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**PowerSHAPE 2015 R2**

# **Reference Help**

**Delcam Render**



## **PowerSHAPE**

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### **Patent Information**

Emboss functionality is subject to patent number GB 2389764 and patent applications US 10/174524 and GB 2410351.

Morphing functionality is subject to patent application GB 2401213.

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# Delcam Render

Delcam Render generates photo-realistic images.



Not only can these images be used to improve the visualisation of a product, they can also be used for its promotion, for example, when

- Making presentations to sales and marketing staff
- Undertaking market research with potential retailers and customers.



*Delcam Designer, PowerSHAPE Pro, and Delcam Toolmaker include a licence to render with KeyShot. All other PowerSHAPE variants generate watermarked, rendered images.*

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## Using Delcam Render

Delcam Render is very easy to use:

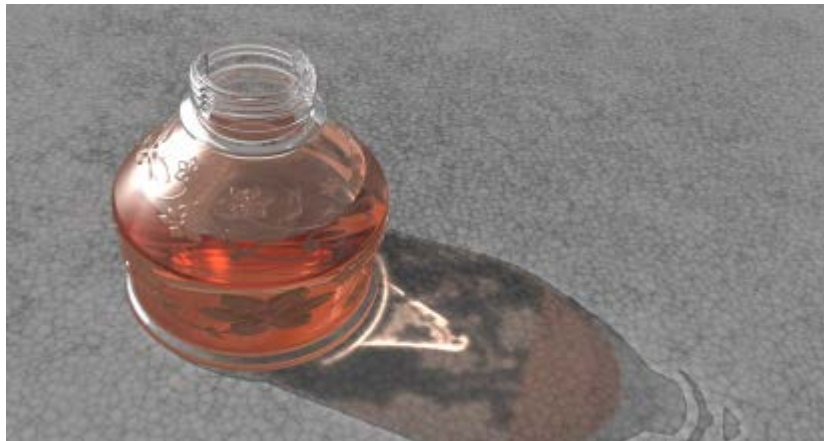
- Complete your model and position the view to the required orientation.
- Assign materials (see page 6) to your solids and surfaces.
- Wrap labels onto your objects (see page 19).
- Set your lights (see page 30).

- Render your view (see page 39) to create a photo-realistic image.
- For the adventurous, you can edit the materials (see page 10) to your own requirements, or even create your own.

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# Rendering

Rendering enables you to create stunning photo-realistic images of your model.



You are ready to render your scene when you have:

- Set up your scene, by creating and positioning objects in your imaginary world
- Added material to the surfaces (see page 6).
- Set up lights sources (see page 30).

## Rendering a scene

Use this option to render a model to create a photo-realistic image.


Before rendering a scene, make sure the solids and surfaces have the correct materials assigned (see page 6).




*Rendering a scene is a very easy operation, but it can be time-consuming.*

- 1 Orientate and position your model as required.
- 2 Click **Render** to render the image. The image is rendered using KeyShot in a separate window.

## Rendering using the Views toolbar

- 1 Ensure your model is shaded. Select the **Shaded**  button on the Views toolbar.

- 2 Click the **Render with KeyShot**  button on the Views toolbar.  
A new window is opened which contains the image.

- 3 You can go back to your original model using the **Window** menu.
- 4 KeyShot is the software that produces photo-realistic ray-traced images. KeyShot needs to be installed separate to Delcam software.

If it is not already installed, download and install (free of charge) by clicking **KeyShot** (<http://www.delcam.com/keyshot/download/>) or by running the installation again. Ensure you install the appropriate version (32-bit or 64-bit) according to the type of computer you are using.

## Rendering using POV-Ray

If you don't have a licence for KeyShot, you can export your model as a **.pov** file. This can be imported into POV-Ray and rendered.

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# Materials

A real-life object is made of material such as metal, plastic, or wood. A shaded object has a computer-simulated material to make it look realistic.

Material is important in the production of an image to enable the designer and customer to see what the finished product will look like.

When you shade surfaces and solids, the default material is automatically assigned to them. You change the materials of individual surfaces and solids to your requirements.

## Material types

There are various material types particularly suitable for rendered images.

- |                 |               |
|-----------------|---------------|
| ▪ Metal         | ▪ Silk        |
| ▪ Cast metal    | ▪ Spring      |
| ▪ Coated metal  | ▪ Summer      |
| ▪ Spark erosion | ▪ Tropical    |
| ▪ Marble        | ▪ Winter      |
| ▪ Wood          | ▪ Leather     |
| ▪ Autumn        | ▪ Textile     |
| ▪ Glass         | ▪ Textile 2   |
| ▪ Metallic      | ▪ Skin        |
| ▪ Muted         | ▪ Skin 2      |
| ▪ Neon          | ▪ Defaults    |
| ▪ Pastel        | ▪ Transparent |
| ▪ Satin         | ▪ Gems        |
| ▪ Standard      | ▪ Dental      |



*In shaded view, the true representation of these materials is not shown.*

## Changing the material of selected surfaces and solids

The default material is assigned to surfaces and solids when you shade them and don't edit their material.

You can change the materials to your requirements as follows:



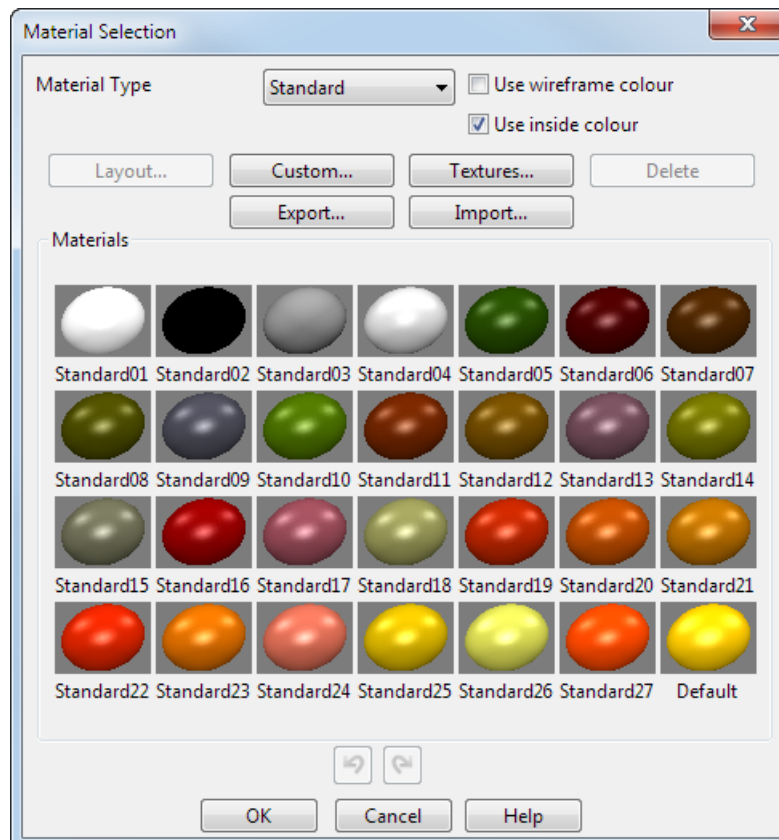
- 1 Select the required surfaces and solids.
- 2 From the **Format** menu, select **Materials** to display the **Material Selection** dialog (see page 7).
- 3 Select a new material from the dialog.
- 4 Click **OK** to change the material of the selected objects.
- 5 If the view is not already shaded, shade it to see the new material by selecting **Shaded** from the **Shading** options on the **View** menu.

## Using the material of an assembly component

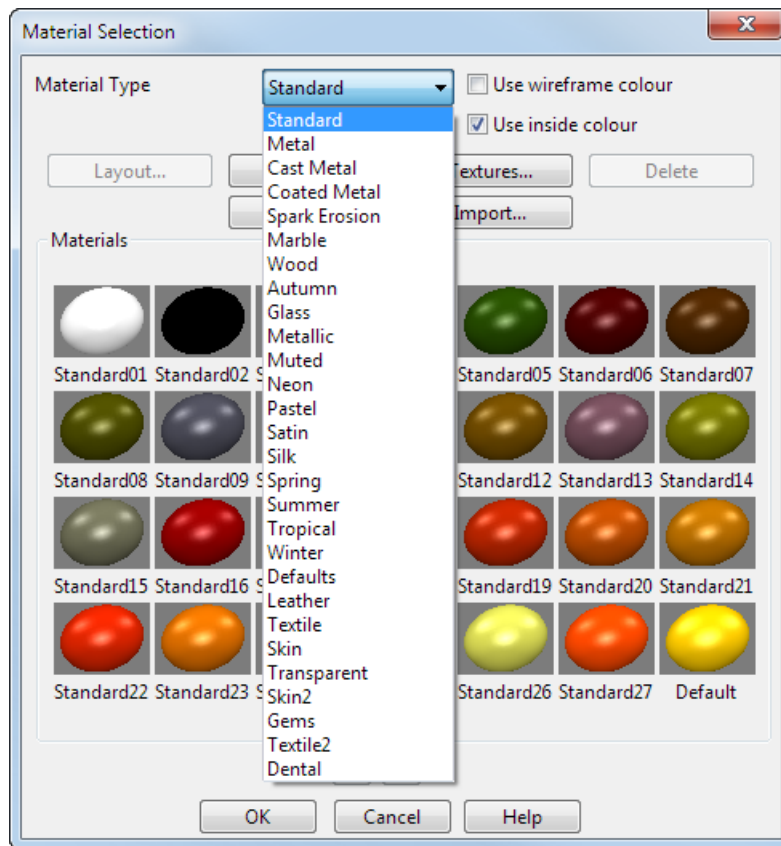
Delcam Render uses the material of an assembly component as long as the **Use material/style of sub-items** option is selected on the context menu in the assembly tree. This option is selected by default when an assembly component is created.

## Material Selection dialog

Use this dialog to change the material of selected items.



- 1 Select a **Material Type** from the list of available types. Each type has its own material range.



- 2 Select **Use wireframe colour** to shade the surface or solid using the colour of their wireframe. Deselect this option to use the default material.
- 3 Deselect **Use inside colour** to use the outside material on the inside as well. Select the option to use a red material for the inside.

You can change the inside colour from red by setting the **inside\_colour** resource in the **powershape.con** file.

You can see an example of the inside\_colour resource in

.....\sys\misc\powershape.con

where ...\ is the path to your PowerSHAPE files, usually

c:\Program Files\Delcam\powershapeXXXXX

The colour is specified as three components, red, green and blue, each in the range 0-1.

To set the inside colour to yellow, use the following values:

**inside\_colour: 1.0, 1.0, 0.0**

Restart PowerSHAPE use the new **inside\_colour**.

- 4 Click **Layout** to display the Label Editor dialog (see page 20). This allows you to edit the layout of a leather material in the same way as you would edit a label.



*This option is only available when a leather material is selected.*

- 5 Click **Custom** to display the Material Editor dialog (see page 10). This dialog enables you to edit existing materials or create your own material effects.
- 6 Click **Textures** to create custom texture materials using the **Texture Material Creator** dialog.
- 7 Click **Delete** to delete the selected material.



*This option is available only if you have a customised material selected. You cannot delete standard materials that are provided by PowerSHAPE.*

- 8 Click **Export** to export materials using the Export Materials dialog (see page 17). You can export:
  - a group of materials.
  - a single material.
  - all materials.
- 9 Click **Import** to import materials (see page 15) using the Select CSV file to Import Material dialog (see page 16).
- 10 Select a material by clicking one of the balls. When you select an option from the **Material Type** option menu, the material displayed on the balls is updated.
- 11 Click **OK** to accept the edits to the material and remove the dialog from the screen.

When you have finished with materials, click **OK** to make the changes available or **Cancel** to discard the changes.

## Changing the default material

If you do not assign a material to a surface or solid, the default material is assigned when you shade it.

You can change the default material to the most commonly used one in your model.

- 1 Ensure that there are no objects selected.
- 2 From the **Format** menu, select **Materials** to display the Material Selection dialog (see page 7)
- 3 Select a new material from the dialog.

- 4 Click **OK** and the new material will be used for colour shading subsequent surfaces and solids.

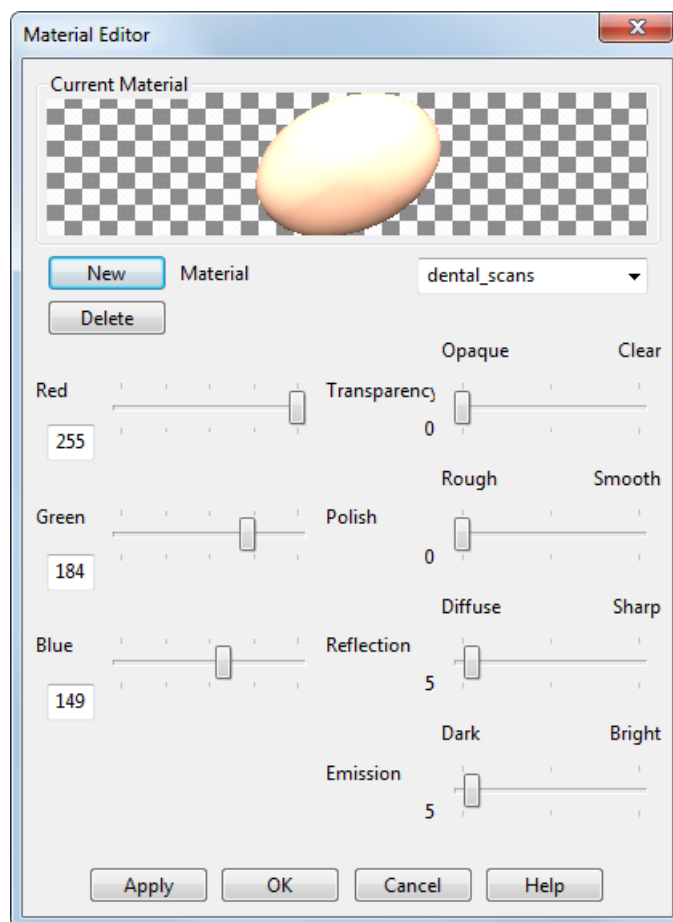
## Creating a customisable material

You can make a customisable copy of a material.

- 1 From the **Format** menu, select **Materials** to display the Material Selection dialog (see page 7).
- 2 Select the material you want to customise.
- 3 Click **Custom** to display the Material Editor dialog (see page 10).
- 4 Use the dialog to create a new material.

## Material Editor dialog

Use this dialog to edit existing options or create your own effects for a material.



- 1 Click **New** to create a new material as defined by the current slider settings. A default name is given to the material, which is displayed in the **Material** text box.

Use the **Material** text box to edit the name of the new material .

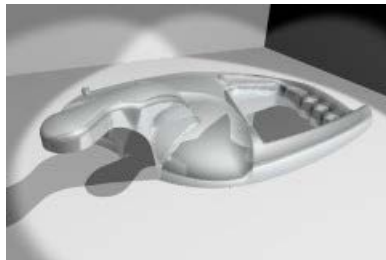
- 2 Click **Delete** to delete the selected user-defined material. You cannot delete a standard material.
- 3 Use the sliders to adjust the effects on a user-defined material.  
For the colours, **Red**, **Blue**, and **Green**, you can also enter values in the text boxes.

The rendering effects from the changes you make on this dialog depend on the original material. For example: if you started with a metal, only the colour changes will take effect in rendered images.



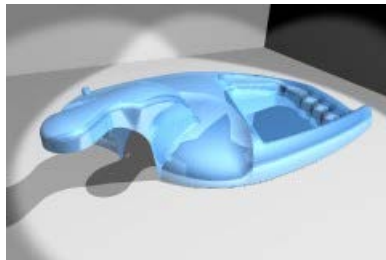
*You can't change any properties for the wood materials. You can change most of the properties for most of the simple materials such as Satin and Autumn.*

The model in the image below is made using **Aluminium** from the **Metals** materials.



*Aluminium*

Below, the model uses a custom copy of Aluminium with its colour changed.



*Blue Aluminium*

- 4 Click **Apply** to save the changes you have made. The dialog remains on the screen for you to continue making changes.
- 5 Click **OK** to save the changes made and removes the dialog from the screen.

## Assigning a custom material to a surface or a solid

If a surface or a solid is selected when you create the new material, the material is automatically assigned to the object. You can assign the material to other objects too.

- 1 Select the surfaces and solids.

- 2 From the **Format** menu, select **Materials** to display the Material Selection dialog (see page 7).  
Click **Custom** to display the Material Editor dialog (see page 10).
- 3 Select the required material from the **Material** selector.
- 4 Click **OK**.

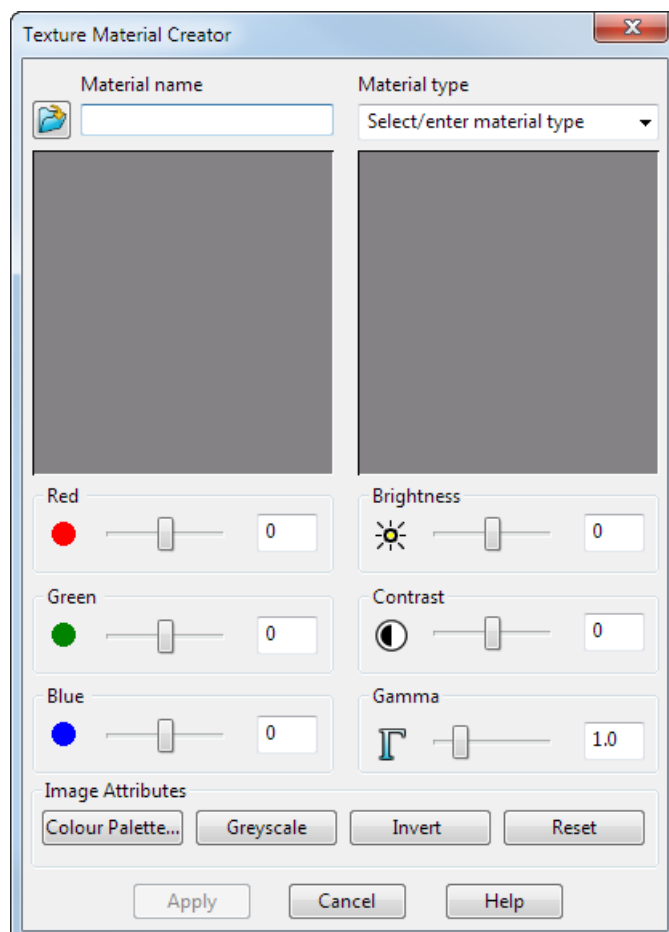
## Creating a Texture material


You can create a textured material based on an image file. This is saved to the shareddb for use with your models.

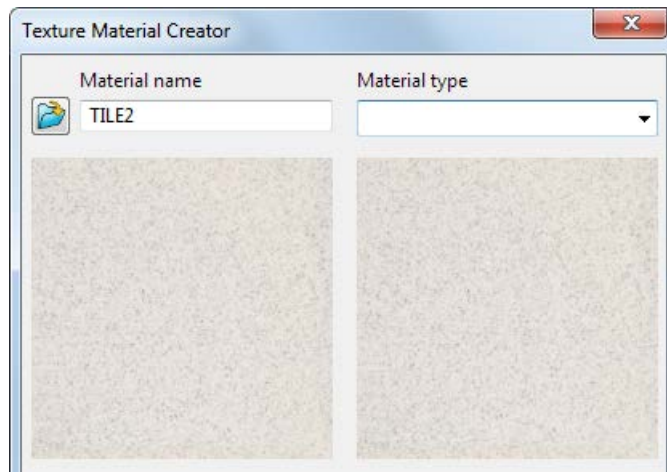
- 1 Select the required surfaces and solids.
- 2 From the **Format** menu, select **Materials** to display the Material Selection dialog (see page 7).
- 3 Click the **Textures** button to display the Texture Material Creator dialog (see page 12).

## Texture Material Creator dialog

Use this dialog to create a textured material based on an image file. This is saved to the [shareddb](#) for use with your models.



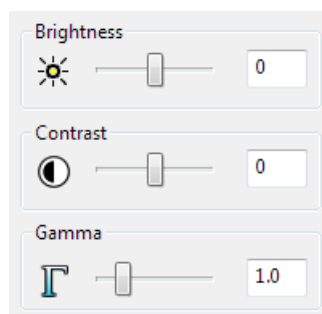
- 1 Click  to display the **Load Image File** dialog.
- 2 Select the texture you want. You can use any image file as the basis of a new texture material. The selected image will be displayed in both windows of the **Texture Material Creator** dialog:



- 3 If required, enter a new **Material name**. This name will be used when you save the texture material.
- 4 If no appropriate **Material type** exists, enter a new type in the box. This will be added to the **Material type** list available in the **Material Selection** dialog.

Typically, you might create a new **Material type** called *My Materials* to hold all the customised textures materials that you have made.

- 5 Use the **Red/Green/Blue** sliders to adjust the colour of the image or enter a value in the adjoining box. The updated image is displayed in the right hand window of the dialog.
- 6 Use the **Brightness/Contrast/Gamma** sliders to adjust the appearance of the image or enter a value in the adjoining box. The updated image is displayed in the right hand window of the dialog.



- 7 Use the **Image Attributes** to make changes to the underlying attributes of the image.

**Colour Palette** — Opens the colour palette in normal way. The colour you select is applied to the image.

**Greyscale** — Converts the image in greyscale.

**Invert** — Inverts the colours in the original image. The updated image is displayed in the right hand window of the dialog.

**Reset** — The changes you have made using the slider controls and values are ignored and the updated image reverts to the original image.

- 8 Click **OK** to update the image file. The image will be added to the custom Material Type that you have chosen. The textures are added to the *Material Type* folder that is stored in the *Textures* folder of the *shareddb* folder. For example,

C:\Program Files\Common Files\Delcam\shareddb\textures\My  
Materials\mytexture.jpg

## Creating glass objects

A glass bottle generally consists of an outer and an inner surface. For an object like this to be rendered correctly, the outer surface must face out and the inner surface must face in.

If you get it right, you get a bottle.



*A Green Bottle*

If you get it wrong, you get a glass solid.



*A Green Solid*



## What are labels and textures?

A label is made from an image and wrapped onto an object to generate stunning photo-realistic quality images.



A texture is also an image that is wrapped onto an object like a label. We supply a library of images containing textures for you to use.

Labels and textures are both added in exactly the same way.

## Importing Materials

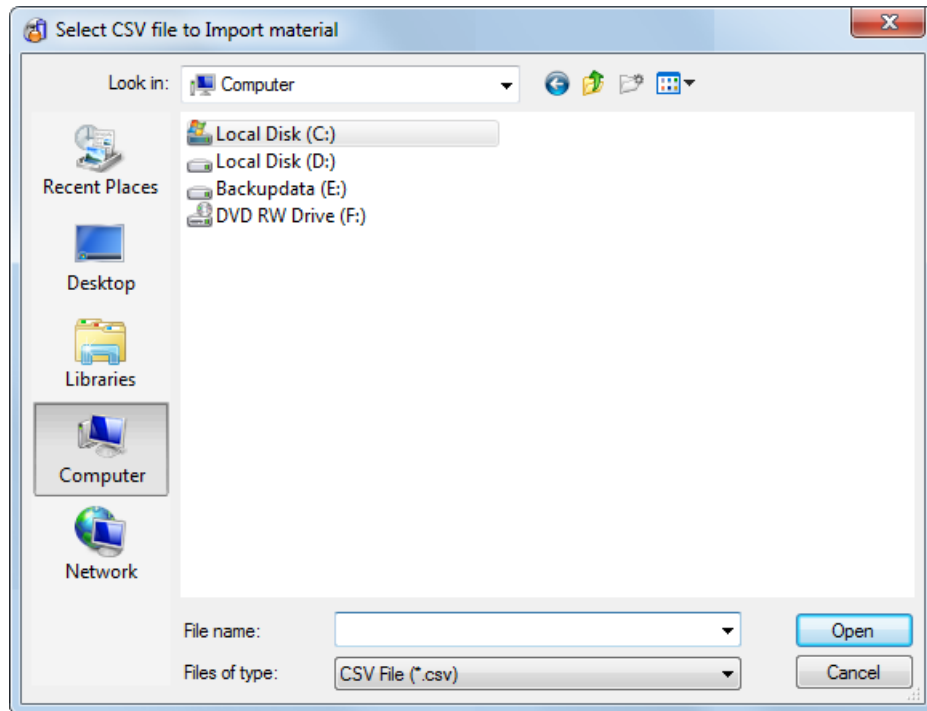
In order to import materials you must have a .csv file that has been created previously. A .csv file is created automatically when you export materials using the **Export Materials** option on the Material Selection dialog (see page 7). For further details, see Exporting data from a model

If you want to import user-created materials you must create a .csv file manually.

- 1 Select **Format > Materials** to display the Material Selection dialog (see page 7).
- 2 Select **Import**. The Select CSV file to Import material dialog (see page 16) is displayed. For further details see, Creating a csv file for materials

## Select CSV file to import material dialog

Use this dialog to select CSV files to import materials.



- 1 Navigate to the required folder and select the valid .csv file containing the materials data that you wish to import into your database required file.



*In order to import materials you must have a .csv file that has been created previously. A .csv file is created automatically when you export materials using the **Export Materials** option on the Material Selection dialog (see page 7). If you want to import user-created materials into PowerSHAPE you must create a .csv file manually.*

- 2 Click **Open** to import the materials data contained in the .csv file.



*You must restart the program after importing materials in order to make the materials available for use.*

## Exporting materials

- 1 Select **Format > Materials** to display the Material Selection dialog (see page 7).
- 2 Select **Export**.

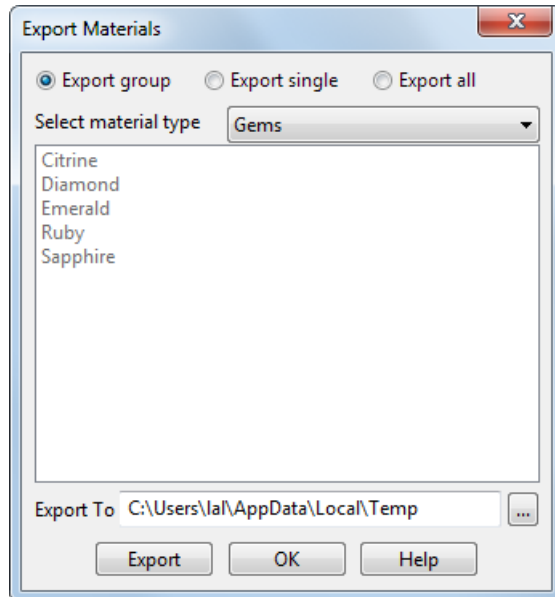
This option exports the following:

- A group of materials.
- A single material.


- All materials.

## Export Materials dialog


Use this dialog to select materials to export.



### To export a group of materials


- 1 Select **Export group** to export a group of materials.
- 2 From the **Select material type** list, select the group of materials that you want to export.
- 3 Enter the **Export To** path or click the Browse  button to specify the path to the new *ExportMaterials* folder that is created to hold the materials images and the .csv file for your exported materials.
- 4 Click **Export**.
- 5 Click **OK** to export the group of materials and close the dialog.

### To export a single material

- 1 Select **Export single Material** to export a single material.
- 2 From the **Select material type** list, select the group of materials that you want to export from.
- 3 From the list of corresponding materials displayed in the dialog, select the specific material you wish to export.
- 4 Enter the **Export To** path or click the Browse  button to specify the path to the new *ExportMaterials* folder that is created to hold the materials images and the .csv file for your exported materials.
- 5 Click **Export**.

- 6 Click **OK** to export the material and close the dialog.

#### To export all materials

- 1 Select **Export all** to export all materials.
- 2 Enter the **Export To** path or click the Browse  button to specify the path to the new *ExportMaterials* folder that is created to hold the materials images and the .csv file for your exported materials.
- 3 Click **Export**.
- 4 Click **OK** to export all materials and close the dialog.



*Care must be taken if you modify the .csv file. If the .csv file is damaged, the Import Materials (see page 15) function, that you use to import the images into PowerSHAPE, will fail.*

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## Label wrapping

You can create a label from an image file and wrap it onto an object as follows:

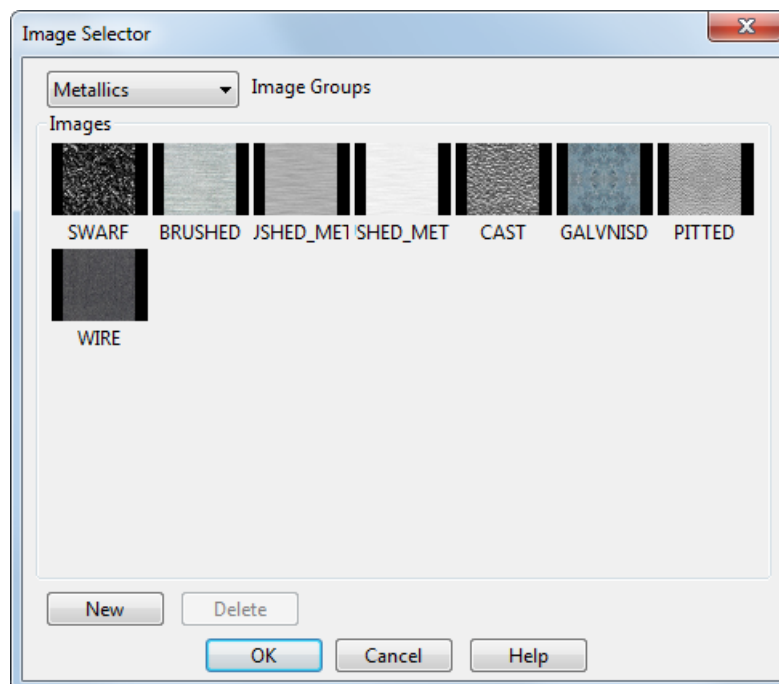
- 1 From the **View** menu, select **Shading**.
- 2 From the sub-menu, select **Shaded** to shade your model.
- 3 Select surfaces or solids.
- 4 From the **Format** menu, select **Labels**.

If no labels are available, the **Image Selector** dialog is displayed so that you can select an image from which to create a label. For further details, see Image Selector dialog (see page 19)

If labels are available, the **Label Selector** dialog is displayed so that you can select a label to add to the objects. For further details, see Label Selector dialog (see page 28).

## Image Selector dialog

Use this dialog to select an image to use as a label. You can also create new image groups and delete selected images from the **User** group.



- 1 Select an option from the **Image Groups** drop-down list- This contains the types of images available such as wood, metallic and woven. When you select an image group, the images for that group are displayed on the dialog.

- 2 Select an image to use as a label by clicking one of the preview buttons in the **Images** section
- 3 Click **OK** to create a label from the selected image and wrap it onto the selected objects. The **Label Editor** dialog (see page 20) is displayed.

### User image group

Use the following buttons on the dialog to specify the contents of the User image group:

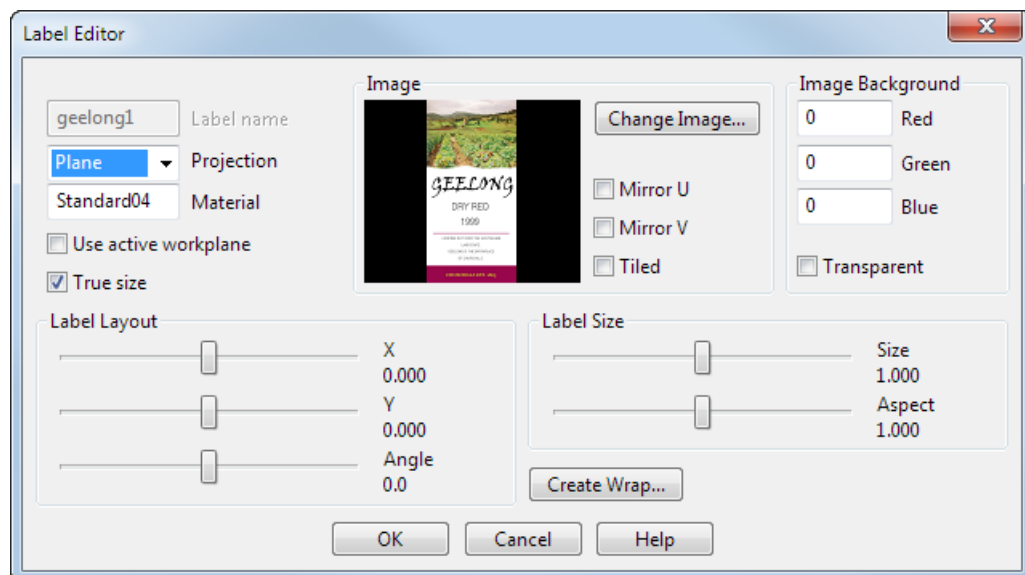
- Click **New** to open the **Load Image File** dialog for you to select a new image file to put in the selector. When you add your own image, it appears in the **User** image group.
- Click **Delete** to remove the selected image from the **User** image group



*The images in the **User** image group are only available in the current PowerSHAPE session. The image is stored temporarily in the model while you are working on it.*

## Label Editor dialog

Use the options on this dialog to edit the label on the selected objects.



The selected image appears as a label on the objects, ready for editing.



GEELONG

DRY RED

1999

CHURCHILLS EST. 1865

**Label name** — This is the name of the label.

**Projection** — This determines how the label is projected onto the objects.

- **Cylinder** — This projects the label as a cylinder onto the objects.

The label is fitted onto the objects along the vertical axis of the screen. It is then projected on the objects from the bounding cylinder around them.

Before selecting this option, make sure the objects are displayed in a view such that the vertical axis of where you want to put the label is aligned with the vertical axis of the screen.



*If a single primitive cylinder is selected, the label is fitted onto it, regardless of its orientation.*

- **Plane** — This projects the label as a plane onto the objects.

To position the label correctly, view the objects on the screen so that you are looking directly at the area where the label will be placed. Then select the **Plane** option. If the option was already selected before you adjusted the position of the objects, select it again after adjusting the position.



*If a single primitive plane is selected, the label is fitted onto it, regardless of its orientation.*

- **Arc** — This option is only available for untrimmed surfaces. It projects the label using distances along the objects.

- **UV** — This projects the label using the parameter space of each object.

**Material** — The material used by the label is displayed. This material determines the reflection properties of the label. These properties will only be visible when you render the model.

**Use active workplane** — If selected, the active workplane is used to position and orient the label. The label will be centred on the workplane origin and its vertical axis will be aligned with the Y axis of the workplane.



*The workplane is not stored with the label. So if you edit the label later and change its projection type when the workplane is no longer active, you will get a different result.*

**True size** — If selected, cylindrical and plane labels based on .tif, .jpg and .dmt file formats have their aspect ratio and size preserved if they have length units. If they have no length units, only the aspect ratio is preserved.

**Label Layout** — Adjust the position of the label using the sliders. The values are proportions of the projection space. The projection space is determined from the option on the **Projection** menu.

Use the **X** slider to move the label in the X direction **1**.





Use the **Y** slider to move the label in the Y direction **2**.



Use the **Angle** slider to rotate the label.



*For fine adjustment of the sliders, use the arrow keys on the keyboard or the mouse wheel.*

**Label Size** — Adjust the size of the label using the sliders. The values are proportions of the projection space.

Use the **Size** slider to scale the label in all directions.



Use the **Aspect** slider to scale only the height of the label.



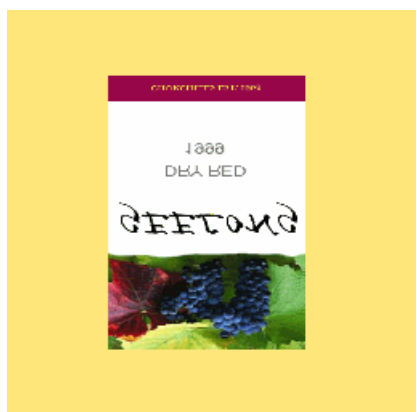
**Image** — Use the options in this section to edit the label image.

**Change Image** — Click this button to display the **Image Selector** dialog so that you can select another image.

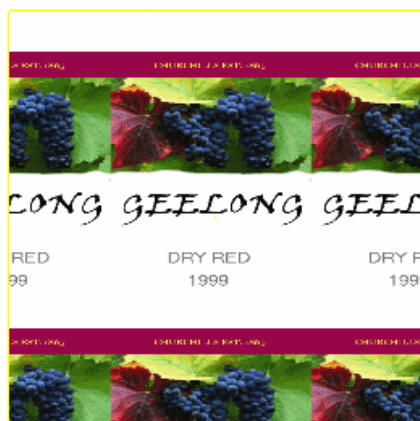
**Mirror U** — Select this option to mirror the image along the U axis of the object.



**Mirror V** — Select this option to mirror the image along the V axis of the object.



**Tiled** — Select this option to repeat and tile the image to cover the entire area of the selected objects.



**Image background** — Use this option to define the background colour of the image.

**R, G, B** — Use these values to specify the colour in the image which is considered to be the background. You can either enter the values or click a colour on the image on the dialog.

**Transparent** — If selected, the background colour is transparent on the label.

**Create Wrap** — This displays the **Wrap Wizard - Chord Length Wrap Map Creation** dialog (*Surface modelling*) (see page 25) where you define how the label is applied to the selected object.



*Before you create the wrap, make sure you have an active workplane where you want the label to be positioned.*

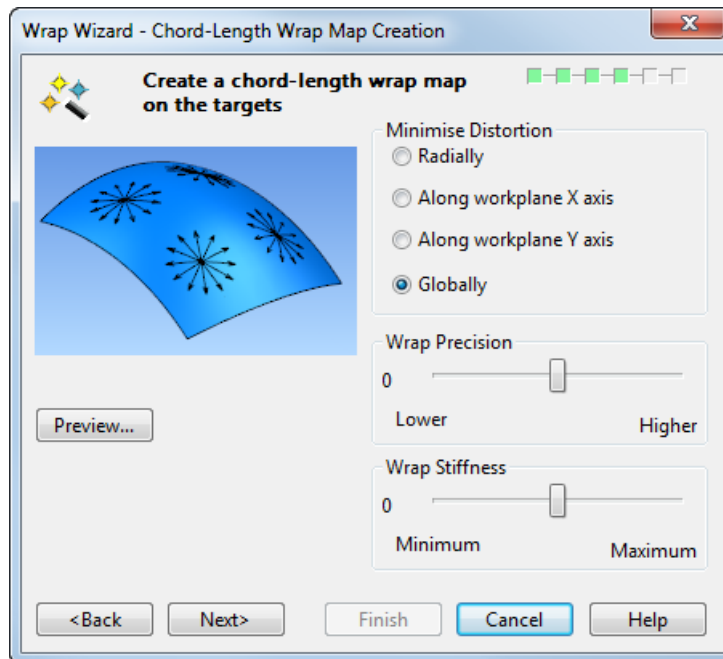
**OK** — Click this option to accept the edits to the label and displays the **Label selector** dialog (see page 28).

## Wrap Wizard - Chord Length Wrap Map Creation

Use this page of the **Wrap Wizard** to define how the Chord wrapper is applied to the target object.

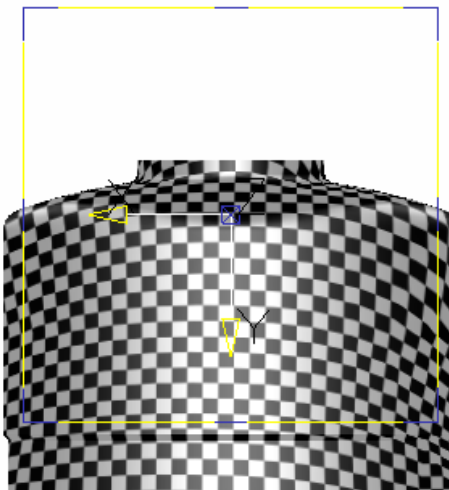


The wrap map is a 2D coordinate system for a triangulated surface. It is displayed as a black and white chequerboard effect on the target object.

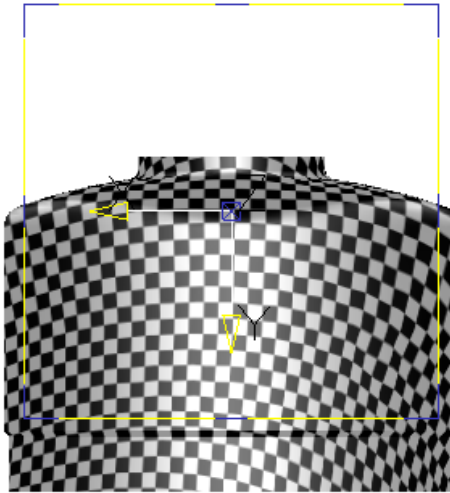


**Minimize Distortion** — Allows you to select where to minimize the distortion caused by the wrapping process. Select one of the following:

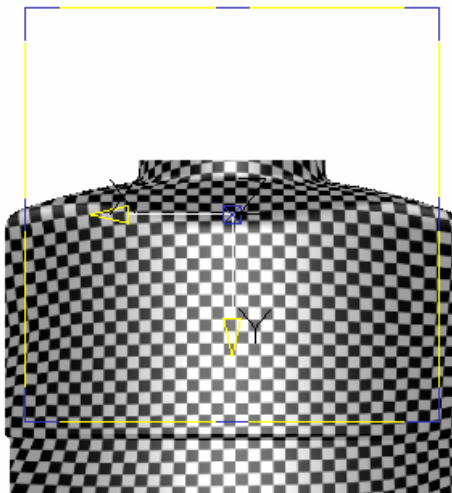
**Radially** — This option works most successfully with square-shaped target objects.



**Along workplane X axis** — This is the default option. This provides straighter lines and more even spacing along the X axis of the target object.



**Along workplane Y axis** — This provides straighter lines and more even spacing along the Y axis of the target object.



**Globally** (*recommended*) — minimises the distortion equally over the whole surface, preserving the shape of the wrapper as well as possible. When this option is selected, **Wrap Precision** is unavailable.



*This method is only suitable for open targets; the target cannot be closed or tubular. The target may contain holes.*

**Wrap Precision** — Move the slider to adjust the precision of the wrap map to reduce distortion if necessary. **Higher** gives the best wrap quality but the wrap map takes longer to create. The default position is **Normal**.

**Wrap Stiffness** — Move the slider to adjust the preservation of large triangle areas, by changing their wrapping angle. **Maximum** stiffness reduces wrapping angles and preserves large triangle areas.

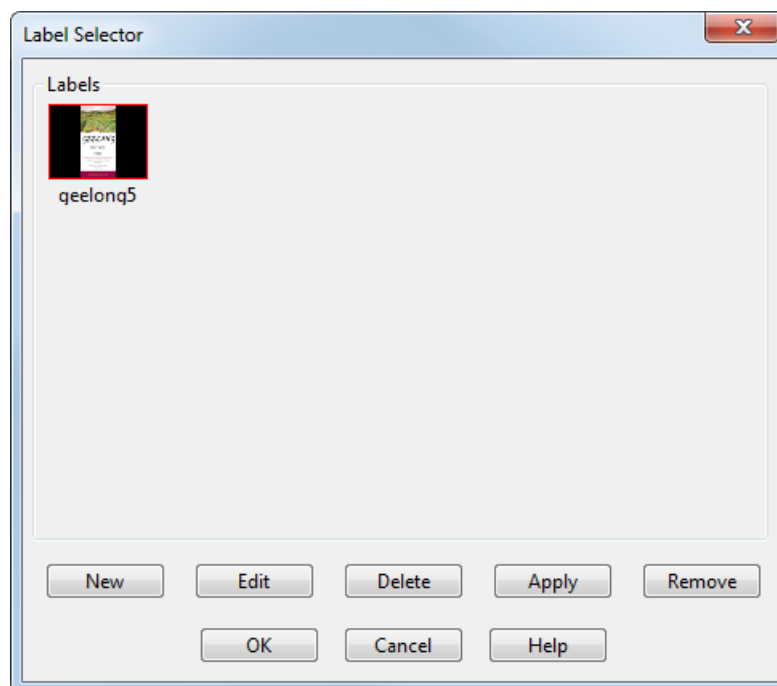
**Minimum** stiffness increases wrapping angles of triangles for greater curvature. This is useful to prevent the flipping of triangles during the wrapping process. The default position is Normal.

**Preview** — This creates the wrap map and displays it as a chequerboard effect on the target object.

**Next** — The Wrapper Layout page of the **Wrap Wizard** is displayed.

## Label Selector dialog

Use this dialog to select a label to use on the selected objects. This dialog is displayed when you click **OK** on the **Label Editor** dialog (see page 20)



**Labels** — This section displays thumbnail images of all the labels available in the current PowerSHAPE session. To select a label, click the appropriate thumbnail.

**New** — Opens the **Load Image File** dialog for you to select a new image to put in the selector.

**Edit** — Opens the **Label Editor** dialog so that you can edit the selected label.

**Delete** — Deletes the selected label from the current PowerSHAPE session.

**Apply** — Wraps the selected label onto the selected objects.

Use the dialog to wrap a label onto a new selection of objects. An object can have only one label. You can use the same label on many objects.

**Remove** — Removes the selected label from the selected objects.

**OK** — Removes the dialog from the screen.

**Cancel** — Cancels the changes you have made since you selected **Labels** from the **Format** menu. The dialog is removed from the screen.



*You may find that an existing label is not displayed on the selected objects. Try changing the **Projection** options on the **Label Editor** dialog (see page 20). Click **Edit** to display this dialog.*

## Editing a label on an object

You can edit the label on an object, for example to remove the label or change its image. If other objects use the label, some edits will change the appearance of those objects too. For example, changing the label's image.

- 1 Select the object.
- 2 From the **Format** menu, select **Labels** to display the **Label Selector** dialog.
- 3 Use the **Label Selector** dialog (see page 28) to edit the label.

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# Lights

Lights illuminate the rendered image to produce real-life lighting conditions, making the shading and the shadows look more realistic.

You can add lights to focus on the main object in a scene to emphasize its importance.

## Changing lights in the light studio

Use this dialog to set up the lights. You can set the direction of the lights onto the model. You can also set spotlights.

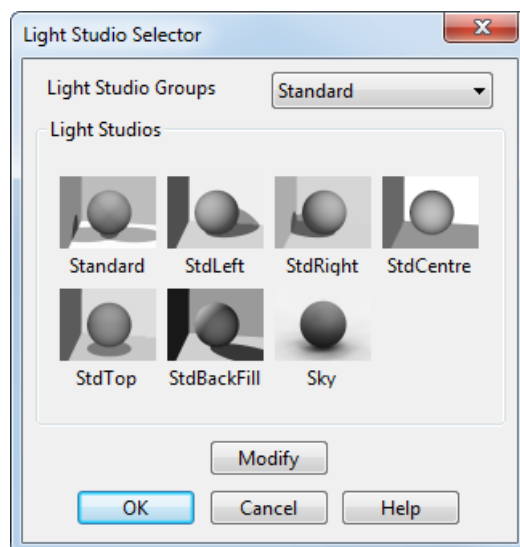
From the **Format** menu, select **Lights** to display the Light Studio Selector dialog (see page 30).



*For rendered views, you override the settings on the **Light Studio Selector** dialog using the **Render** dialog.*

## Light Studio Selector dialog

Use this dialog to set the lights used in shaded and rendered views.



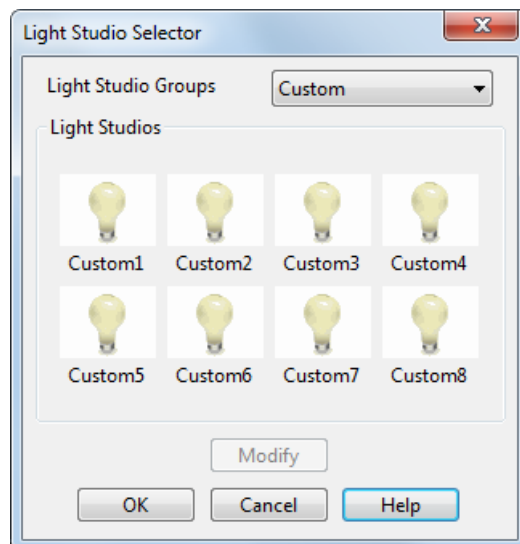
- 1 Select one of the following **Light Studio Groups** from the list:
  - **Standard** — These are the default lights used in the modelling views. **Standard** lights are located at infinity and their directions are specified relative to the camera.
  - **SingleSpot** — Displays a selection of 8 single spotlight options.
  - **TwinSpots** — Displays a selection of 8 twin spotlight options.



- **Observer** — Spotlights are positioned in the model relative to the current view. Once spotlights are positioned and you rotate the view, the spotlights move.
  - **Custom** — Displays customisable **Light Studios** as thumbnails. A light bulb thumbnail indicates an unused light studio.
- 2 Select the direction of the lights from the **Light Studios** options. The default light set is **Standard**. Select from the following light sets:
    - **Standard**
    - **StdLeft**
    - **StdRight**
    - **StdCentre**
    - **StdTop**
    - **Sky**
  - 3 Click **OK** to save the changes and close the dialog. If the view is shaded, you can see the changes on the screen.

## Light Studio Selector dialog - Custom settings

Use this dialog to create customised lighting.



- 1 Select **Custom** from **Light Studio Groups** list. This displays customisable **Light Studios** as thumbnails. A light bulb thumbnail indicates an unused light studio.
- 2 Select a thumbnail.
- 3 Select **Modify** to display the Modify Lights dialog (see page 32). Use this dialog to customise the selected **Light Studio**.
- 4 Click **OK** to save the customised light studio and remove the dialog from the screen.

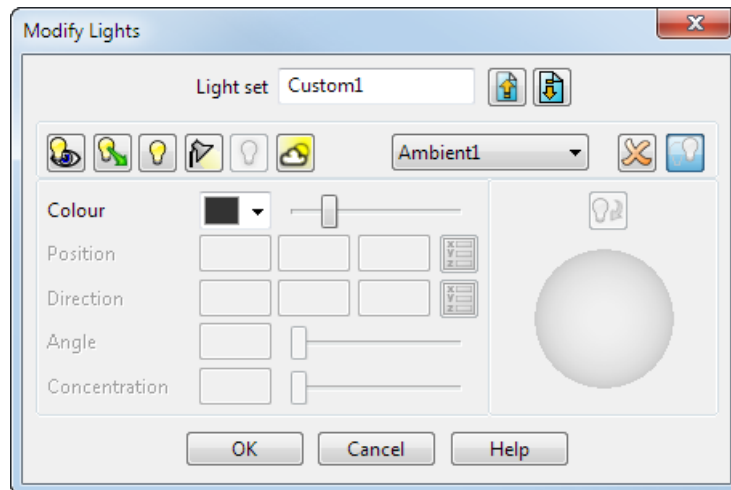
## Modify Lights dialog

You use this dialog to customise the light set for your selected **Light Studio**.


An unused **custom** light set contains a copy of the current light set. By default this comprises:


- one ambient light
- three observer lights

You can add up to eight lights to each light set in any permutation, but you can have only one ambient light in a light set.

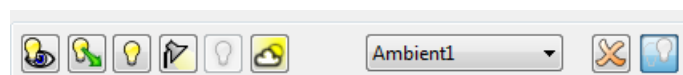



### 1 Enter the new name for the **Light set**

 **Import** — Click this button to import a light set. The **Import** dialog is displayed.

 **Export** — Click this button to export this light set. The **Export** dialog is displayed.

### 2 Add lights to your light set by clicking any of the light buttons.




The lights added to the light set are displayed in the list. To remove a selected light from the list click the **Delete**  button.



**Create an observer light.** This light points in a straight line to infinity. The light is fixed and does not move with the model when rotated. You can specify the following:


- Colour
- Direction of the light.

Enter the coordinates for the direction of the light or click  to enter the coordinates using the Position dialog. You can also use the **tracker ball** on the dialog to move the light over the model.



**Create a directional light (point).** This light points in a straight line to infinity. The light is relative to the model and moves with the model when you rotate it. You can specify the following:

- Colour
- Direction of the light.


Enter the coordinates for the direction of the light or click  to enter the coordinates using the Position dialog. You can also use the **tracker ball** on the dialog to move the light over the model.





**Create a positional light.** This radiates light in all directions and is similar to a hanging light bulb. The light is relative to the model and moves with the model when rotated. You can specify the following:

- Colour
- Position of the light.

The position of the light is indicated by the star symbol. Drag the star to change the position of the light. Alternatively, enter the coordinates for the position of the light or click  to enter the coordinates using the Position dialog.



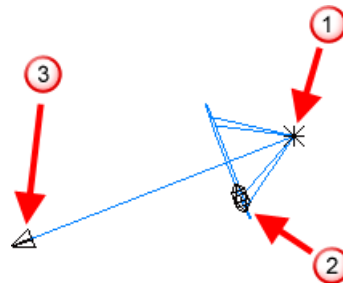


**Create a spotlight** shines the light in a specified direction from a specified position. The light is relative to the model and moves with the model when you rotate it.


Specify the following options:

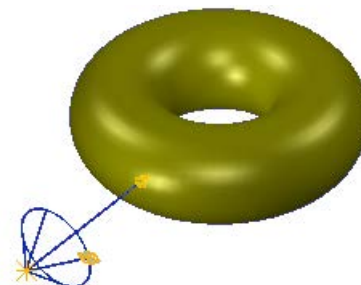
- **Colour.**
- **Position** of the spotlight.
- **Direction** of the light.
- **Angle** of the pool of light. You can use the instrumentation to change the angle of the pool of light.

- ① Drag this point to move the spotlight's point of origin
- ② Drag this point to change the angle of the pool of light
- ③ Drag this point to move the spotlight's destination point



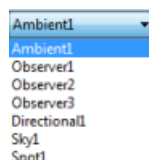
- **Concentration** of the pool of light.

Click  to toggle between rotating the direction of the light around its point of origin and rotating the light's origin around its destination point.



**Create sky light** provides lighting to simulate sky light.

Use the drop-down list to select the light to modify or remove.






Click to remove the selected light from the light set.



When selected, this option makes the light casts a shadow when the model is rendered. When deselected, no shadow is cast when the model is rendered.

This button is inactive  until a lighting method is selected.

### Colour




Choose a colour for the selected light. Use the slider to vary the luminosity of the selected colour.

### Position

Enter coordinates for the position of the following:


- **Positional light**
- **Spotlight**

Alternatively, click  to display the **Position** dialog, where you enter the coordinates for the **Light point position**.

### Direction

This option is available when you are creating one of the following:

- **Directional light**
- **Spotlight**
- **Observer light**

Alternatively, click  to display the **Direction** dialog, where you enter the coordinates for the **Light point direction**.

### Angle

Specify the angle of the pool of light given by a spotlight, or use the slider to set the angle. The maximum angle is 90°.

### Concentration

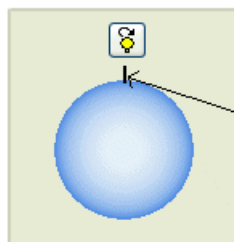
Specify the concentration of the pool of light given by a spotlight, or use the slider to vary the concentration.

- Low concentration gives a steady spread of colour.
- High concentration fades the colour out towards the edge of the pool of light.



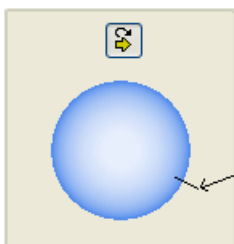
The tracker ball is used to move a selected light over the model.

A thick line on the tracker ball indicates the light is shining away from the observer.



Thick line shows the light is shining away from the observer

A thin line on the tracker ball indicates the light is shining towards the observer. For example, the light can be positioned behind the model to shine through it towards the front.



Thin line shows the light is shining towards the observer

The tracker ball can be used with the following lights:

- Directional light.
- Observer light.
- Spotlight.



Click this button and use the tracker ball to rotate the direction of the spotlight around its point of origin. When clicked, this toggles so you can rotate the origin of the spotlight around its destination point.

## Rendering to see light effects

To see the finished light effects on your model, render the image by selecting **View** from the main toolbar and selecting **Render**.



*Ensure the **As View** option is selected on the Render dialog.*





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## Rendered images

When you have created your rendered image, you can:

- store a copy (see page 39).
- print a copy (see page 39).
- edit images (see page 40).

## Saving images to file

When you render an image, a temporary **.png** file is stored in a location specified in the POV-Ray Settings dialog. Default locations are:

C:\Documents and Settings\XXX\Local Settings\Temp for XP systems.

C:\Users\XXX\AppData\Local\Temp for Vista or Windows 7 systems.

where **XXX** is the users login name. You may need to turn on view hidden files for the directory to be displayed.

### To save an image to a different format:

- 1 Open the file in your default graphics editor.
- 2 Select **Save As** from the **File** menu and choose the required graphics format from the drop-down list.
- 3 Click **Save**.

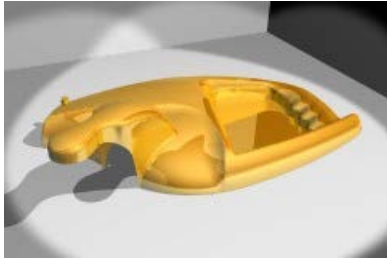
## Printing images

Print the image using one of the following techniques:

- Select the **.png** file located in the **Output image** folder specified in POV-Ray settings dialog. Right-click and select **Print**.
- Open the file in your default graphics editor. Select **Print**.

## Making images darker or lighter

Use an image manipulation program, such as PaintShop Pro, to alter the appearance of the generated image.



Gamma correction gives the best results when you want to print the image. The following image has had gamma reduction applied:

