. These folders can also be scaled and shifted to control timing and duration.
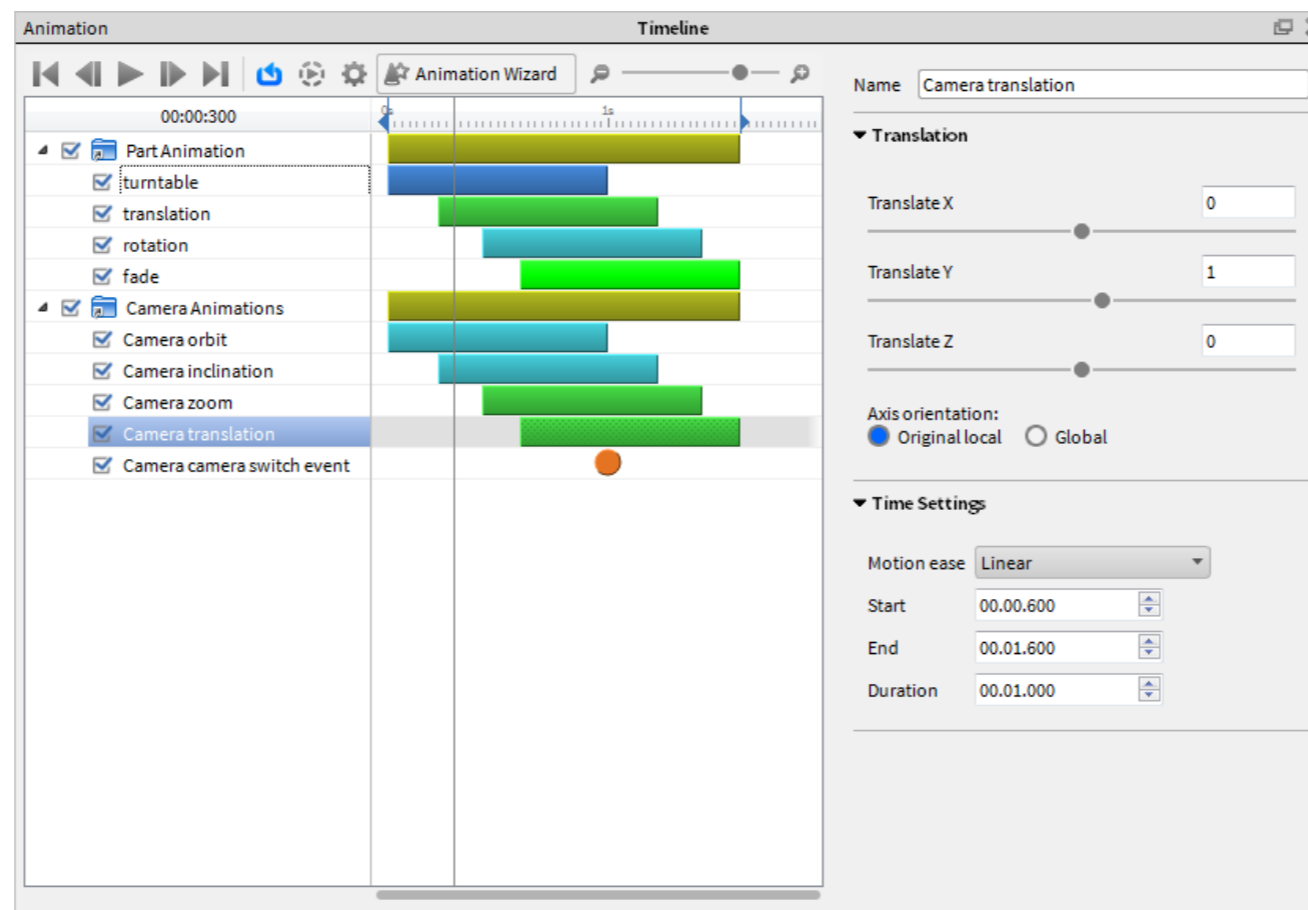
More >

The Timeline Toolbar

Realtime Preview buttons

These buttons will allow you to quickly jump to the beginning or end of your animation, scrub through the animation one frame at a time, and play a realtime preview of your animation in the realtime render window. The preview play is only showing you the basic motions of the animations while rendering in realtime. To see a more accurate portrayal of materials and motion, click the "preview" button on the animation toolbar.

Loop

Enable this to have the animation loop when playing the realtime animation preview.

Preview

Click this button to begin rendering a small video file of your animation with more accurate results than the realtime preview.

Settings

Click the settings icon top open the settings panel. The settings panel contains adjustments for Frames Per Second (FPS), Timeline unit used, and the preview settings for when rendering a preview.

Animation Wizard

Opens the Animation Wizard. See section on Animation Wizard for details.

Zoom Slider

Change the scale of the timeline.
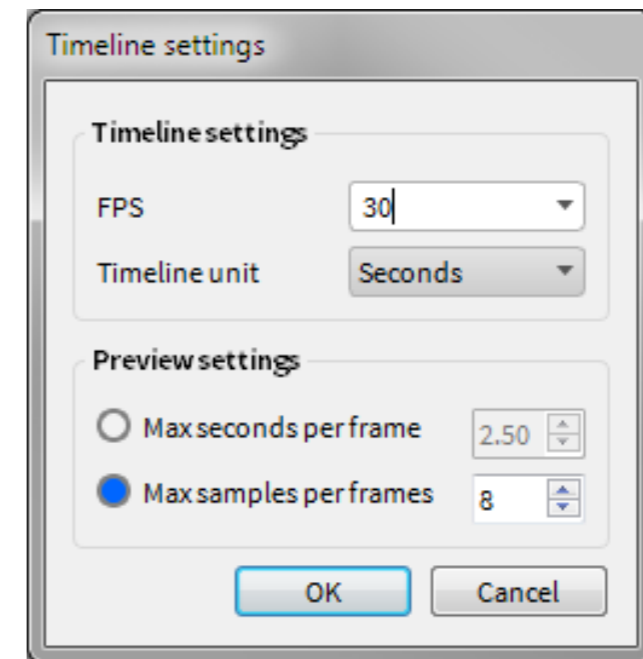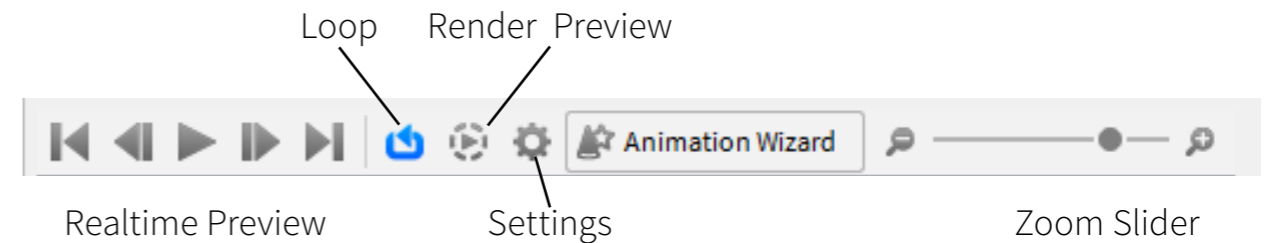
The Timeline UI

Time Stamp

This will show where the preview line currently is on the timeline

Preview line

This line will is the marker for the current state of where in the animation the realtime render window is rendering from. When you play a realtime preview, this line will move with in time with the animation. Click and drag the line to scrub to a point in the animation you would like to preview.

Start/End Markers

Designate the actual animation to be rendered. The space between is called the "work area" and can be selected in the render output.

Timeline

Shows the timeline in the units chosen (seconds, frames.)

Nodes

Each animation is represented in the timeline as a colored bar called a node. Most nodes can be selected at the ends and dragged to change the duration of the animation. Click on the body of the node to move along the timeline. Hold SHIFT while dragging to snap to another node.

Folder Nodes

Yellow Nodes are Folder Nodes. Changing the duration and location of a folder node affects all animation nodes contained within it.

Node List

Lists all animation nodes and folders. uncheck the node to disable.
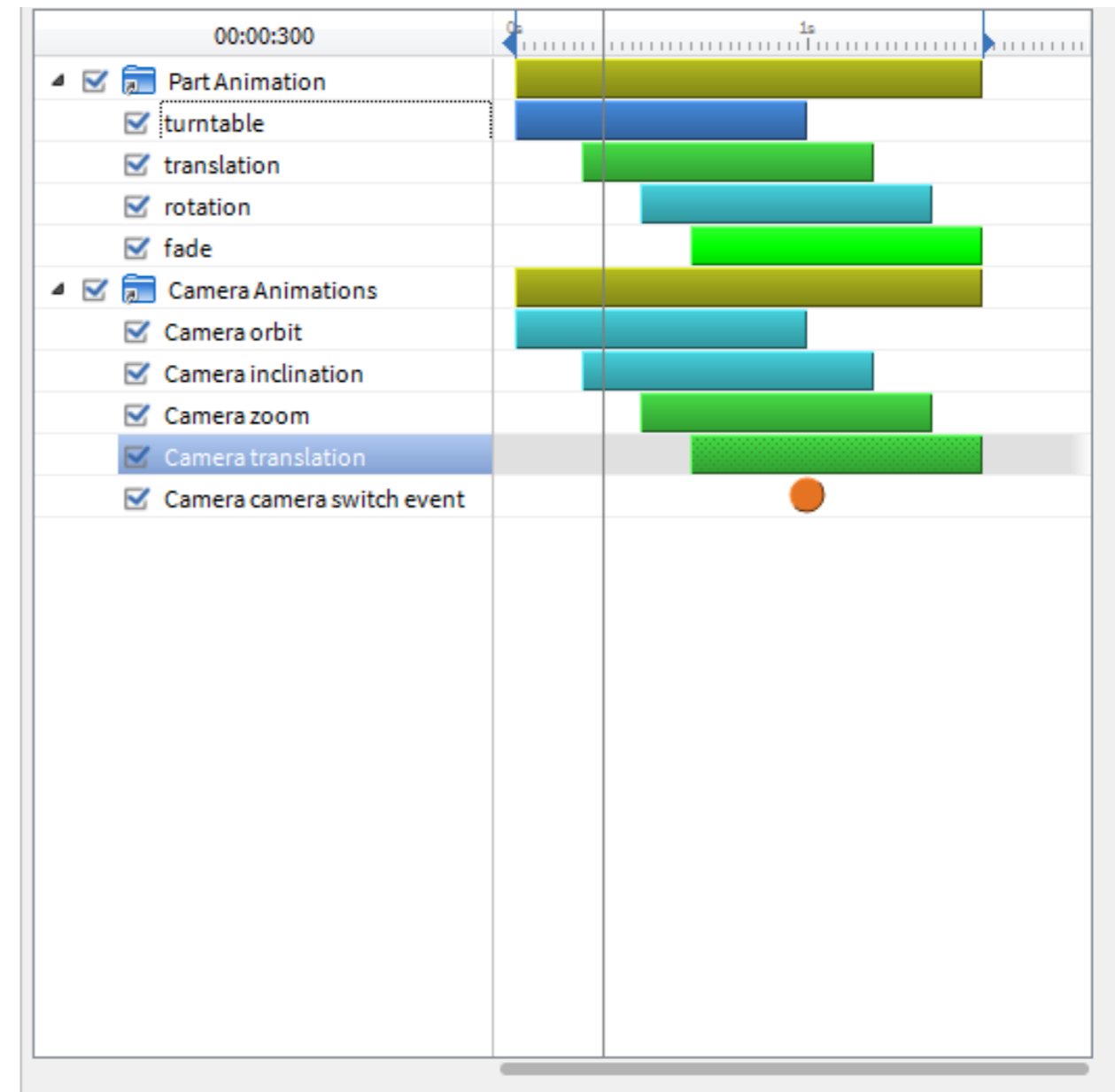
Managing Nodes

Node management utilities can be found on the right click on nodes in the node list. To change the node order, or to move a node into an existing folder, click and drag the node in the node list. To multi-select nodes, hold CTRL on a PC or Command on a Mac while selecting multiple nodes.

Delete

Select this option to delete an animation node(s) from the timeline.

Add Folder

Right click on a blank area in the node list to display this option.

Duplicate

Right click on the node(s) you would like to copy, and select this option.

Mirror

Right click on the node(s) you would like to have a reverse duplicate animation of. This is useful for exploded view animations, or where you need to have the animation end where it began for looping.
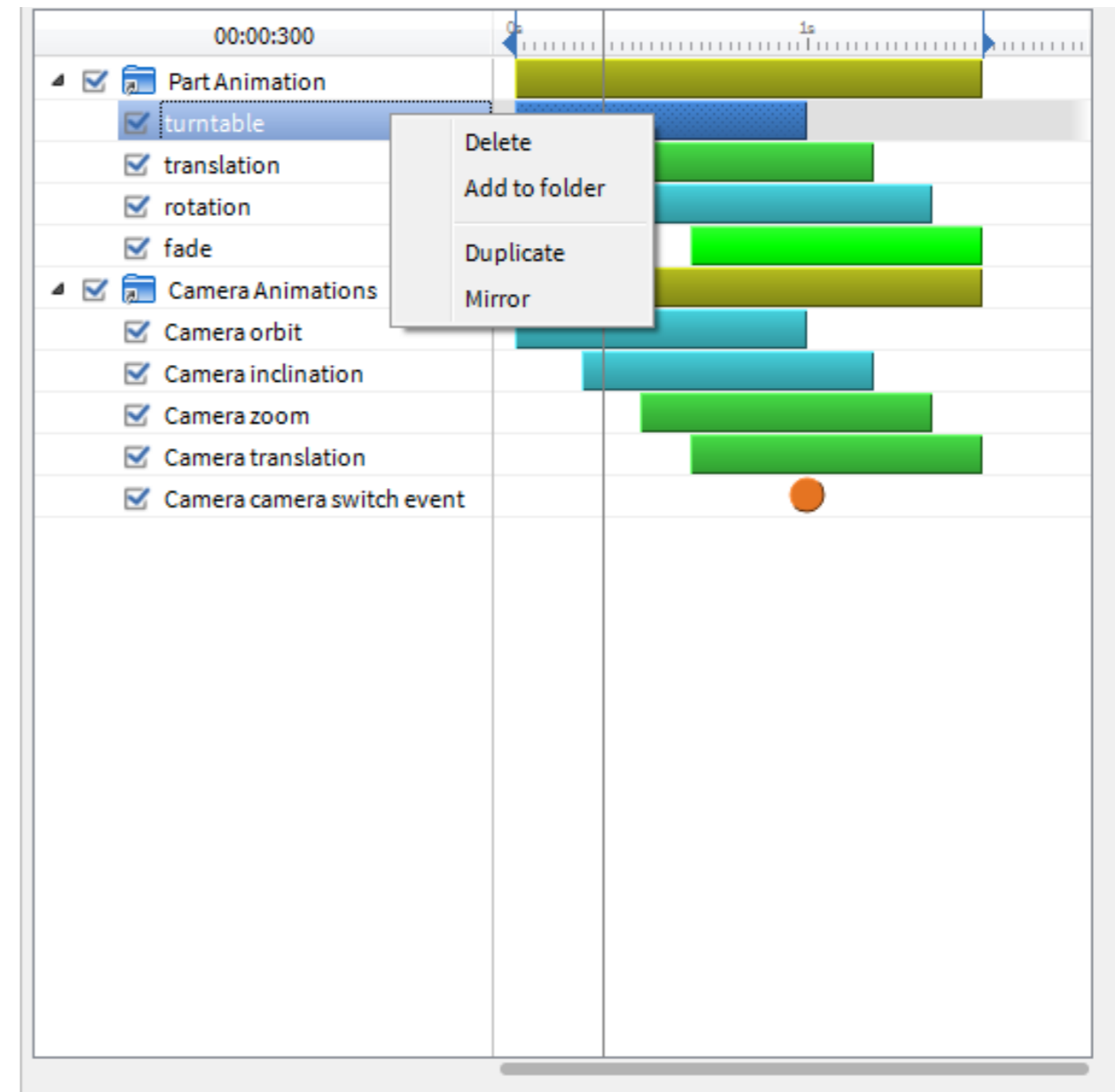
KeyShot® Manual

Animation Properties

Selecting a node will display its properties in the right side of the animation window. These parameters are the same parameters used in when creating an animation via the Animation Wizard. See the different animation types for more information. You can change the all existing animation parameters as well as changing the name of the node in the animation properties.

If the animation window is docked, or if you are using the window with a short window, you can compress sections of the properties to see the parameters that are most useful to you at that time.

Animation Properties
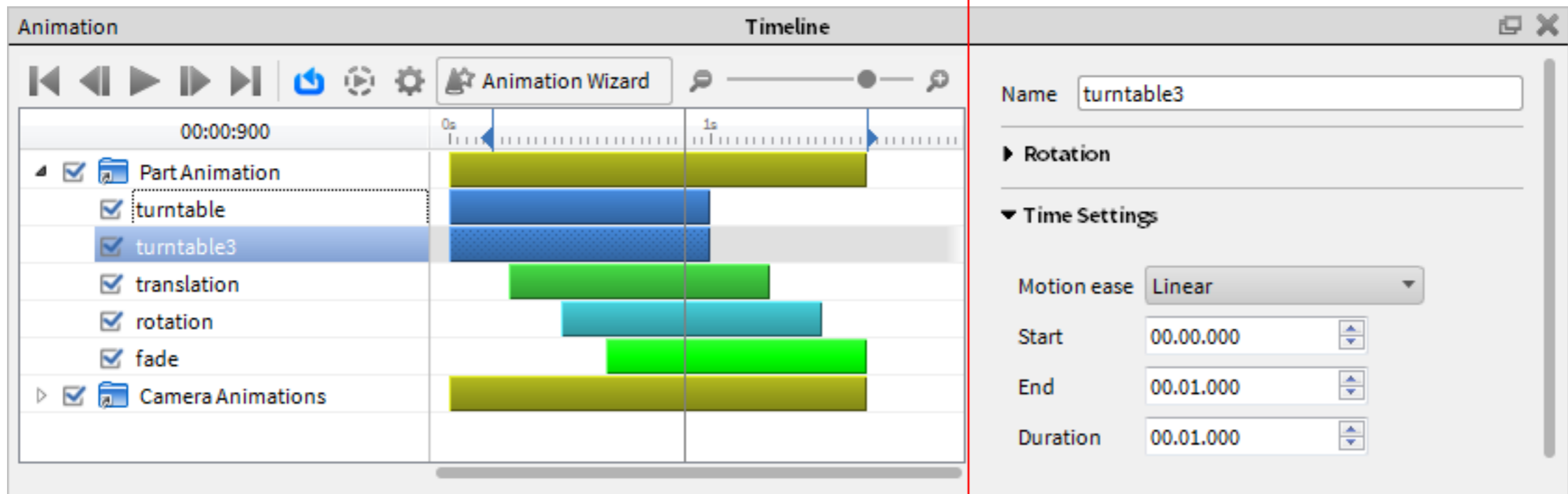
KeyShot® Manual

KeyShot HDRI Editor

The KeyShot environment editor is a simple way to make adjustments to lighting environments. The editor adjustments and pins menu can be docked to the left or right side of the editor dialog.

Open the Editor
The KeyShot environment editor is opened my clicking the HDRI thumbnail.
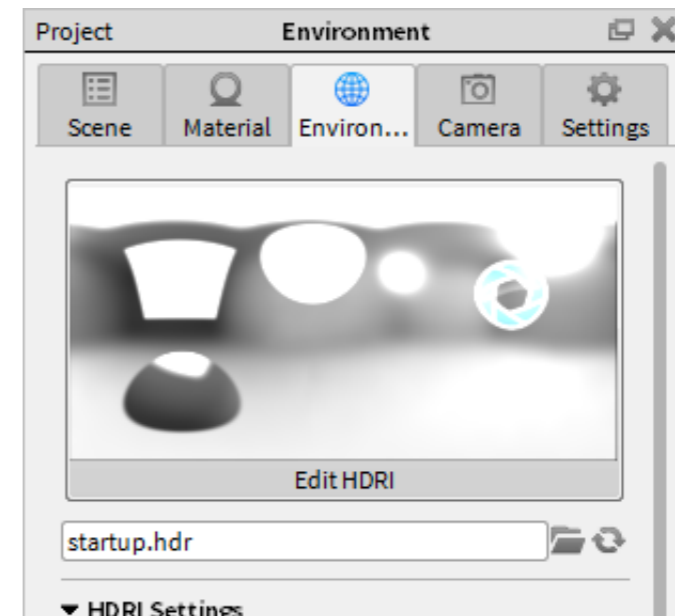
Click "Edit HDRI" thumbnail to open HDRI editor

More >

KeyShot HDRI Editor Menu Bar

File

New HDRI

You can create an HDRI environment from scratch using this menu Item. You will be prompted to choose the resolution and background color for the new HDRI.

Open Image

While it is recommended to use an HDRI image file, or a KeyShot HDZ, the KeyShot HDRI editor allows you to use low dynamic range images such as JPG, PNG, and GIF.

Replace Image

Swap out the HDRI with another image file.

Save

Save the current HDRI to a KeyShot HDZ file.

Save As...

Save the current HDRI as an HDRI with a different file name.

New HDRI

KeyShot HDRI Editor Menu Bar

Edit

Undo

This will list the last action executed in the HDRI editor. It is important to remember that the "undo" in the HDRI editor is a separate list of actions than the "undo" in KeyShot.

Clear Pins

Remove all pins from your pin list.

Generate High Resolution

While editing an environment the image is downsized to increase performance. To see the environment in full quality, use the "generate high resolution for KeyShot" option.

Use Super Sampling for High Resolution

Enable this for the best quality image for your environment.

KeyShot HDRI Editor Menu Bar

View

Display Type

This will list the last action executed in the HDRI editor. It is important to remember that the "undo" in the HDRI editor is a separate list of actions than the "undo" in KeyShot. Toggle between Flat and spherical. Flat stretches out the HDRI to a flat rectangular image to edit with. Spherical displays the image on two circular projections that minimize distortion. Use the Display mode that suits your workflow.

Display Orientation

Choose an orientation that works best for you.

Reset View

After dragging your HDRI, click on reset view to move the HDRI back to the default position.

KeyShot HDRI Editor Ribbon

The Ribbon in h the HDRI editor contains quick access to tools within the HDRI editor For more details on these tools, find the information within this section in the manual. The tools on the ribbon are:

Open
Save
Generate High Resolution
Add Pin
Add Copy Pin
Add Image Pin

Show Ribbon

If the ribbon is not visible, go to window, and click "show ribbon" within the KeyShot HDRI editor.

Adjustments

The adjustments tab contains simple sliders to enhance and fine tune the HDRI environment.

Saturation
Use the saturation slider to increase or decrease the intensity of color in the environment.

Hue
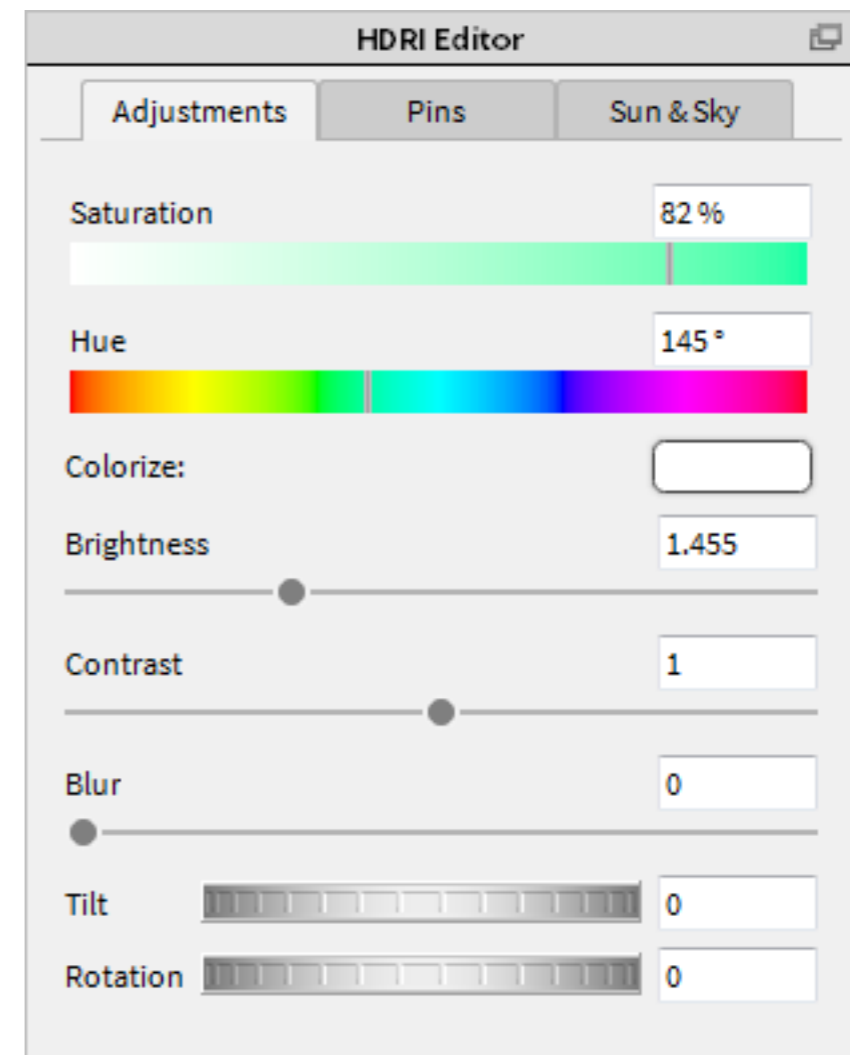Use the hue slider to shift the colors of the environment.

The slider is in degrees, from 0 to 360, to represent the color wheel.

When shifting the hue of the environment, the resulting color is dependent on the starting point color. For example, if your environment is mostly red and the hue slider is set to 120, the resulting environment will be mostly green. If the starting point is green though, and the hue is again set to 120, the resulting environment will be blue.

Colorize
Use colorize to overlay one color on the entire environment image. The colorize color blends with the original environment colors, so the final colors will be a mixture based on the original colors, the saturation slider value, the hue slider value, and the colorize color.

In order to obtain a single color tone set the saturation slider to 0 then adjust colorize to your desired color.

Adjustments

Brightness
Use brightness to lighten or darken the environment.

Contrast
Use contrast to create a sharper lighting result (high contrast) or a softer lighting (low contrast).

The contrast value also controls how sharp the ground shadows in KeyShot will appear. A low contrast environment will show softer shadows.

Blur
Using the blur slider will blur the environment.

Tilt
Use the tilt dial to tilt the environment along the X axis. This is a great way to fine tune your reflections.

Rotation
Use the dial to rotate the environment along the Y axis. This works independently from the rotation that is found in the environment tab.

Adjustments

The adjustment settings are used to edit the entire HDRI environment.

Saturation
Use the saturation slider to increase or decrease the intensity of color in the environment.

Take the value down to 0 to completely desaturate the environment.

Hue
Use the hue slider to shift the colors of the environment.

The slider is in degrees, from 0 to 360, to represent the color wheel.

When shifting the hue of the environment, the resulting color is dependent on the starting point color. For example, if your environment is mostly red and the hue slider is set to 120, the resulting environment will be mostly green. If the starting point is green though, and the hue is again set to 120, the resulting environment will be blue.

Colorize
Use colorize to overlay one color on the entire environment image. The colorize color blends with the original environment colors, so the final colors will be a mixture based on the original colors, the saturation slider value, the hue slider value, and the colorize color.

In order to obtain a single color tone set the saturation slider to 0 then adjust colorize to your desired color.

Pins

The pins allow for targeted adjustments lighting in environment image.

Add Pin/Add Copy Pin/Add Image Pin

Places a new selected type of pin in the HDRI. The new pin will be displayed in the Pin list, as well as the preview window. Select a pin in the pin list, or click on the pin handle in the preview window to make it active for editing. Drag the pins by the handle to position pins where you need them to go.

Delete Pin

Deletes the active pin.

Move Pin Up/Down

Changes the pin order in the pin list. The order is important as it will display and layer pins from the top down.

Pin List

Contains all the pins created in the HDRI editor. You can enable and disable pins buy clicking the checkbox to the left of the name of the pin. You can rename pins by double clicking the name. Right pins for options to delete or duplicate. The Icon to the right of the name denotes the type of pin it is. The active pin being edited will be highlighted blue in the list, and will have a blue dot in the preview window.
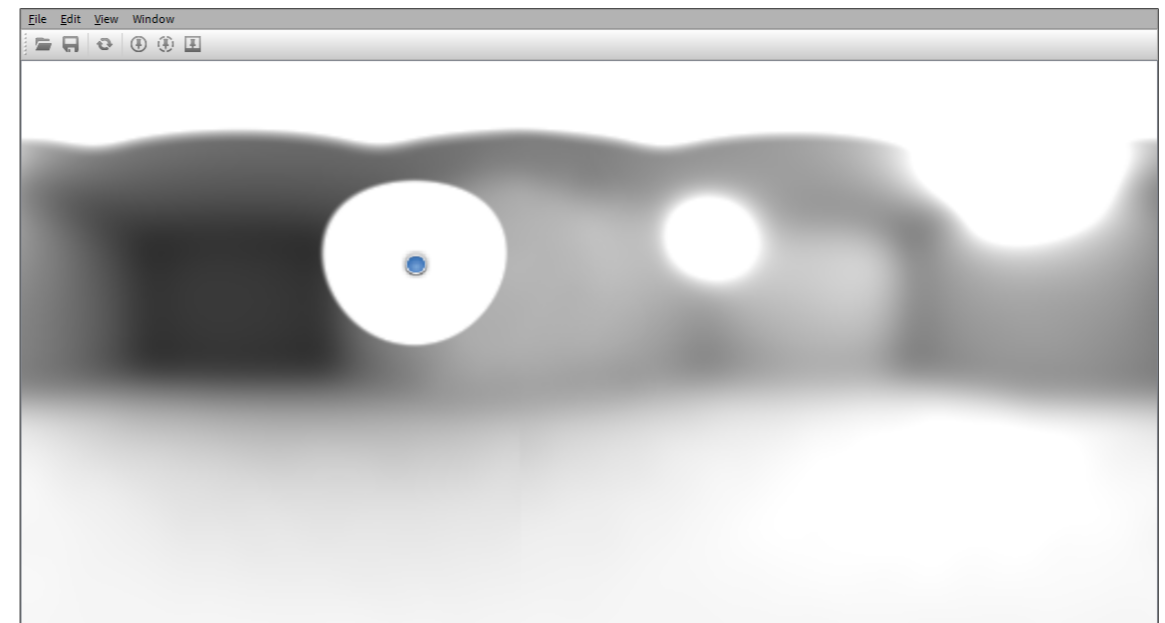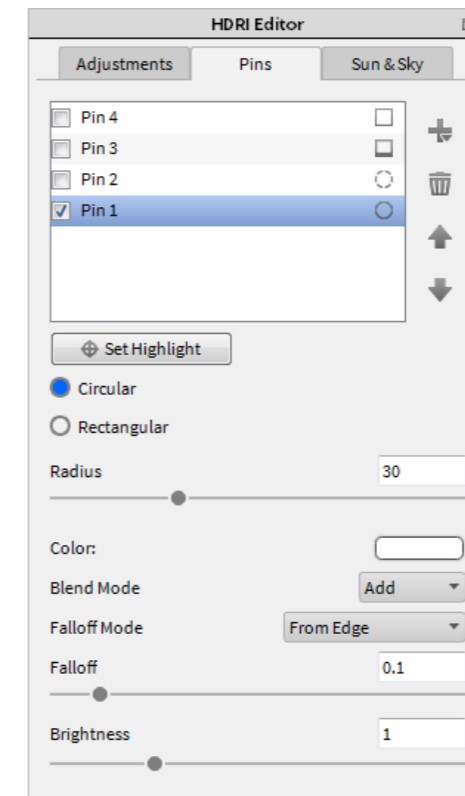
KeyShot® Manual

Pins

Set Highlight

Adding and setting highlights can be achieved by clicking and selecting "Set highlight". This will bring forward the KeyShot realtime window where you can position your pin by selecting a region on the model you want to highlight. CTRL+Click anywhere on the surface of the model and a pin will be generated facing that point on the surface. When finished, click done. Pins added this way can be edited as normal.
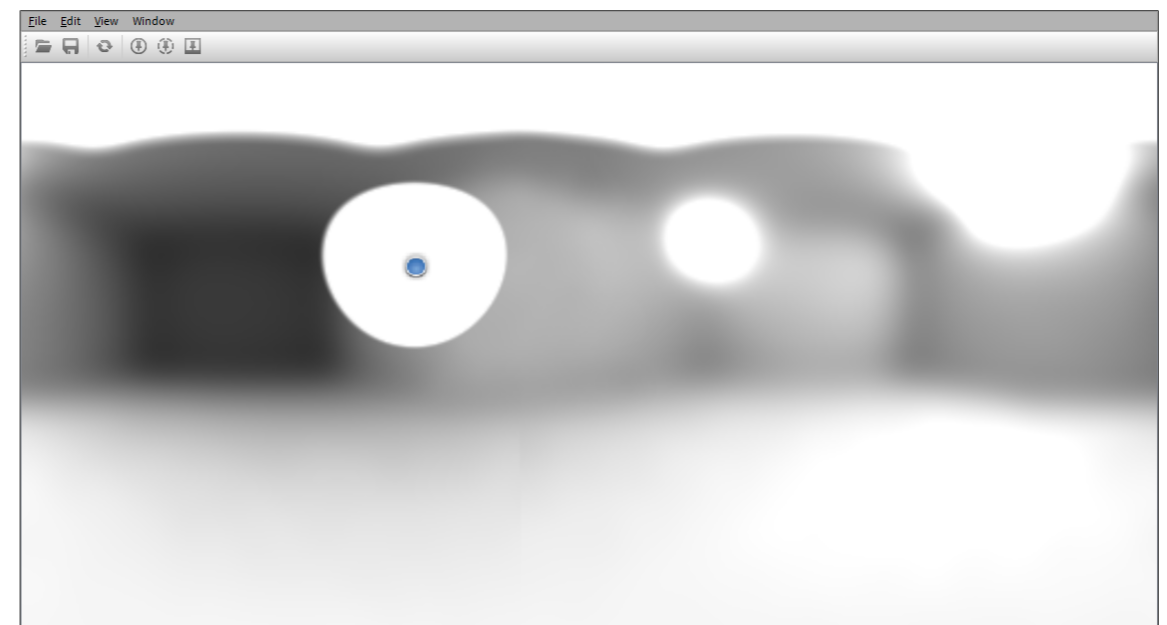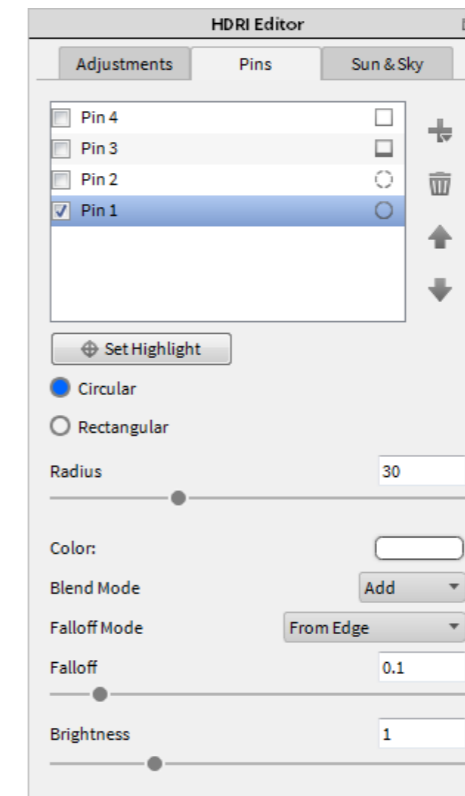
Pins

Circular/Rectangular

This will toggle between the shape of the pin. This is crucial when creating very specific shapes and reflections in your renderings.

Radius (Circular)

Determines circular pin size

Width/Height/Angle (Rectangular)

Determines the Shape for rectangular Pins.

Color

Set what color the pin will be projecting. For accurate real world lighting, use the kelvin scale for the color picker.

Blend Mode

Change from different ways the pins blend and interact with each other. Pin order layer becomes very important with this function.

Falloff

Controls the softness of edge of the pin light. Increase the falloff for more blended, softer edges.

Brightness

Adjust the overall intensity of the pin light.
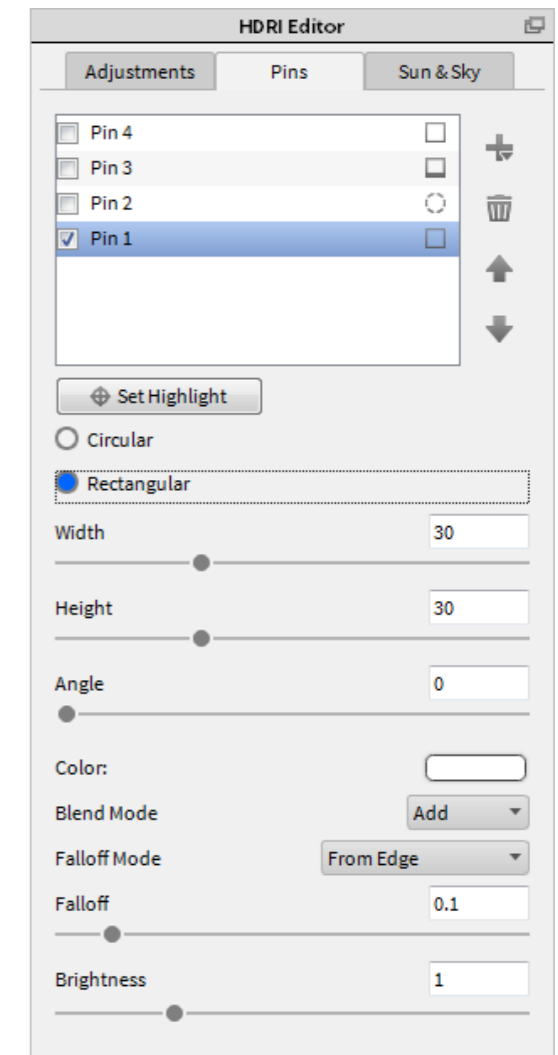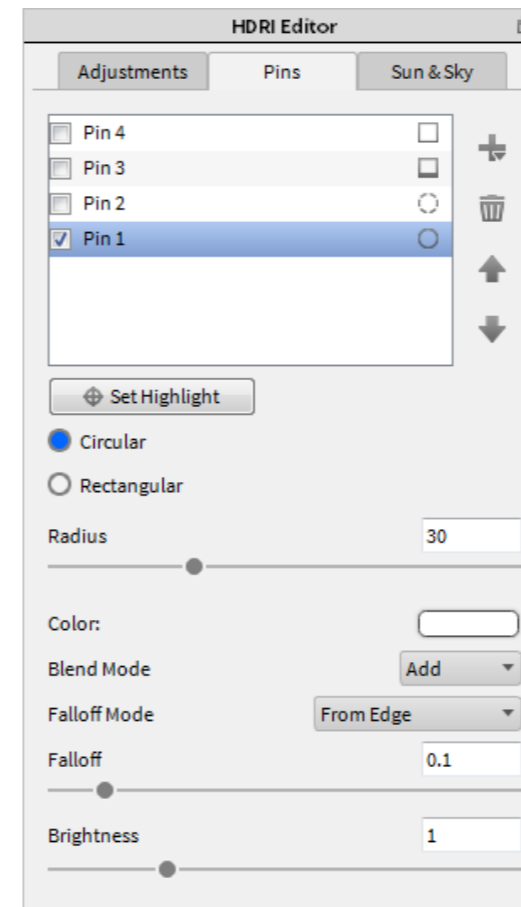
Pins

Copy Pin

Copy Pins take a snapshot of the HDRI image and uses that image as a new pin. After selecting "Add Copy Pin," a pin handle with an orange outline will appear on the preview window. This will be the area of the image that will be copied to be used as a pin. Toggle between circular and rectangular for shape you want, and set the size and angle with the adjustment sliders. When finished Click on the green check to create the copy pin.

After creating the copy pin, move the pin by the handle to place it where desired. Adjustment sliders similar to the regular pin will be available with the same effects.
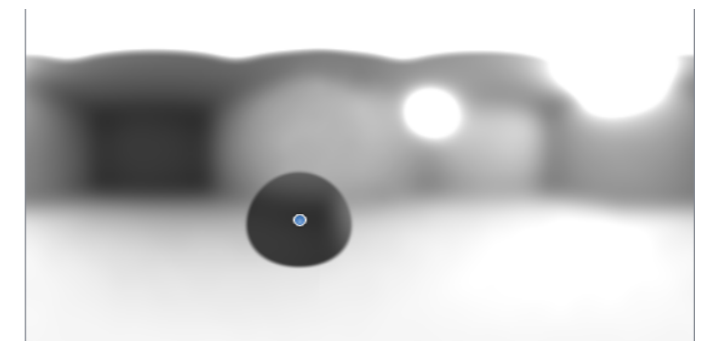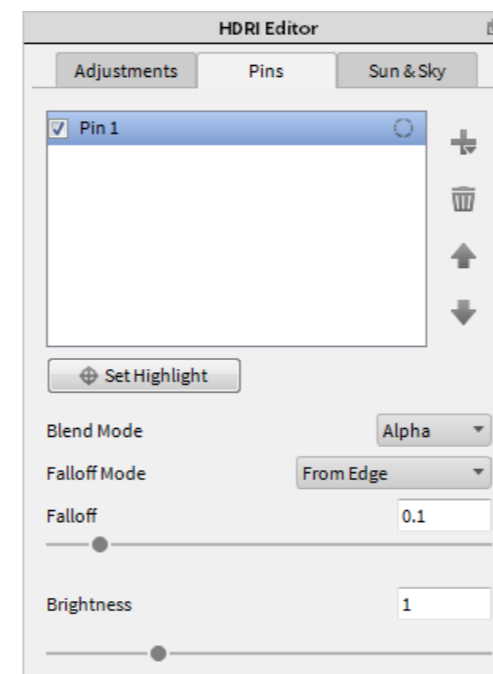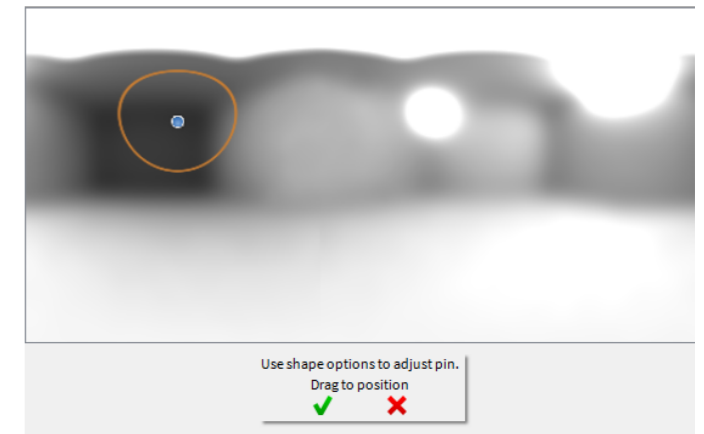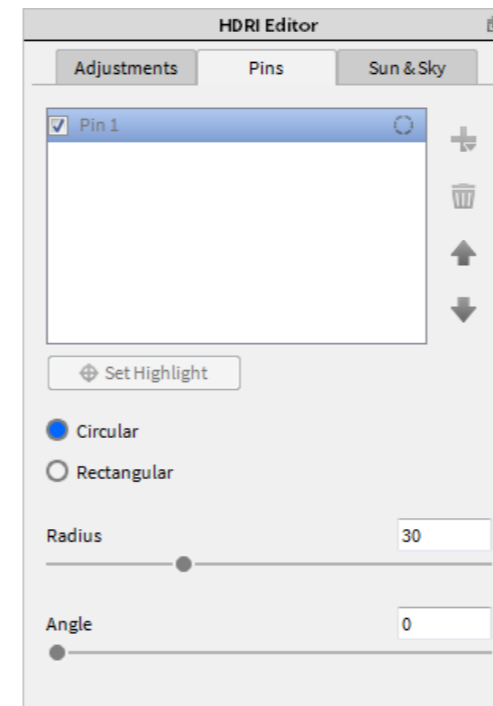
Pins

Image Pin

Image pins allow you to use HDR, HDZ, EXR, JPG, PNG,JPEG, and BMP as a pin. There are limitless usages for this pin such as creating specific reflections, simulating a lighting array, using part of a HDR with another HDR, among others.

When adding an image pin, you will prompted to select an image to be used. Once selected, the image will be placed in the preview window.

Adjustment sliders will be available to edit the image pin. These sliders are similar to the regular pin sliders. See the beginning portion of this section on pins for more information on the slider effects.
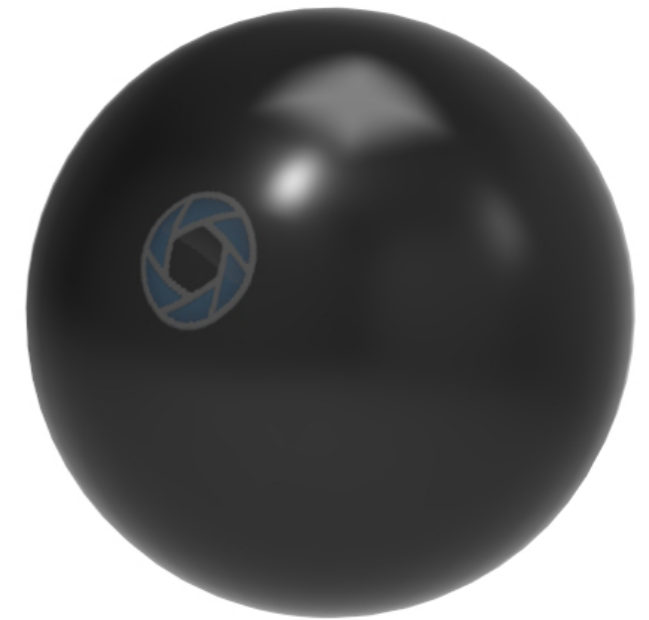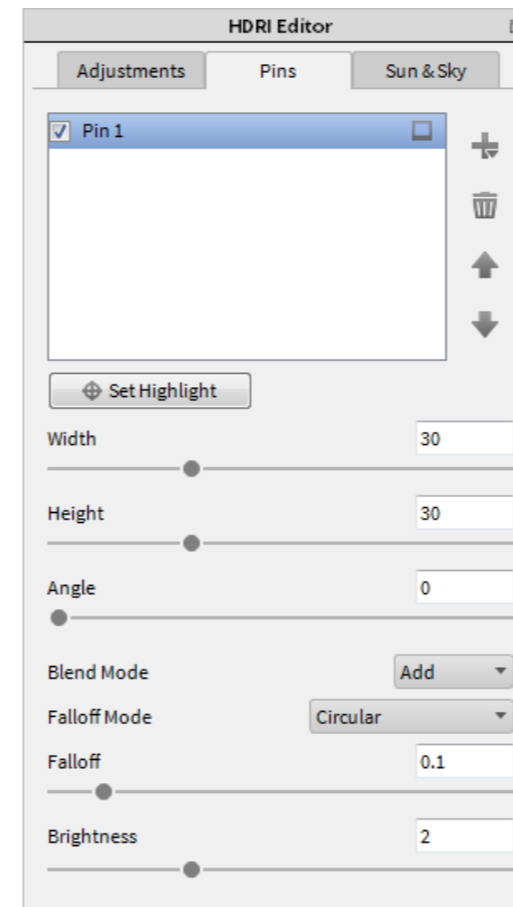
Reflected image pin

Sun and Sky

You can create accurate outdoor lighting with the sun and sky system in the KeyShot HDRI editor.

Resolution

Set the resolution of your sun and sky that will be generated. A smaller resolution has better performance, but a larger resolution has better shadow and reflection quality.

Location

Choose a preset city that is closest to where the scene is taking place for accurate portrayal of the sun and seasons at location.

Coordinates

Enter custom geo coordinates of a location.

Date

Adjust the date to the day the scene will be taking place for accurate portrayal of color temperatures of seasons.

Time

Set the time the scene takes place for placement of the sun.

Turbidity

Increase to add more haze to the sky. This will tint the sky with a warm tone, as well as filter the sunlight that is cast in the scene.
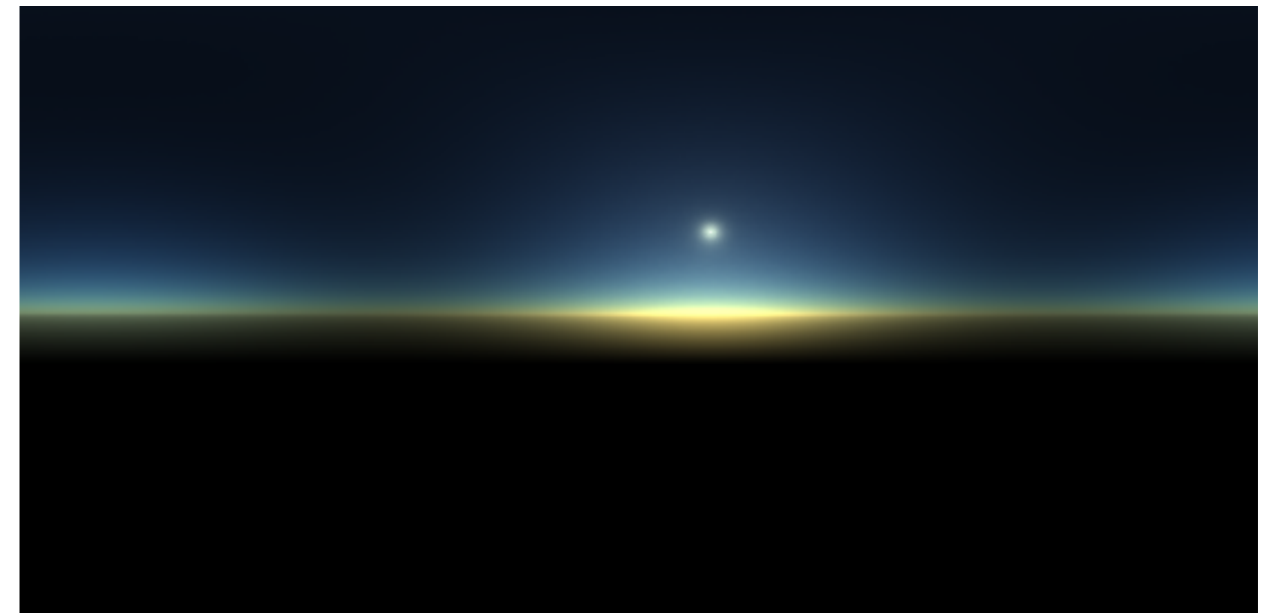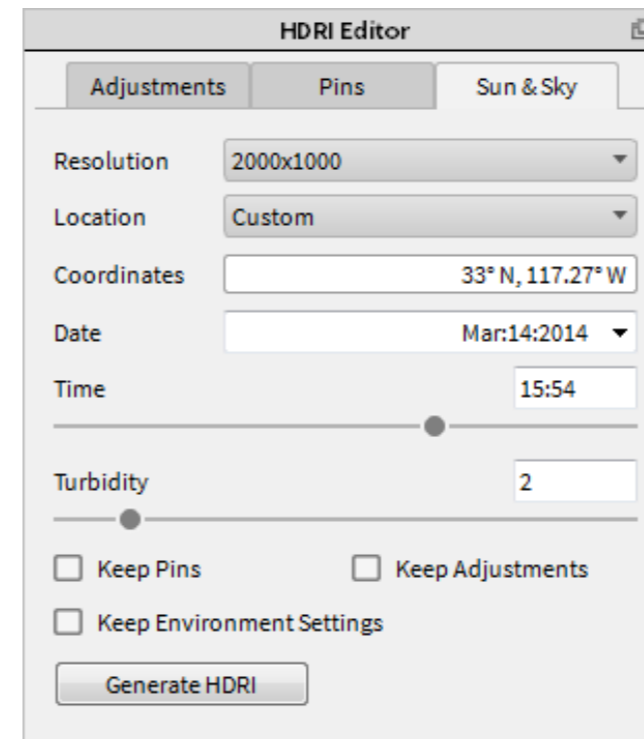
Sun and Sky

Keep Pins
Enable this feature to keep any pins created when generating a sun and sky HDRI.

Keep Environment Settings
Enable this feature to retain environment settings when generating a sun and sky HDRI.

Keep Adjustments
Enable this feature to retain adjustments to the HDRI when generating a sun and sky HDRI.

Generate HDRI
Once your settings are complete, click this button to replace the HDRI with a sun and Sky HDRI. **Caution**: clicking this will remove the previous HDRI. Make sure if you want to save your previous HDRI, save it first before you click "Generate" HDRI.
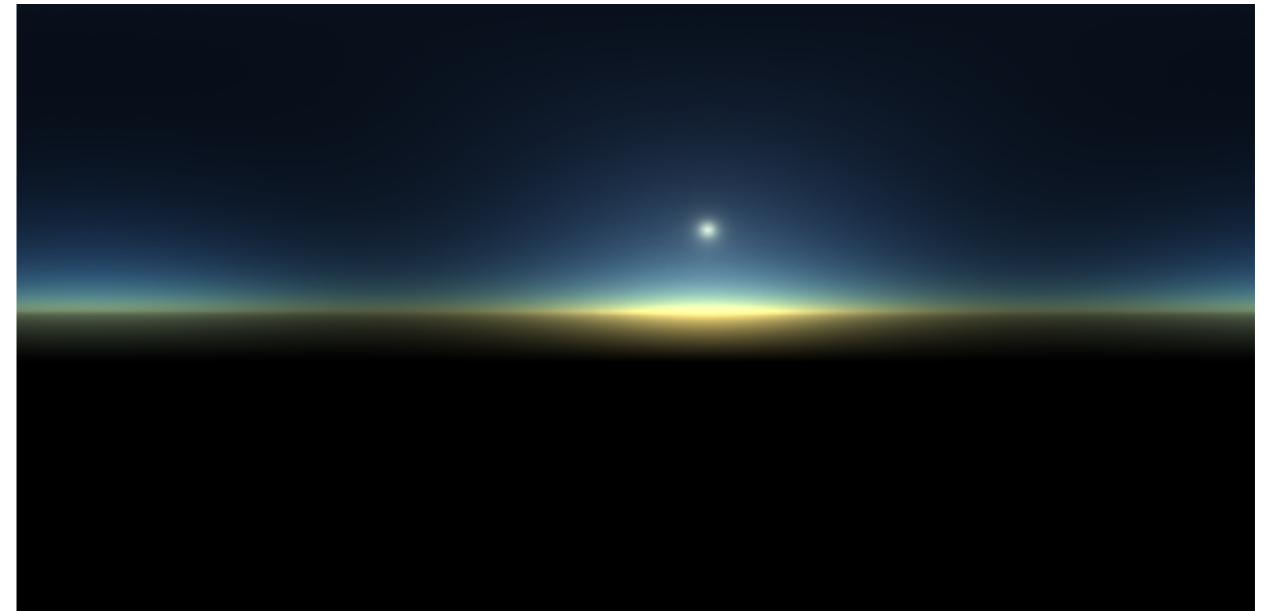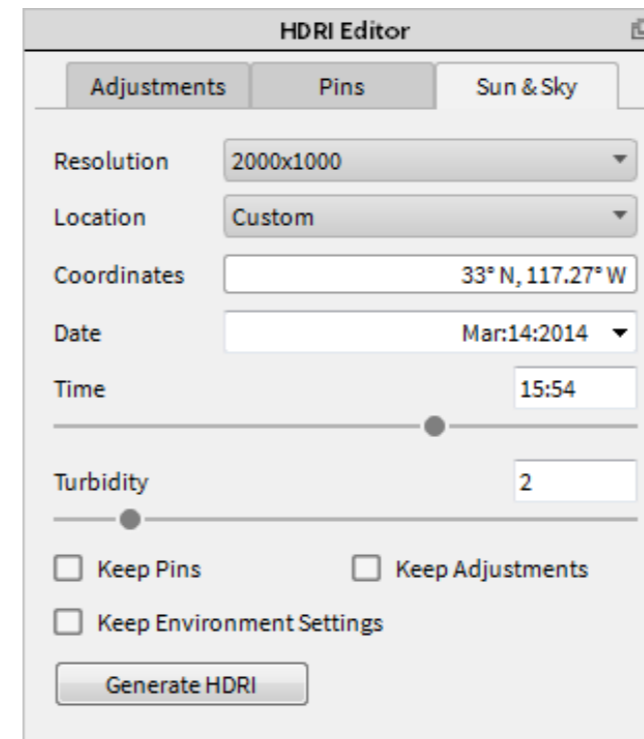
KeyShot Manual

KeyShot VR

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- [Setting Up a VR](#)

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- [KeyShotVR Render Output](#)

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Overview

KeyShotVR gives you the ability to bring your 3D renderings to interactive webpages. With KeyShotVR you can create high-quality, touch-enabled, 3D rendered content capable of being displayed in any web browser supporting HTML5. The content can be viewed using mouse or finger on touch-enabled devices and does not require a browser plugin to work.

Setting up a VR

The VR option will be located on the ribbon or with the hotkey "V".

Clicking the KeyShotVR button will open the KeyShot wizard dialog with four types of VR modes you can choose from. Selecting one of the four VR modes will show you a preview of the model's rotation.

Next, you will be able to select the center of rotation for your VR. With three options. This will dictate the center of rotation of the VR After selecting a center of rotation. Click next after you have selected.
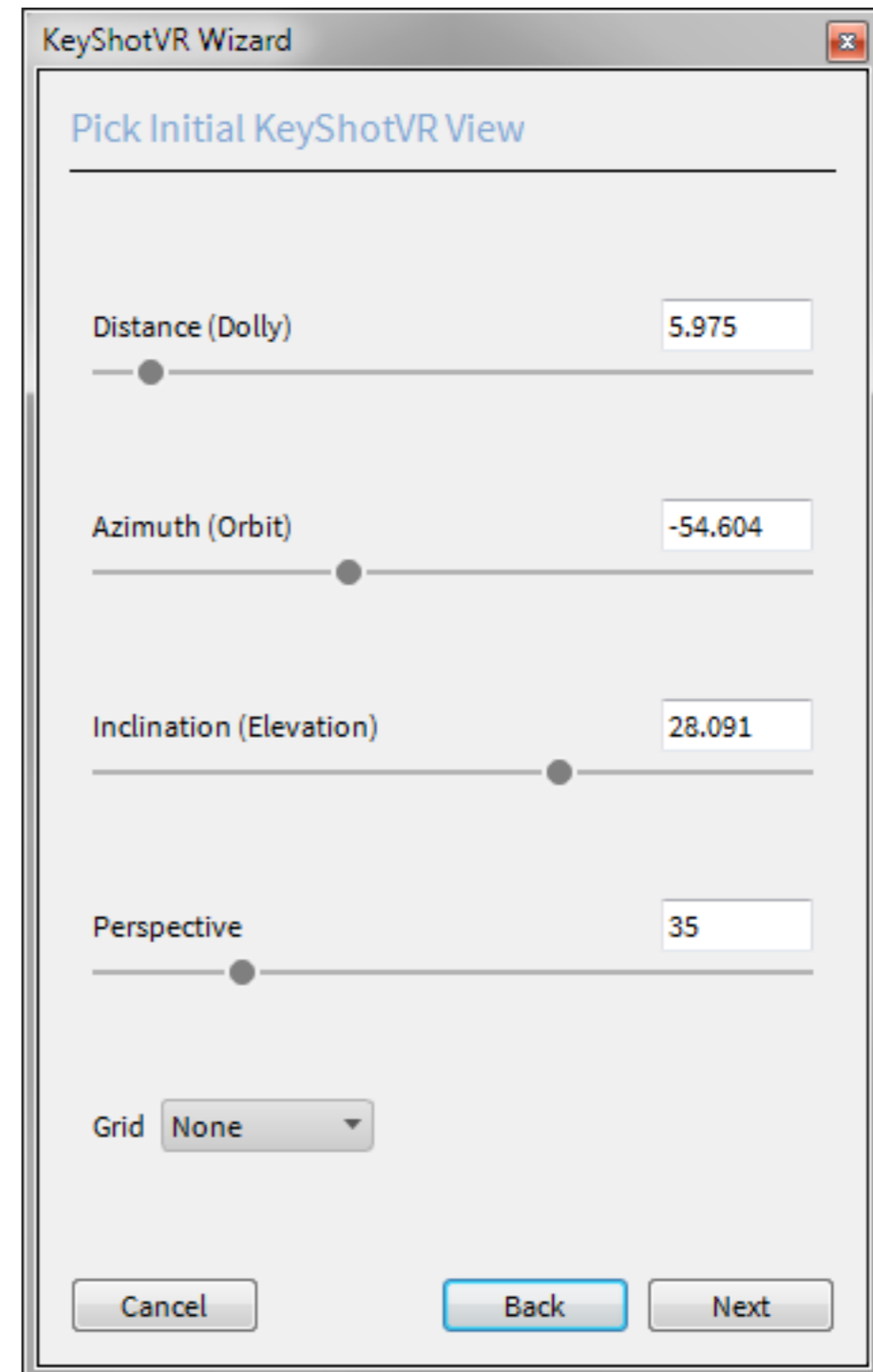
Environment
Set the center of rotation at the center of the environment.

Object
Select an object in the scene as a center of rotation.

Custom
Allows you to select the center of rotation.

Setting up a VR

The VR option will be located on the ribbon or with the hotkey "V".

Clicking the KeyShotVR button will open the KeyShot wizard dialog with four types of VR modes you can choose from. Selecting one of the four VR modes will show you a preview of the model's rotation.

Next, you will be able to select the center of rotation for your VR. With three options. This will dictate the center of rotation of the VR After selecting a center of rotation. Click next after you have selected.

Environment
Set the center of rotation at the center of the environment.

Object
Select an object in the scene as a center of rotation.

Custom
Allows you to select the center of rotation.

Setting up a VR

In this step you will be able to control the smoothness of the VR. Higher the number of horizontal and vertical frames will increase the smoothness of the rotation on the model inside a web browser, but will also increase the total number of frames to be rendered.

In this last step you will be able to configure the output of the VR, as well as the image resolution for each frame.
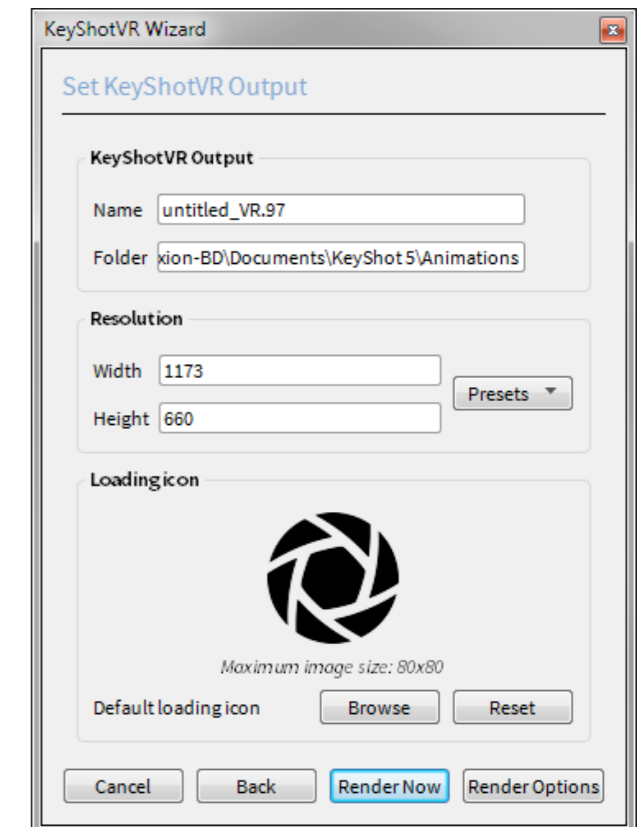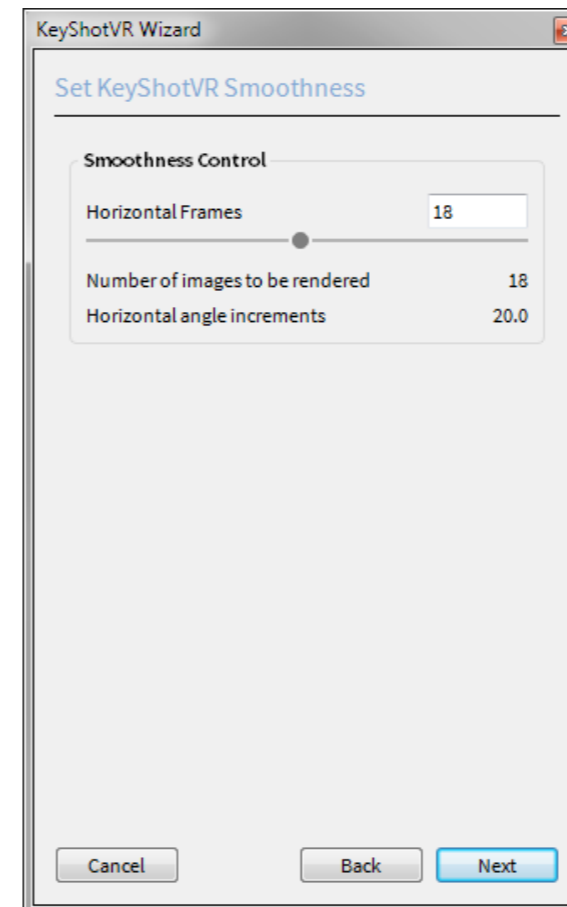
Generating KeyShotVR From Animation

If an animation is applied to the model, it can be set as the KeyShotVR mode. Any animation type can be included as a KeyShotVR.

Select Animation at the first step in the KeyShot Wizard.

Next, you will be able to select the time range of the animation.

Resulting FPS
This will give the overall smoothness of the KeyShotVR when using in the browser. Higher value will give a more smooth transition.
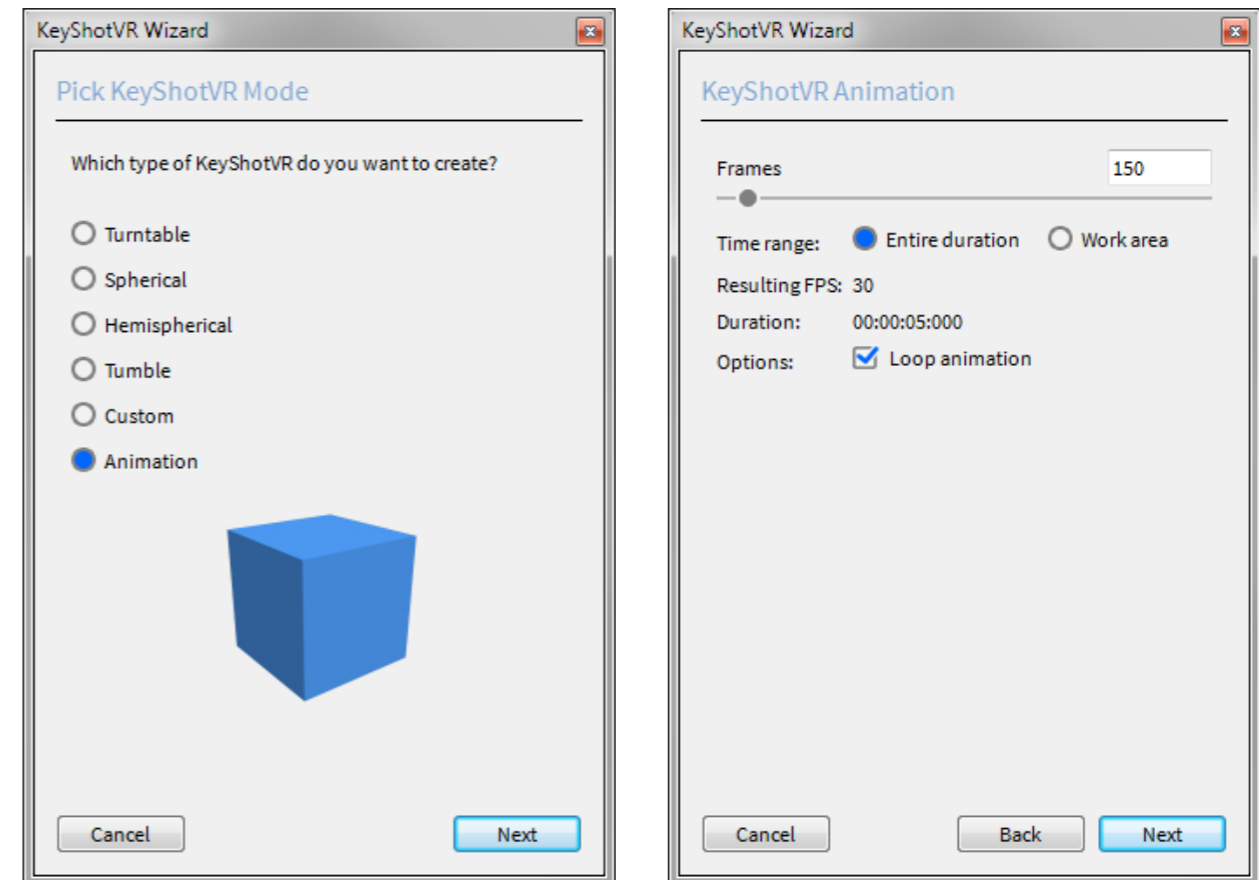
Object
Gives you the ability to select an object in the scene as a center of rotation.

Loop Animation
Will give an infinite looping in the browser.

Additional options can be made by selecting "Render options" at the end of the wizard.

KeyShotVR Render Output

Click :"Render Now" to render immediately, or click "Render Options" to open the render options window to review your VR settings. All the parameters set in the wizard can be edited in the render output window as well. In Addition, there are other options such as image quality, and outputting for an iPad. There is also an option in this window to output directly to a website you are managing.

From here, you can select render quality, queue, network, and more. See the section on rendering for more information

Smoothness Control
Animation Frames
If animation is applied to the scene you will be able to create a VR from this animation. Additional parameters will be shown if enabled.

Horizontal Frames
Controls the number of frames in the 'X' direction, the higher the number of frames the smoother your model will rotate.

Vertical Frames
Controls the number of frames in the 'Y' direction, the higher the number of frames the smoother your model will rotate.

Horizontal/Vertical Angle Increments
Sets the degrees between each frame, this value will change depending on the number of vertical and horizontal frames, and starting and ending angles.
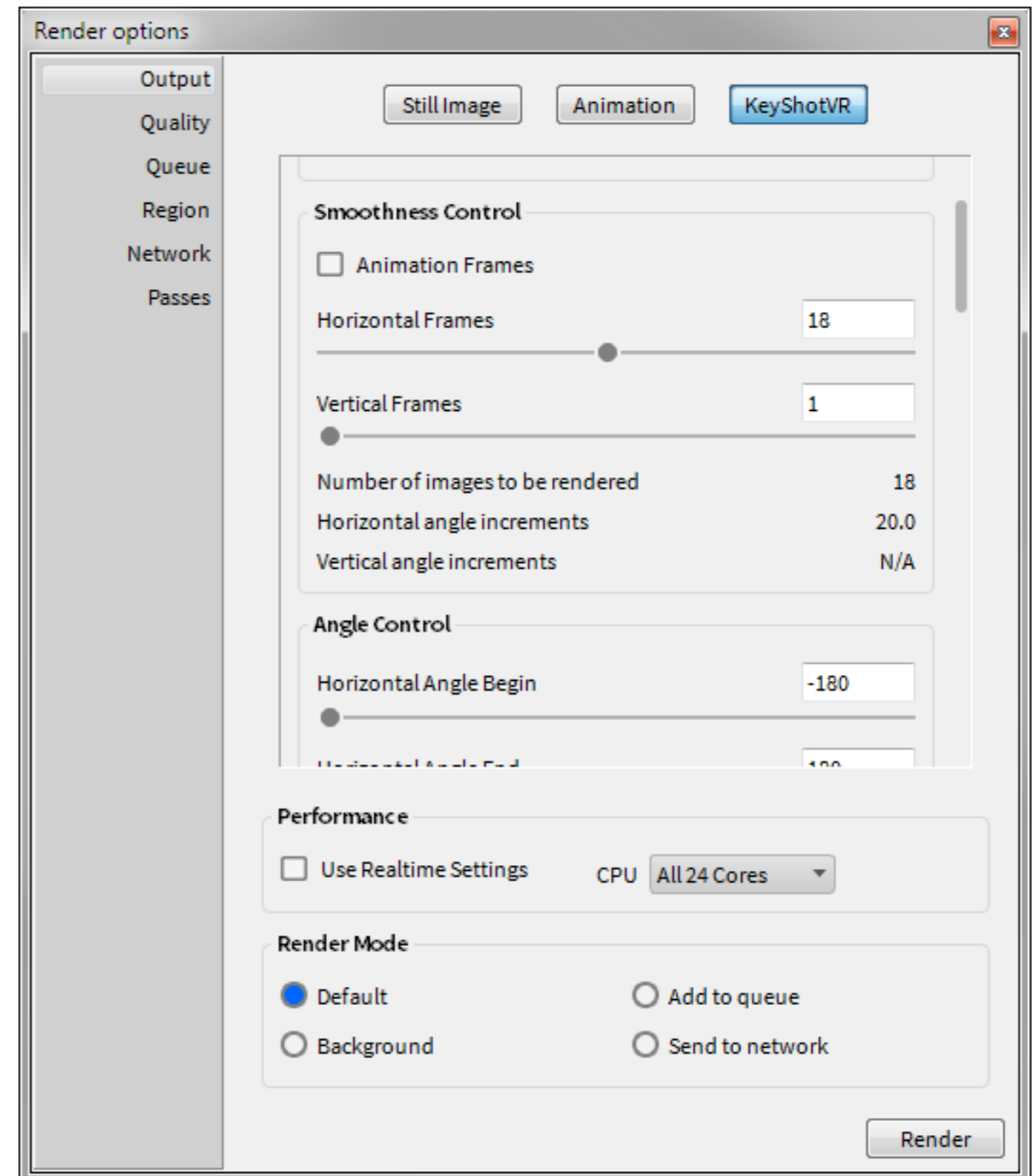
KeyShotVR Render Output

Angle Control
Use these sliders to control the beginning and ending of the VR.

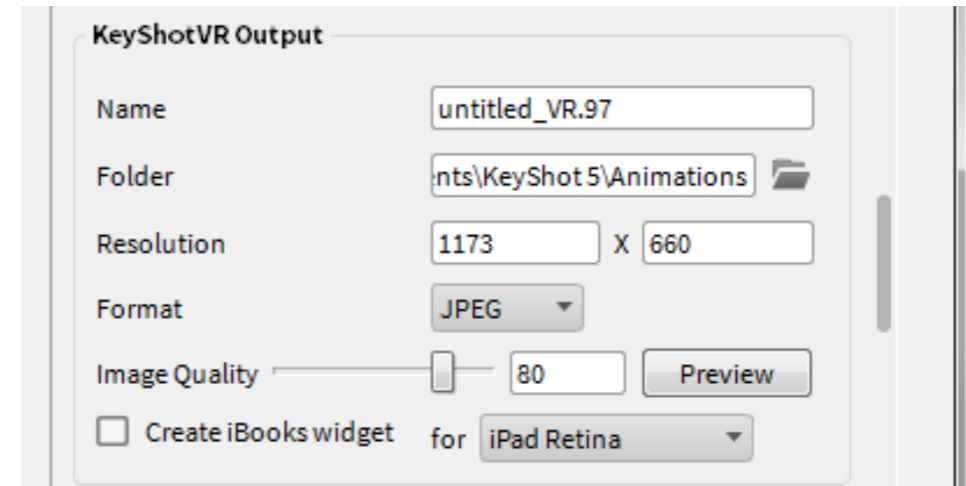Horizontal- controls the beginning and end of rotation on the 'X' plane.

Vertical- controls the beginning and end of rotation on the 'Y' plane.

VR Output
This section allows you to set up the resolution as well as the destination of the VR

Image Quality- selecting the "Preview" button will render one frame from the VR as well as a compression slider that allows adjustments to the quality of the image, and updates in realtime.

iBook Widget - if checked an HTML5 widget will be output in the same folder as your KeyShotVR that can be used inside of iAuthor to embed KeyShotVR. The type of iPad the KeyShotVR should be selected from the dropdown.

Advanced Settings

Advanced settings for KeyShotVR will be located on the same window as the custom settings, as a drop down menu. This menu will control how your VR interacts in the web browser.

Re-sizable GUI Button
If this field is checked, it will place a button on the VR in the webpage that allows you to resize to fullscreen or fixed window size.

Play GUI Button
If this field is checked, a play button will be placed inside your web browser, allowing interaction with the VR once pressed.

Allow Fullscreen Mode By Double-Click
Double-clicking left mouse button will enter fullscreen mode.

Loading Screen
The loading icon will be shown if the KeyShotVR is loading in the browser. This can be changed by selecting "Browse" and browsing to the image file.

Name of Div
This defines the VR section in the HTML code.

Rotation Damping
Increasing the value will increase the smoothness of the camera rotation when panning inside the web browser.

☐ Down-scale with browser width
☐ Add down-scale GUI button
☐ Add play GUI button
☑ Allow fullscreen mode by double-click

☑ Show loading screen

Maximum image size: 80x80

Default loading icon [Browse] [Reset]

Name Of Div [KeyShotVR]

Rotation Damping [96]

Mouse Sensitivity [100]

☐ **Zoom-In**

Maximum Allowed Zoom-In Percent [200]

KeyShot VR > Advanced Settings

Advanced Settings

Mouse Sensitivity
Controls the overall mouse sensitivity to the VR. Increasing this value will increase the model movement with less mouse movement.

Zoom-In
Enabling zoom-in will allow you to zone in to the VR when inside the browser.

FTP Deployment
This will allow your VR to be uploaded to a FTP site automatically.

Confirm Before Deployment
When the VR is finished rendering, you will be prompted to accept the deployment to the FTP site.

Generate Embeddable HTML Code
This will give you the code necessary for implementing your VR in a website using the iframe tag.

Embed FTP Settings in BIP File
This will save all the FTP credentials inside your BIP for easy deployment by another user.

Render Mode
KeyShotVR can be rendered using Default, Background, Network Rendering, and Queue for later processing of the VR.

Final Output

Once the VR has finished rendering, the web browser with the finished VR will be displayed. Additional settings can be set in the HTML code that was produced with the VR. You can find the HTML code along with all the render frames in a folder at your saved location.
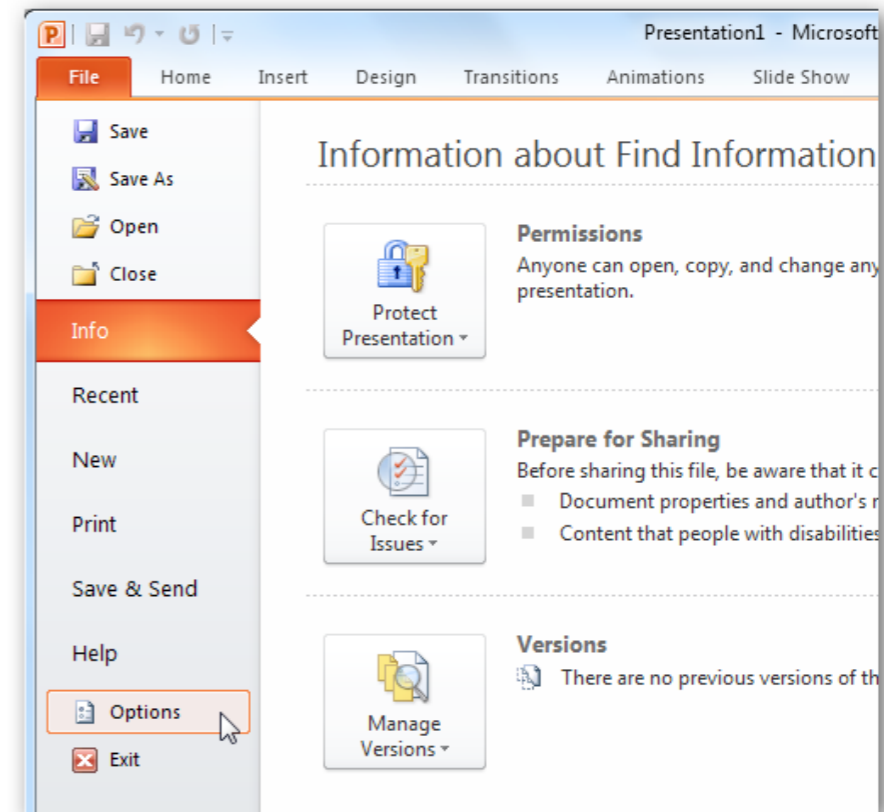
Embedding KeyShotVR in a PowerPoint Presentation

To embed KeyShotVR inside a PowerPoint presentation, you will need to download the LiveWeb add-in which can be found here: LiveWeb

Once it has downloaded, extract the files. In PowerPoint , open the Options window. In PowerPoint 2010, you can do this by clicking the File button and selecting Options; in PowerPoint 2007, click the Office orb and select Options. Select Add-Ins on the left side, then select PowerPoint Add-ins from the Manage menu, and click Go.

This will open the PowerPoint Add-ins window. Click Add New to add the LiveWeb add-in you downloaded previously. Browse to the folder you extracted the LiveWeb.ppam add-in and add it. PowerPoint may warn you that the add-in contains a macro. Click Enable Macros to continue.

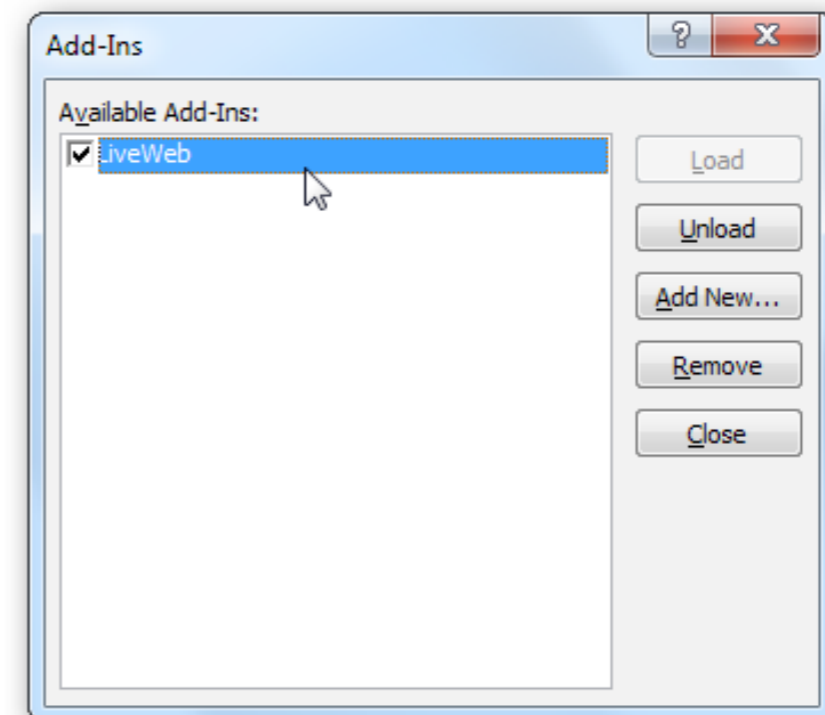You should now see the LiveWeb add-in in the Add-Ins window and you ready to add a KeyShotVR to your PowerPoint.

Embedding KeyShotVR in a PowerPoint Presentation

This will open the PowerPoint Add-ins window. Click Add New to add the LiveWeb add-in you downloaded previously. Browse to the folder you extracted the LiveWeb.ppam add-in and add it. PowerPoint may warn you that the add-in contains a macro. Click Enable Macros to continue.

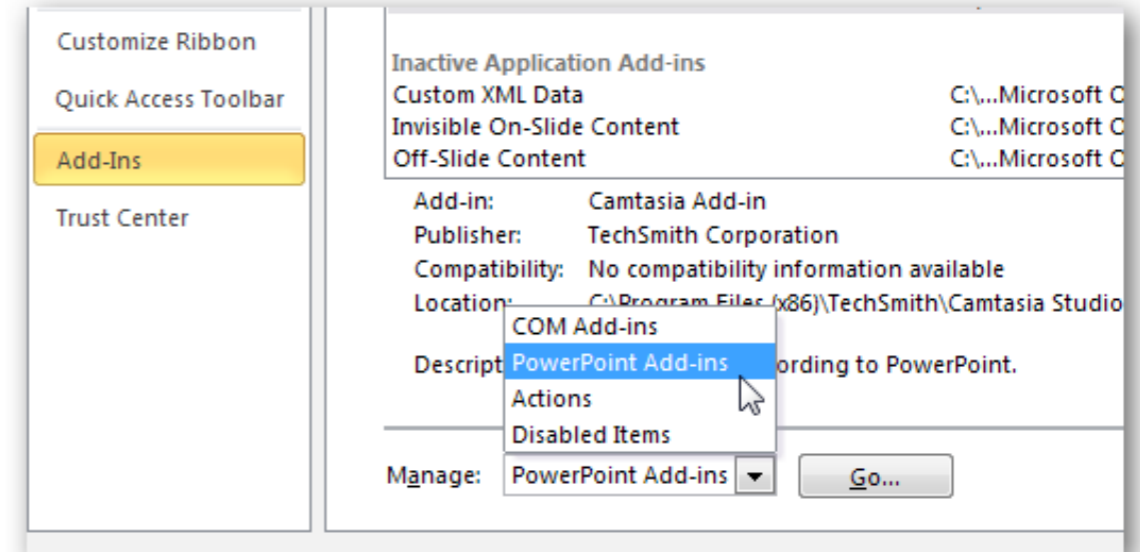You should now see the LiveWeb add-in in the Add-Ins window and you ready to add a KeyShotVR to your PowerPoint.

Embedding KeyShotVR in a PowerPoint Presentation

To add a KeyShotVR to your PowerPoint. From the Insert tab, select Web Page from the LiveWeb section.

This will open a quick wizard, that will guide you through inserting a webpage into your PowerPoint. If your KeyShotVR is stored on a webserver(e.g. website) you can use the URL, make sure to include http:// in front of the web address.

You can also add a KeyShotVR stored on your own machine. You will need to use the absolute filepath to the KeyShotVR html file(e.g. C:\Users\Luxion\Documents\KeyShot 3\Animations\KeyShotVR\ KeyShotVR.html)

Click Add, Next.

The remaining settings on the wizard can be configured any way. LiveWeb will let you know at the end of the wizard if the webpage was successfully added to the PowerPoint presentation.

You should now see a Windows 98 style logo inside your presentation of where the KeyShotVR will be located. You are able to resize and move the KeyShotVR inside the presentation, if you want.

To start viewing the KeyShotVR you will need to start the PowerPoint presentation(F5). You will now be able to interact with the KeyShotVR as though you are viewing inside a web browser. Additionally you can mark up the slide as you would with any other PowerPoint tools.