



ParamCopy

Substance 3D Designer plugin

User Manual

Version 1.1.2



About ParamCopy

ParamCopy is a plugin for Substance 3D Designer enabling to perform various operations related to node parameters such as copy/paste and node state storing/recalling.

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Requirements

ParamCopy 1.1.2 requires usage of Substance 3D Designer 12.1 or above.

ParamCopy use case examples

- Copy common node Base parameters such as resolution or bit-depth from one node into multiple other nodes.
- Copy specific node parameters into other nodes of the same type, i.e. to uniformize a distribution, layout or processing between multiple nodes.
- Change the inheritance methods of some parameters by changing them into a source node and pasting into other nodes.
- Using named clipboards, create and name multiple node configurations that can be pasted into other nodes.
- Create multiple variations of a selected set of nodes then switch between them for testing different design options. Combine variations with those of other node sets and recall them all at once.
- Create and combine variations for development, testing or demonstration purpose, skim with a few clicks through variations showing multiple states of your Substance and even combine them.
- Copy/paste parameters between custom or third-party Substances of different types but having similar parameters.
- Shuffle the randomness of parts your graph by rolling the random seeds of a selection of nodes.

ParamCopy features

- Selective copy of node parameters into an internal clipboard and selective paste (including inheritance methods) into other nodes of same or other type. By default, both Base and Specific parameters are pasted into nodes of the same type as the source node, and only Base parameters pasted into nodes of different types. An option however enables to copy matching Specific parameters into nodes of different types, which can be used for node types having similar Specific parameters.
- Named clipboards enable handling of multiple clipboards created during parameter copy. Users can select one of these clipboards and paste it into the current node selection or make it current to paste it later.
- Non-persistent storage of variations composed of a set of node states with the ability to later recall stored variations. This enables to select a set of nodes involved into a design variation, store their state and this way switch

between different variations with a few clicks, for development or demonstration purpose.

- Rolling of random seed Base parameters (i.e. random seeds are assigned to a random value) for a selection of nodes, so their randomness properties are being affected in a random manner. This enables to shuffle multiple nodes at a time to produce new outcomes.

Installation / upgrade

If upgrading from a previous version of the plugin, the latter must first be deleted from the user space, on Windows this is:


```
<user home>\Documents\Adobe\Adobe Substance 3D  
Designer\python\sduserplugins
```

Then, launch Substance 3D Designer to install the new version of the plugin as mentioned below.

Installation steps:

- In Substance 3D Designer, open the Plugin Manager ("Tools / Plugin Manager..." menu)
- Click the "INSTALL..." button and select the .sdplugin file.

The plugin will be installed on your user space (on Windows this is <user home>\Documents\Adobe\Adobe Substance 3D Designer\python\sduserplugins) and enabled in the Plugin Manager. You may disable/enable it in the Plugin Manager at any time.

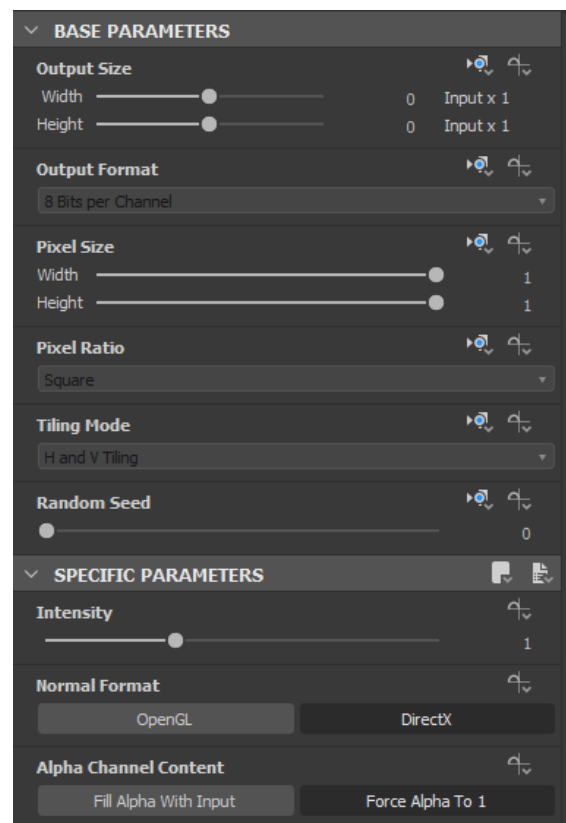
The plugin creates a ParamCopy menu in the application's top menu as well as a toolbar in newly created/opened graph. The ParamCopy toolbar can be shown/hidden using the  icon.

The toolbar is created only in newly created/opened graph views, If you are installing the plugin with a graph view already open, the toolbar will not be created in this graph view. The graph view must be closed then reopen for the toolbar to be created.

Base and Specific/Instance parameters

In the rest of this document, we'll be referring to Base and Specific parameters (the latter can also be called Instance parameters). Base parameters are input parameters common to all Substance Designer nodes/graphs/Substances, they are *Output Size*, *Output Format*, *Pixel Size*, *Pixel Ratio*, *Tiling Mode* and *Random Seed*. Specific or Instance parameters are all the other input parameters, those specific to a certain node/graph/Substance type.

The side illustration shows the Base and Specific parameters of the Normal node.

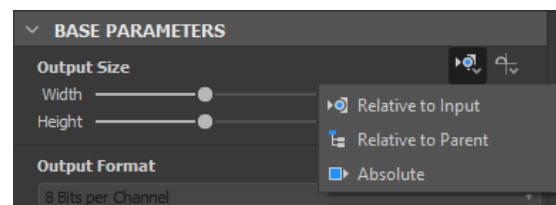



ParamCopy adopts the following behavior when copying/pasting parameter values:

- Base parameters are copied from the source node into destination nodes regardless of node type.
- Specific parameters are copied from the source node **only into destination nodes having the same type as the source node**. An option inside the Paste dialog enables to override this behavior, see below.

Inheritance method

Parameters have an associated inheritance method which is copied and pasted along with the parameter value. The possible inheritance methods are the following:




- *Relative to Input*: the value of this parameter is based on the equivalent parameter of the input connected to the graph it belongs to. If the graph has several inputs, this is the input having a dot inside the input connector icon: 
- *Relative to Parent*: the value of this parameter is relative to the equivalent parameter in the parent graph.
- *Absolute*: the value of this parameter is specific to this node.

Copying / Pasting node parameters

Copy parameters

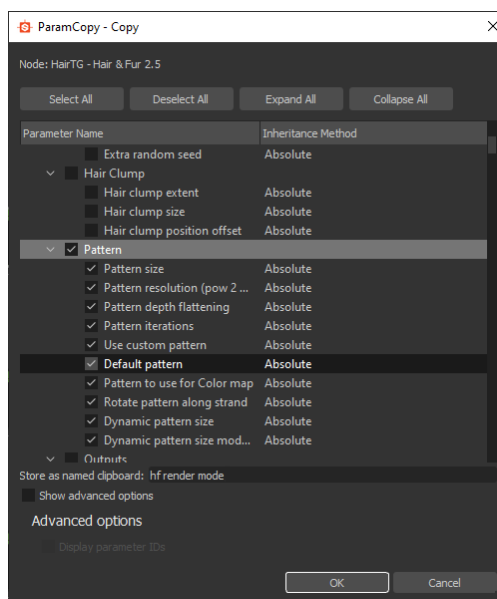
To copy node parameters, select a single node in a graph and do either of the following:

- use "ParamCopy / Params / Copy Node Parameters..." menu
- click toolbar  icon
- use the keyboard shortcut Ctrl+Alt+C (shortcuts can be changed in Preferences)

Copy dialog box will show up:

The Copy dialog box is resizable, you may adjust its size function of the number of parameters to display.

The top label tells about the type of the node we are currently viewing. Below is a row of buttons where we can select/deselect all items in the below tree view as well as expand/collapse all items.



The below tree view shows all the parameter names and their inheritance method. They are organized in two categories, Base and Specific parameters, then by group and subgroups function of the node type. Selecting (checking the checkbox) or deselecting (unchecking the checkbox) a tree view item having children performs the same operation on all the parameters it contains, this way you may quickly select/deselect groups of parameters.

The *Store as named clipboard* field lets you optionally enter a clipboard name to store (in memory, not persistently) this parameter copy as a named clipboard which can be selected and pasted later. If not filled in, parameters will be copied into the current clipboard and can be pasted until they are replaced by another parameter copy. See the “Named clipboards” section below for further information on named clipboards.

The *Show advanced options* checkbox displays the following option:

- *Display parameter IDs*: if enabled, the internal parameter ID (identifier) of specific parameters will be displayed in a separate column in the tree view. This may be useful if you need to match parameter IDs between nodes of different types, more about this in the Paste section.

Click the OK button to copy the selected parameters into the clipboard. These parameters can then be pasted into other nodes.


Copied parameters are fully independent of the source node they have been copied from. The source node may be deleted, it is still possible to paste previously copied parameters into other nodes.

Paste parameters

Pasting previously copied parameters can be made within the same graph as the source node or another graph, in the same or a different package.

For cross-package copy to work properly, packages need to have been saved at least once in order to be identified by a path.

To paste node parameters which have been previously copied, select one or more nodes in a graph and do either of the following:

- use “ParamCopy / Params / Paste Node Parameters...” menu
- click toolbar  icon
- use the keyboard shortcut Ctrl+Alt+V (shortcuts can be changed in Preferences)

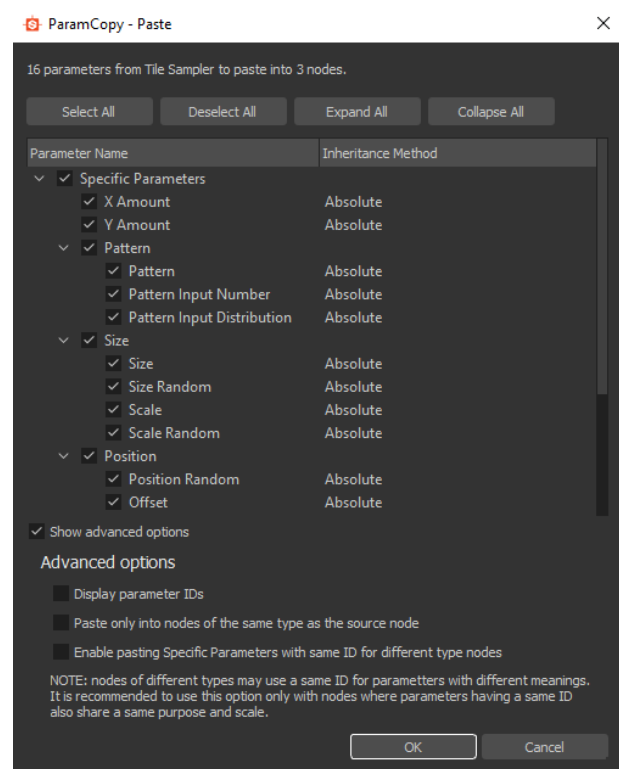
The Paste dialog box will show up:

The Paste dialog box is resizable, you may adjust its size function of the number of parameters to display.

The top label shows how many parameters have been copied into the clipboard, from which source node and the count of destination nodes to paste into.

As with the Copy dialog, the next button row enables to select / deselect / expand / collapse all nodes in the below tree view.

The tree view shows only parameters that have been copied. At this stage, it is still possible to disable some of them before pasting.



The *Show advanced options* checkbox enables the following advanced options:

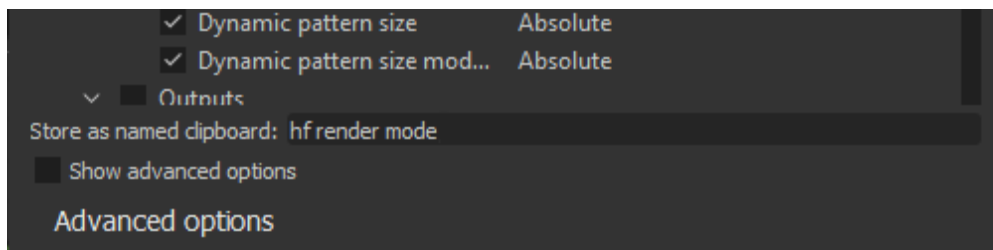
- *Display parameter IDs*: same as for the Copy dialog, adds a column to the tree view with internal parameter identifiers for Specific parameters.
- *Paste only into nodes of the same type as the source node*: this option applies only to Base parameters, as Specific parameters are not copied between nodes of different types. If enabled, Base parameters of the source node will be pasted only into destination nodes having the same type as the source.
- *Enable pasting Specific Parameters with same ID for different type nodes*: this option overrides the default behavior and enables to copy Specific parameters between nodes of different types when their internal parameter ID match. This option is generally used for custom or third-party Substances which differ only by a few Specific parameters. You will generally not use this option with default Substance Designer nodes unless you have a good reason to do so. Please note that even though parameters of different node types may have the same IDs, it does not mean they have the same meaning or scaling. You may use the *Display parameter IDs* option in Copy and Paste windows view parameter IDs and check whether they are matching.

Named clipboards

When copying parameters, it is possible to assign this copy to a named clipboard which can be restored later. This helps creating multiple parameter configurations which can be pasted into nodes at any time during the duration of the work session.

Creating a named clipboard


Named clipboards are created from the Parameter Copy dialog box entering a name in the *Store as named clipboard* field.



After validating this dialog (clicking the OK button), the copied parameters will be set into the current clipboard but a named clipboard will also be created and visible in the Clipboards window (see below).

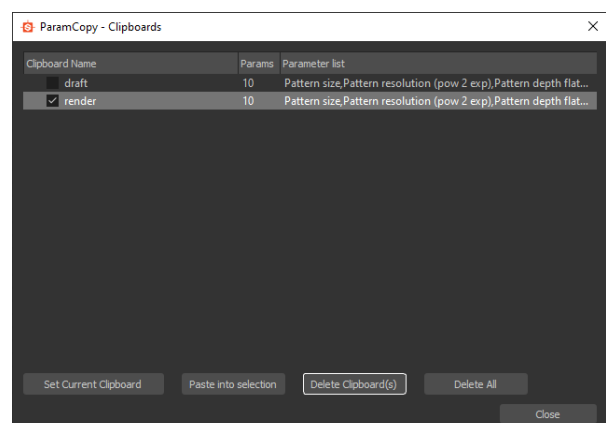
Managing named clipboards

To Clipboards window can be displayed using either of the following:

- “ParamCopy / Params / Clipboards...” menu
- toolbar  icon

The Clipboards window is non-modal meaning you can leave it open while working in other areas the application. It displayed the current named clipboards:

- *Clipboard name*: name of the clipboard given in the Copy dialog box.
- *Params*: number of parameters whose values are contained into this clipboard.



- *Parameter list*: the list of parameters whose values are contained into this clipboard.


At the bottom of the window are the following action buttons:

- *Set current clipboard*: set the selected clipboard as current, which means it replaced the current clipboard and will be used next time a Paste operation is performed.
- *Paste into selection*: paste the selected clipboard into the currently selected nodes using default pasting parameters. This is a quick way to paste parameters without having to set the current clipboard then use the Paste dialog. However using *Paste into selection* you cannot configure advanced pasting options (found in the Paste dialog), the defaults are being used being base parameters are copied regardless the type of node and specific parameters are copied only for nodes of the same type.

Variation storage/recalling

Storing a new variation

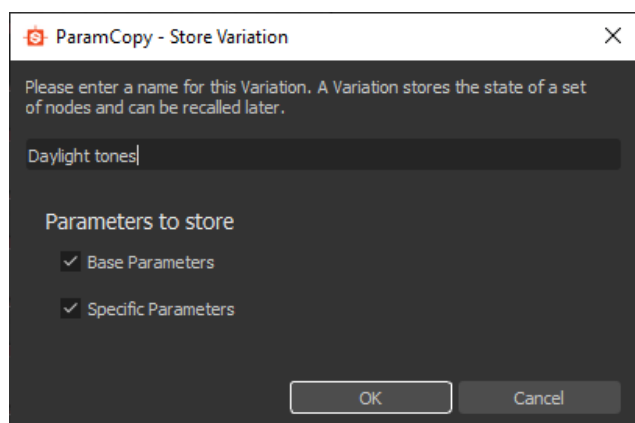
A variation contains the state (i.e. parameter values) of multiple nodes. In the current version of ParamCopy, Variations are **not** persistent, they are stored in computer memory only, so if you close the application and restart it, they won't be preserved. To create a variation, select one or more nodes and do either of the following:

- use "ParamCopy / Variations / Store Variation..." menu
- click toolbar  icon
- use the keyboard shortcut Shift+V (shortcuts can be changed in Preferences)

The Store Variation dialog will pop up:


Enter a name for the variation. By default both Base and Specific parameters are stored for the selected nodes, you may select only one category with the associated checkboxes.

Hit the OK button to store the variation.



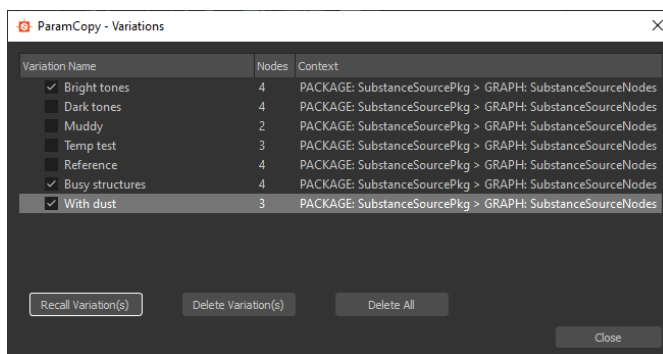
Viewing / recalling variations

To view the currently stored variations and recall some of them, do one of the following (there is no need to select any node):

- use “ParamCopy / Variations / Show/Recall Variations...” menu
- click toolbar icon 
- use the keyboard shortcut Alt+V (shortcuts can be changed in Preferences)

The Variations dialog box will show up:

The Variations dialog is non-modal, which means you can resume operations into other areas of Substance Designer without closing it. It is also resizable.



For each variation, columns show the variation name, the number of nodes it contains and some context information, actually the package and graph name where the nodes reside.

Below the list of variations is a row of buttons:

- *Recall Variation(s)*: the selected (checked) variations will be recalled, which means the state of the corresponding nodes will be restored as they were when the variation was created. There is no need to select any node for this action as the variation will be recalled in the same nodes it has been created from. If some nodes do not exist anymore, they will be silently skipped.
- *Delete Variation(s)*: the selected (checked) variations will be deleted.
- *Delete All*: all existing variations will be deleted (no need to select them).

Rolling random seeds

The Rolling random seeds functionality lets you select a group of nodes and change the values of their Random Seed Base parameter. This way, if these nodes are using the random number generator for some of their procedural generation, the random values they are using will change hence will the outcome of the nodes.

To roll random seeds of the selection nodes, do one of the following:

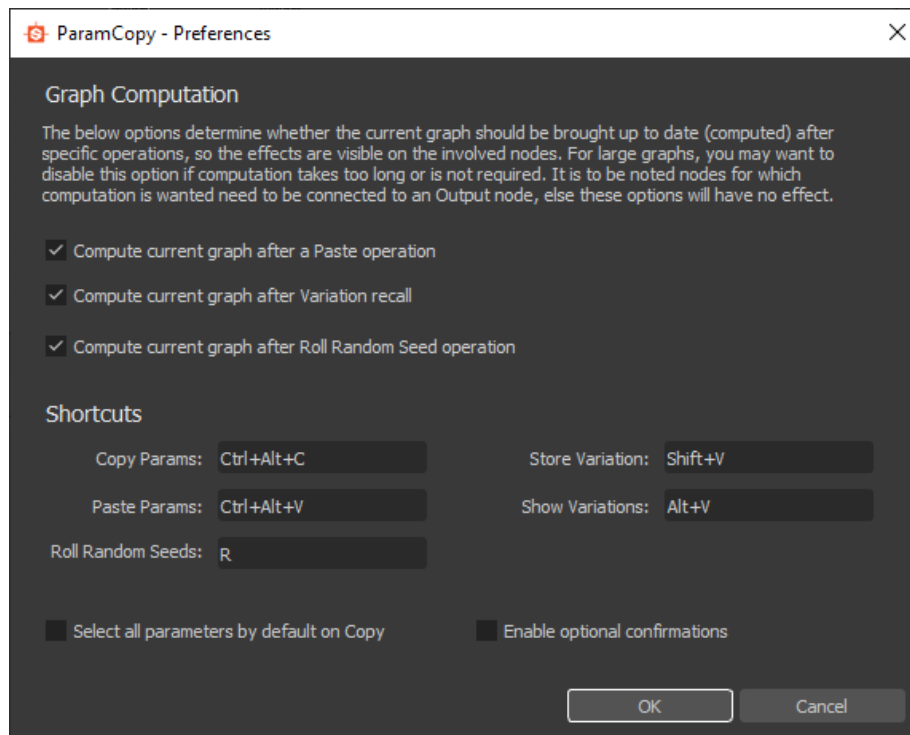
- use the “ParamCopy / Roll Random Seeds...” menu

- click toolbar  icon
- use the keyboard shortcut R (shortcuts can be changed in Preferences)

The optional confirmation dialog that pops up can be disabled in Preferences.

Preferences

ParamCopy Preferences are persistent and can be accessed using the “ParamCopy / Preferences...” menu.



- The Graph Computation group contains options to enable graph computation after certain operations. Graph computation recalculates the not up-to-date nodes in your graph, it may take some time if the graph is large this is why graph computation is optional.
- The Shortcuts group lets you define shortcuts for various actions. Leave the edit field empty to disable a shortcut.
- *Select all parameters by default on Copy*: tells whether the Copy dialog box will have all parameters selected by default when opening. If you are using the Copy dialog and most of the time selecting individual parameters, you may want to disable this option so you don't have to constantly deselect all items at dialog opening.
- *Enable optional confirmations*: some confirmation dialogs are optional, such as when rolling random seeds or recalling variations. These confirmation dialog boxes have a mention in them indicating they are optional. Use this option to enable/disable them.