

XS - EXTENDED **SHADER MANAGER**

Manual Version 1.2

Content

Important Information.....	1
Copyright.....	1
Disclaimer.....	1
1. Overview.....	1
2. User Interface.....	2
2.1. Tool Bars.....	2
2.2. Tree View.....	2
3. Copy and Paste.....	4
4. Set-Up Tools.....	5
4.1. Modify.....	5
4.2. Replace Maps.....	6
4.3. Overlay.....	6
4.4. Reflection and Refraction.....	7
4.5. Translucence.....	7
4.6. Ambient Occlusion.....	8
4.7. Toon.....	8
4.8. Reset.....	8
5. Utilities.....	9
6. Options.....	10

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Important Information

Copyright

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Disclaimer

There is no warranty beyond the legal minimal warranty. In no case, the author shall be liable for any damage on hardware or software caused by using XS - eXtended Shader Manager.

1. Overview

XS is a Poser Python script to manage materials and shader nodes. It lists all figures and props, materials, and shader nodes in a tree view. By selecting several materials or nodes in the tree, many tasks can be applied to several materials at once.

Note: Undo / redo is not available for any changes that are done by XS. This is a general limitation of Poser Python scripts.

Starting XS

You start XS like any other Python script. (See RunPython.pdf about how to start a Python script from Poser or how to start it together with Poser.) If you call the script again while XS is running, XS is either restored (when minimized) or closed. You can also close the XS window like any other window. In Poser 9, XS will dock into PPP if it is running.

You can leave XS running even when you close the current scene or start a new scene.

2. User Interface

The main part of the XS window is the tree with the Poser objects, materials, and nodes. At the top is a tool bar to work with the tree, at the bottom is a tool bar for additional tasks.

2.1. Tool Bars

The top tool bar has buttons for the following commands:

- Toggle between *objects* and *lights* view.
- Toggle between *material* and *node* view.
- *Select*: Opens a menu to select tree elements of a particular type.
- *Deselect*: Opens a menu to deselect tree elements of a particular type.
- *Search*: Shows or hides a small window to search for an object in the tree.
- Toggle to *delete unused nodes*. If on (red X), nodes that become unconnected are deleted.
- *Options*: Opens the options dialog.

The bottom tool bar has buttons for the following commands:

- *Copy*: Copies the (first) selected object, material, or shader node.
- *Paste*: Pastes the copied element to the selected elements.
- *Paste...:* Opens a dialog with additional options to paste the copied element.
- *Delete*: Deletes the selected shader nodes.
- *Modify*: Opens the dialog to modify selected materials or nodes.
- *Maps*: Opens the dialog to replace map files in selected materials of nodes.
- *Overlay*: Opens the dialog to add overlays.
- *Refl**ct*: Opens the dialog to set-up reflection and refraction.
- *Translucent*: Opens the dialog to set-up translucency.
- *AO*: Opens the dialog to set-up ambient occlusion.
- *Toon*: Opens the dialog to convert a material to a toon material.
- *Reset*: Opens the dialog to reset a material.
- *Clean Up*: Deletes all unconnected nodes.
- *Refresh*: Refreshes the preview.
- *Fix Bump*: Connects bump maps to the correct bump input.
- *Toon ID*: Assigns a new unique toon id.

Note: The *Paste* buttons are only active after copy. The *Delete* button is only available when nodes are listed. Most tools are hidden for lights because they are for surface materials only.

2.2. Tree View

The tree view of XS lists either the objects or the lights in the scene. You switch between objects and lights with the first button in the top toolbar. For each figure or prop, the tree lists the materials of that object. For lights, the light is already the material because lights have only a single material.

You can show or hide the shader nodes for each material or light using the second button in the top toolbar. Each material has at least one node, for objects this is usually called *PoserSurface* and has the type *poser*, for lights it is usually called *Light* and has the type *light*. You can select in the options whether to show the node type in the tree or not.

Initially, the materials and nodes are collapsed. Click on the small plus in front of an element to expand or collapse its children.

Note: It is possible to navigate the tree with the arrow keys and to find an entry by typing the first character. However, the latter is restricted to the regular letters A to Z and to the numbers 0 to 9. All other characters are found by the space key. (This is because of a problem with keyboard shortcuts in Poser that are still active when a wxPython script is running.)

Context Menu

Each element in the tree has a context menu that is accessible by right clicking on it. Depending on the element type, the menu can have the following entries:

- *Expand / Collapse All / Objects / Materials / Lights:* Expands or collapses the according elements. This may affect elements that are not visible because their parent is collapsed.
- *Copy / Paste:* Copy the clicked element, paste to all selected elements.
- *Modify / Reset / Clean Up:* Quick access to the according tools.
- *Select in Scene:* Selects the object in the scene and the material in the material room.
- *Rename / Delete:* Renames or deletes all selected shader nodes.

Select / Deselect

You can select one or several elements in the tree with the mouse. With shift pressed, elements are selected in a row, with control pressed, the selection of a single element is toggled.

Note: If you select a figure or prop, tools and paste are applied to all materials of that object.

With the *Select* and *Deselect* buttons in the top toolbar, you can select all elements of a particular type. If *In Selection Only* is checked, materials and nodes are only selected, if the object or material they belong to is already selected.

With *Apply*, *Save*, and *Delete*, you can manage your own selections. *Save* saves the current selection of materials and/or nodes in the tree. This stores the names only independent of the actual name of the figure for materials or material for nodes. For nodes, this includes the node type if it is shown in the tree. *Apply* selects or deselects all materials or nodes with the same name as those that were stored. *Delete* deletes a named selection.

Search

The *Search* button in the top toolbar opens the search dialog. The search is case-insensitive and searches for any occurrence of the search term. You can limit the search to one or several of objects, materials, or nodes.

There are five buttons to direct the search:

- o Search first object.
- < Search backwards from last found object (or starting with last object).
- > Search forwards from last found object (or starting with first object).
- + Select all matching objects.
- - Deselect all matching object.

3. Copy and Paste

In XS, you can copy either an object, a material, or a shader node. Depending on what you copied, you can paste it to the according type of selected materials or nodes as follows:

- *Pasting an object to a material*: if the object contains a material with the same name, that material is pasted; this can be used to copy a complete material set
- *Pasting a material to a material*: the material settings are pasted.
- *Pasting a node to a material*: the node is inserted as a new node into the material.
- *Pasting a node to a node*: if both nodes have the same type, the node settings are pasted.

Note: Unlike copy for shader nodes in the material room, copy in XS only remembers which material or node was copied. If you modify it between copy and paste, the modifications are pasted as well.

Note: Copy and paste of complete materials actually is the same as copy and paste using the root nodes of the shader trees for those materials. That's why the following description refers to nodes only.

If you use *Paste...*, a dialog is shown where you can select what you want to paste. For *Paste* (without dots), the complete node is pasted, which is the same as when everything in the dialog is selected.

Depending on what you paste where, there are up to three lists in the paste dialog to select from. The lists *Values* and *Connected Nodes* contain all inputs of the copied nodes. If both lists are present, the *Connected Nodes* may contain empty lines for those inputs that can't have a node as input. If you select an input in *Values*, the according color, value, or selection is pasted. If you select an input in *Connected Nodes*, the node input is pasted. If there is a node connected to that input, it is pasted together with all further nodes that may be connected to the first node. In any case, any former node for this input is detached, even if the input to paste has no node attached. If you paste an object, you can select the materials to paste in the list *Materials*.

With the buttons *All* and *None*, you can quickly select or deselect all entries in the list. The buttons > and < can be used to transfer the selection between the *Values* and the *Connected Nodes* list.

With *Transfer values only*, no nodes are created, replaced, or deleted. Only values are transferred as far as the structure of the shader tree is the same. With *Keep maps*, the prior image maps of the target material are used in the copied material if this is possible. This is useful when you copy a material to a region that differs only by UV-mapping.

4. Set-Up Tools

The set-up tools open a dialog to enter parameters. Only one of these dialogs can be open at once, but you can keep a dialog open and work in the scene or select different materials to apply the tool to. An exception is the *Modify* tool, that is always applied to the nodes that were selected when the dialog was opened, because the parameters of this dialog depend on the selected nodes.

All tools have three buttons *OK*, *Apply*, and *Close* to apply the settings and/or close the dialog. Most tools also have a *Preset* button that opens a menu where you can reset the parameters and save, select, or delete a preset. Presets are saved (and hence applied) only for explicit values, not for empty input fields.

For numeric input, point and comma are both accepted as decimal point. For colors, inputs with a decimal point are interpreted as ranging from 0.0 to 1.0, without a decimal point as ranging from 0 to 255. Some parameters use a unit. In that case, the unit is stated explicitly right to the input field.

Note: The unit is the one selected in the Poser preferences. If you change the unit in Poser, you have to restart the script for the change to take into effect.

Most tools can be used both to create a new effect and to modify an existing effect, either when previously created using the same tool or otherwise. For blank input fields, a default value is used when creating the effect and the value is not changed when modifying the effect.

4.1. Modify

The *Modify* tool lists all inputs that are common for all selected nodes, i.e. that have the same (internal) name and type. In the *material* mode, this is the root node of the selected materials. In addition, the dialog shows checkboxes to show/hide the inputs and the preview.

Each input consists of one line in the dialog. It starts with the name, followed by the input field for the color, value, or selection. If reasonable, there are two more buttons, one to select an input of the same type to copy the value from and one to select a node to attach.

The initial state for all parameters is neutral, it won't change the node. For colors, files, and menus, there are buttons to select a value. For numeric input fields, you can enter a value to set, but also a calculation to perform on the actual value.

Calculating Values

You can not only set a new value, but also perform mathematical operations with the actual value.

- A number without operator is used to set a value. (Minus - is used for negative values.)
- A plus + adds a value. (Use +- or _ for short to subtract a value.)
- A star * multiplies by a value.
- A slash / divides by a value.
- A tilde ~ is used to round relative to a step. (E.g. ~0.1 rounds 3.33 to 3.3.)

If you select a value to copy from a different input, the value is copied first, and then any calculations are applied to the copied value.

Selecting Nodes

Besides leaving the input node unchanged, there are three more options. The first is, to unconnect the node input. The second is to copy the input node from a different node listed at > *Input*. If the selected input has no input node and the target input has an input node, the node is detached. The third option is to select one of the existing nodes by name, which are listed at < *Node*. If there are several nodes with the same name, the first is used.

4.2. Replace Maps

The *Replace Maps* dialog lists all files used as image maps in the selected materials and nodes. Enter a different file in the text field or select a file from the file system with the *O* button. The file may have an absolute or relative path. Leave the field empty to keep the old file. Press *OK* to replace the files or *Cancel* to close the dialog without changes.

Note: It may happen that the scene preview doesn't use the new maps. In that case, select the material in the material room, use the *Refresh* button, or use *Reload textures* to update the preview.

4.3. Overlay

An overlay is a value or image that is blended to the current value of an input by a mask. The mask itself is usually also an image with black for the original texture and white for the overlay. The overlay tool allows to add an overlay to one or several inputs of the selected materials.

Note: In general, an overlay can use any kind of node. If you want to use an overlay with a different node than an image map, create the overlay for a value only and create the node in the material room. Then, connect the node to the second input of the according blender node that was created for the overlay.

The first section of the overlay dialog is for the overlay mask. You can select a *mask file* and select to filter the image or not. The strength determines how much of the original texture will be visible through the overlay even for white parts of the mask. If the mask file is black on a white background, mark the according checkbox.

The *overlay image* is an image file to use as overlay. This can be empty to use a pure color or value for the overlay. Again, you can select to apply texture filtering or not.

The *image placement* (if any) is applied to both, the mask and the image map. These are the scale and offset parameters known from the image map node.

Finally, there are color and strength fields for all inputs of the material where you can apply an overlay. If a field is empty, no overlay is applied. If you want to use different image maps for some inputs (e.g. for diffuse and for bump), you have to apply the overlay tool several times.

Note: You cannot use the overlay tool to modify an existing overlay. Instead, additional overlays are added on top of any existing overlay.

4.4. Reflection and Refraction

The reflection and refraction tool creates nodes for raytraced reflection and refraction. You can use it to create one or both of them. In addition, you can combine one or both with a fresnel effect, that controls reflection and refraction depending on the viewing angle.

For reflection and refraction, you have the color and strength that are set in the PoserSurface node as well as the inputs of the refract and reflect node. You can enter the intended values or leave the fields blank for a default value. For the background, you can additionally name a reflection map to use. If you select to reuse an existing reflection map and a reflection map really exists, the other background settings are ignored.

For reflection, you can also configure the multiply by light and/or diffuse color settings from the PoserSurface node. For refraction, you can select to use a fresnel node instead of a refract node and to turn off transparency.

Note: Because the fresnel node already combines reflection, refraction, and fresnel, you should not use it together with reflection or the fresnel effect as it is set up by this tool.

Note: Because the raytraced refraction already makes the material transparent, you should always turn off any existing transparency, except if it emulates an alpha mask.

The fresnel effect uses an edge-blend node to control the strength of reflection and refraction. The inner value is for small viewing angles, where reflection is minimal and refraction is maximal. The outer value is the reverse. Both values range from 0 to 1, usually the inner value is close to 0 and the outer value close to 1. The attenuation determines the transition from inner to outer value. Typical values for attenuation are around 0.5.

Note: If you combine reflection and refraction, the strength of both together should be 1 or less. However, if you also use the fresnel effect, each strength alone can be up to 1 because this effect reduces the reflection where it enhances the refraction.

Finally and most important, the tool can automatically recalculate the strength for diffuse and alternate diffuse, so you should not turn off these options for correct materials, in particular when using the fresnel effect.

If you check *Disconnect Nodes if Turned Off*, any nodes that are connected to inputs that are turned off by the tool are disconnected (and deleted, if the according global option is active). This affects the transparency inputs and may affect the diffuse inputs if they are adjusted to zero strength.

4.5. Translucence

The correct way of setting up translucence requires to connect a diffuse node (with normals forward turned on) to be connected with the translucence color. Otherwise, translucence behaves more like

ambient independently of the actual scene lighting. The translucence tool creates this diffuse node and makes other connections and adjustments for translucence.

The strength is the amount of translucence. The higher the value, the more light shines through for the material. There is no default value, you must enter a strength in any case. The translucence color is the color to tint the light shining through. If you check *Use Diffuse Color*, the diffuse color and input node are also used for translucence.

Because translucent materials are often also somewhat transparent, you can also set the transparency with this tool.

4.6. Ambient Occlusion

Ambient occlusion creates small shadows nearby objects. This tool creates an ambient occlusion node and connects it in the correct way to the selected input nodes. The parameters in the first section are those from the ambient occlusion node.

Because the *strength* value in the ambient occlusion node is not working, you should check *correct*. This will create additional nodes that actually set the strength. (In case the *strength* value may work in Poser one day, just uncheck *correct*.)

Note: If you use ambient occlusion, always connect it to the diffuse inputs. If there is translucence, one may argue that ambient occlusion should be used there as well. From the very nature of highlights, it's rather unusual to have ambient occlusion there.

Note: Ambient occlusion is a pseudo-effect in any case, so there could be endless discussion for which inputs it is required and for which not.

4.7. Toon

The toon tool creates a toon node and optionally a glossy node for specular highlights. For both nodes, you can enter the preferred values or use default values. Also for both nodes, you can select to use the pure settings or to combine them with already existing settings for diffuse or specular. Additionally, you can set a toon id, either explicitly or use 0 to create a new yet unused one.

Finally, you can select which other inputs to leave unchanged or to reset to not interfere with the toon set-up. Pure toon settings will reset all of them, but some may give reasonable effects when kept. For reflection, there are separate options to reset raytraced and other reflections, because reflection maps may be a rather typical effect for toon renders, while raytraced reflection may be rather unusual.

4.8. Reset

The reset tool can be used to reset a material if you want to create a new material from scratch or to hide a material. The *colored* mode is useful to identify particular material zones. Reset turns off all inputs except those for which a particular option is selected.

There are three sections. The first determines whether to reset colors and values only (*Values only*), to detach all input nodes (*Nodes only*), or both (*Values and Nodes*). The second sets the diffuse and ambient color either to *White*, *Gray* (50%), or *Black*. When choosing *Colored*, each selected material gets a different color with high contrast between all colors.

The last section determines the type of the material. With *Highlight* selected, the material has default highlights. *Transparent* makes the material fully transparent (and hence hidden, maybe except for highlights). *Ambient* set the ambient value to 1 and the diffuse value to 0, otherwise it's vice versa. With *Shadow Catch*, the material is set to shadow catching only.

5. Utilities

Refresh

Refresh updates a material in the preview. This is done by saving and reloading the material. Refreshing is usually not required, but may be necessary if Python scripts modify a shader tree without updating the preview material accordingly.

Clean Up

Clean Up deletes all nodes that are not used by a material because they are not connected directly or indirectly with the root node of the shader tree.

Fix Bump

The *gradient bump* input is intended only for Poser 4 bump/bump files (with the green/red look), while the *bump* input is used for grayscale bump maps. Unfortunately, Poser does not consider this when loading material poses without shader tree and connects all bump maps to the gradient bump input. This utility connects bump maps to the correct input based on the file extension.

Toon ID

The Toon ID is used to interconnect materials when rendering with toon outlines (in the render settings, not in the toon node). This utility sets the same yet unused id for all selected materials.

Select in Scene

This set the selected object or material as current object or material in the scene and material room.

Note: The material room may fail to update the current material name in the material selection box.

Delete

Delete deletes all selected shader nodes.

Note: You can't delete the root node of shader tree. Usually, this is named *PoserSurface* or *Light*.

Rename

You can rename several selected shader nodes at once from the context menu, and you can rename a single node in the tree by clicking twice on it.

6. Options

Delete Unused Nodes

Many of the tools of XS modify shader trees. This may cause nodes to become unconnected and hence unused by the material. With the *Delete Unused Nodes* option active, all nodes that become unconnected when applying a tool are deleted. However, nodes that were already unconnected are not deleted. You can use the *Clean Up* button to delete all unconnected nodes.

You toggle the *Delete Unused Nodes* option with the second last button in the top toolbar. If that button has a red X, it is active, otherwise it is inactive.

Options Dialog

Click the rightmost button in the top toolbar to open the options dialog. It contains several options for the script and some tools.

Small Layout sets the size for the bottom tool bar to 3 rows of 4 buttons instead of 2 rows of 6 buttons. (This requires to restart the script.)

If *Update Tree for Changes only* is checked, the tree is only updated if the script recognized a change in the scene. Unfortunately, if you reopen a scene, the scene may look unchanged to the script and may miss a required update. So be careful with this option or it might cause an error message.

With *Sort Objects*, *Sort Materials*, and *Sort Nodes*, you select whether to sort these elements in the tree alphabetically or to use their original order in the scene.

Select *Show Node Types* to include the type in the tree for shader nodes. If this option is active, the node type is shown in brackets in front of the node name.

If *Use Relative Path* is selected, path names are converted to relative when you select a file in file chooser dialog.

Disable *Limit Colors to 0..1 / 0..255* if you want to allow the *Modify* dialog to change color values outside of the regular range. Poser will use color values greater than 1 or less than 0, but you can't recognize them in the color fields in the material room.

The *Bump Factor* determines how the bump strength is adjusted when moving a bump map from the bump input to the gradient bump input or vice versa. The factor is independent of the unit selected in the preferences (i.e. it is always relative to inches). A factor of 20 usually results in a similar bump strength.