

User Guide

Guide d'Utilisateur

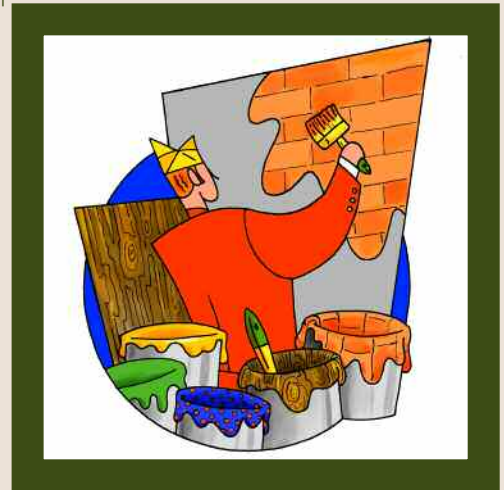
Benutzerhandbuch

Guía del Usuario

Guida Utente

# ArchiMaterial™

vers. 1.0



PLUG-IN FOR ARCHICAD®



ArchiMaterial User Guide  
Version 1.0 for Microsoft Windows and Apple Macintosh  
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# ArchiMaterial



ArchiMaterial provides the users with a new management of the ArchiCAD surface materials, organizing them in hierarchical mode (customizable by the user), defining the favourites ones and using the drag & drop technique that allows you to select the preview of a material and to drag it on the element to which you want to assign it. A simple procedure lets you generate seamless texture images together with images to be used for the effects of bump-mapping, transparency, etc.

## What are ArchiCAD Plug-ins?

ArchiCAD plug-ins are software components that add functionality to the standard features of ArchiCAD.

Extensions are currently available for import/export operations, for executing special GDL functions and for some of the display methods that come with the standard ArchiCAD package. ArchiMap is one of these extensions.

## System Requirements

From a technical standpoint, ArchiCAD plug-ins are code fragments.

This means that they cannot be launched directly from the Finder (Macintosh platform) or from Windows Explorer (Windows platform). ArchiCAD opens and closes them automatically using the Code Fragment Manager's service routines.

## **Memory**

As import libraries are not applications, they do not require special memory configurations.

Import libraries are loaded into the system heap when they are activated. If there is not enough memory available, a warning will be displayed.

If this occurs, make more memory available to the operating system by quitting other applications or reducing the memory allocated to ArchiCAD.

## **ArchiCAD Version**

ArchiMap is compatible with ArchiCAD 8.1 (release 8.1 – R2 is recommended) and later versions.

It will not run with earlier versions of ArchiCAD.

## **How are ArchiCAD Plug-ins Used?**

Normally, you will not even realize you are using a plug-in.

When you select a particular command or action, ArchiCAD automatically executes the appropriate code. You will only notice that new functionality has been implemented within the program.

The only special attention required by the user involves the location of the ArchiCAD plug-ins on the computer's hard drive.

## **Where to Install Plug-Ins**

Plug-ins must be copied into ArchiCAD's Add-Ons folder.

Different types of code can be placed in various levels of subfolders.

- Mac OS: The Add-Ons folder can be located either in the same folder as the ArchiCAD application or in the Graphisoft folder inside the System Folder.
- Windows: The Add-Ons folder must be in the same folder as ArchiCAD. If placed in any other location, ArchiCAD will not be able to access it.

ArchiCAD verifies the presence of the plug-ins at start-up. If they are not in the correct folder, you will have to exit the program, move them to the appropriate location and restart ArchiCAD.

If a plug-in is used on an infrequent basis, you can launch it using the Load Add-On... command from the Tools menu.

### **Package Installation**

To ensure correct installation of the package, follow the procedure described below:

- Copy the ArchiMap folder to the Add-Ons folder, which is located in the same folder as the ArchiCAD application.

If the installation is successful, a new menu will be added to the Menu Bar (typically in the Extra menu).

This new menu will allow you to show or hide the ArchiMap Palette depending on your needs.

The method used when working with ArchiMap is the same one used when carrying out an as-built survey. You move through the structure room by room, preparing a sketch, adding the measurements of the sides and diagonals and inserting the windows, doors and all other data and notes relating to the room you are surveying.

# ArchiMaterial

## The ArchiMaterial palette

The ArchiMaterial palette contains seven icons, each corresponding to a particular function:



- Materials Tracker and List of Materials in the project- Copy materials (eyedropper)
- Transfer materials (syringe)
- Create texture image
- Straighten texture image
- ArchiCAD/LightWorks materials toggle
- Help.

## Materials Tracker and List of Materials in the project

Click on this icon in the ArchiMaterial palette to display two list windows.

The first window lists the materials assigned to the current selection (Materials Tracker).

The second window lists the materials defined in the current project (List of Materials).

When you use this function, ArchiMaterial constructs all the previews required to identify the material listed on the basis of your settings (preview with ArchiCAD Internal Rendering Engine or preview with LightWorks Engine).

This could take a few seconds or a few minutes depending on the preview method used, quantity of materials to configure and your hardware configuration.

However, complete generation of all materials only takes place the first time you use the function (or when the data requires updating). Subsequently the previews already generated by ArchiMaterial will be used.

## Materials Tracker

The Materials Tracker enables you to configure the materials for the current selection without having to display the relative tool settings box.

Because you do not need to display the tool settings box, you can access the materials for different types of element simultaneously, not possible with the standard ArchiCAD interface.

The window is extremely simple to use: select the element (or elements) for which you want to view the materials and the materials assigned will be listed immediately in the Materials Tracker window.

At the top of the Materials Tracker window, a series of icons provide access to the various functions.



From left to right, these are:

- Element/face filter toggle
- Material colour image toggle
- Material texture image toggle
- Material vectorial hatching toggle
- Fill/texture name strings toggle
- Dock/undock Materials Tracker and List of Materials windows.



### Element/component filter toggle

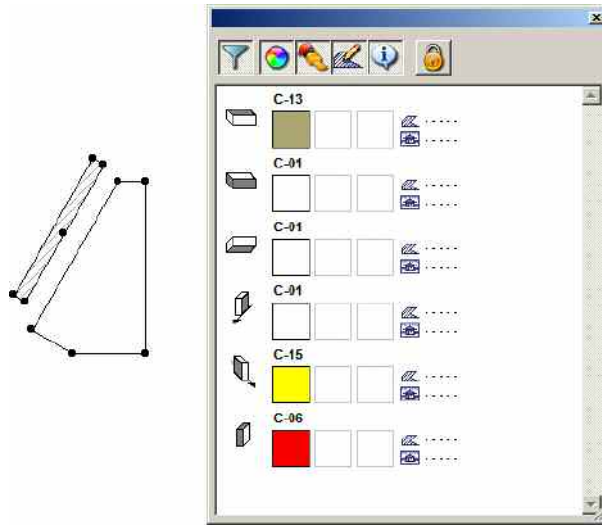
Toggleing this filter on or off determines whether certain items of information are displayed or hidden, varying the list of materials in the selection as a result.

If the filter is on (the icon is down), the list includes information on the type of element selected and face to which the material is assigned.

The two examples below illustrate the function of this filter.

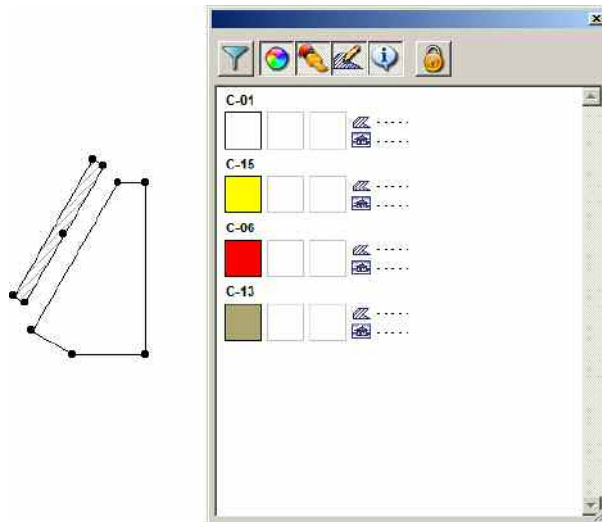
With the filter on, a wall and slab have been selected. The list displayed by the Materials Tracker will be as follows:





In this case, on the left ArchiMaterial displays icons identifying the type of element selected (in the example, Slab and Wall) and the face to which the material is assigned.

If the same selection is retained and the filter is switched off (icon up):



The list is now shorter as the materials are listed just once, given that the information on type of element and face is no longer displayed.

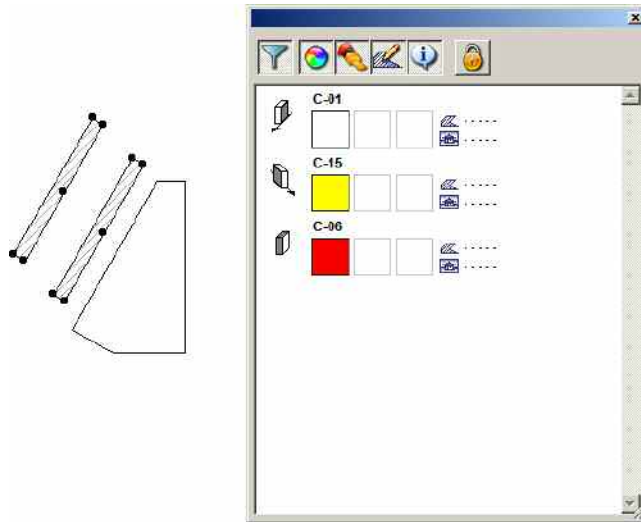
In the latter case, if material "C-01" is replaced, the materials used for the edge of the slab, the bottom surface of the slab and the vertical surface of

the wall on the side of the reference line will be modified with a single operation.

The material required is thus assigned to two different type elements (slab and wall) and different surfaces, not possible with a single command in ArchiCAD.

Now we will look at the effect of the filter on elements of the same type.

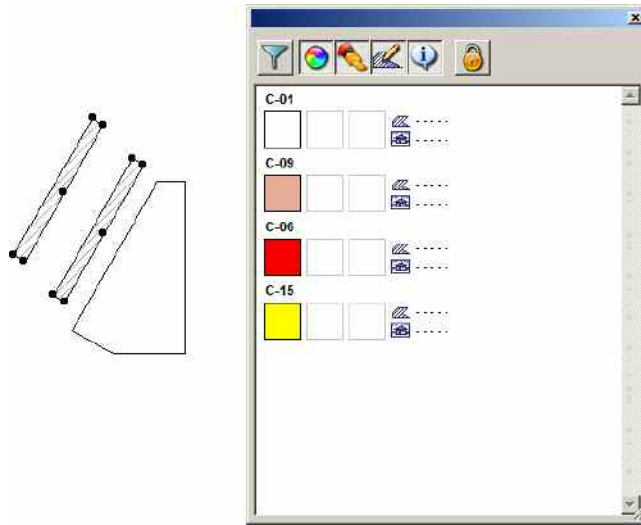
Select two walls with a different configuration of surface material:



In this case (all elements selected are of the same type), the list behaves exactly as it would normally in ArchiCAD, in other words, the information corresponding to the last element selected is displayed.

By holding down the shift key, the last element selected can be modified, exactly as with standard ArchiCAD procedures.

If the filter is switched off, this is how the list of materials changes:



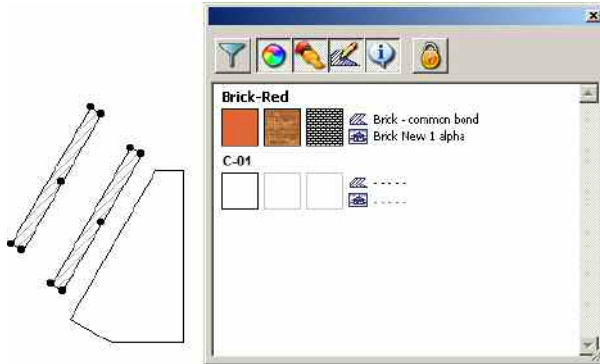
Now there are three, not four, materials listed as ArchiMaterial displays all the materials in the selection (once only, in other words, irrespective of the face the material is assigned to).



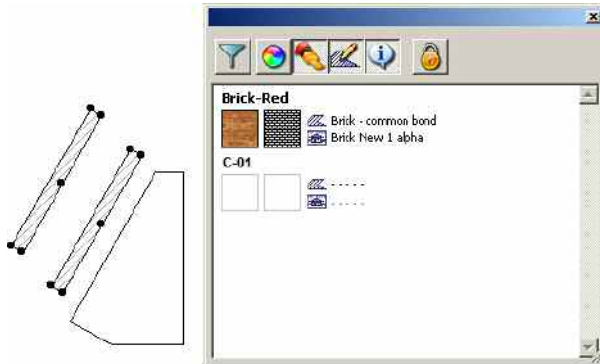
## Material colour image toggle

This is not a filter which modifies the contents of the data displayed (and therefore the number of information items), but simply a toggle which displays or otherwise a preview of the colour of the material.

Below is an example of the list displaying the colour of the material (icon down):



Below is an example of the list not displaying the colour of the material (icon up):

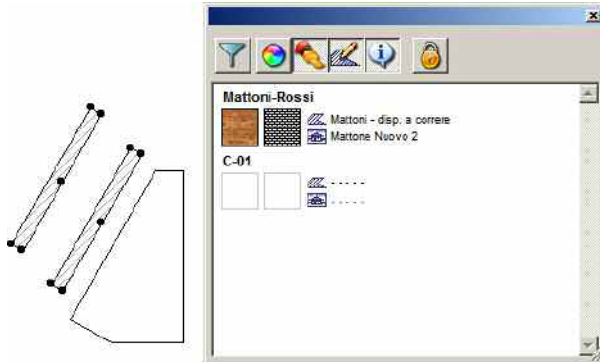




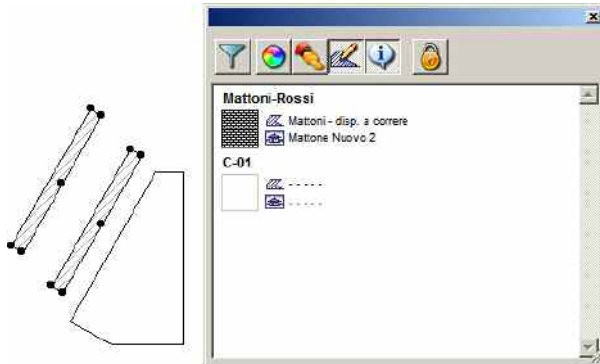
## Material texture image toggle

This is not a filter which modifies the contents of the data displayed (and therefore the number of information items), but simply a toggle which displays or otherwise a preview of the texture of the material.

Below is an example of the list displaying the texture of the material (icon down):



Below is an example of the list not displaying the texture of the material (icon up):

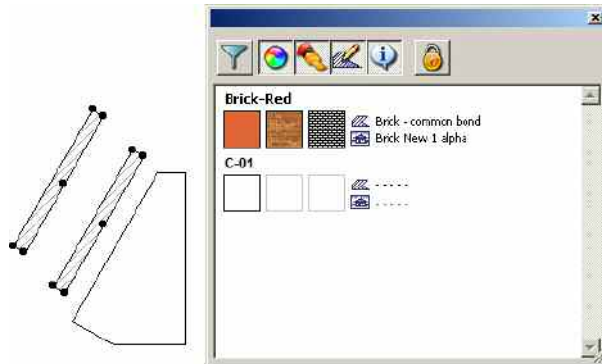




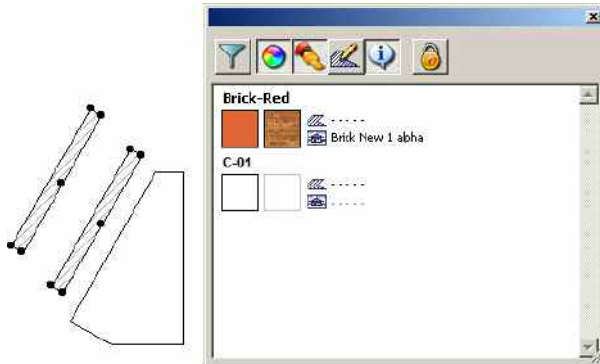
### Material vectorial hatching image toggle

This is not a filter which modifies the contents of the data displayed (and therefore the number of information items), but simply a toggle which displays or otherwise a preview of the material's vectorial hatching.

Below is an example of the list displaying the material's vectorial hatching (icon down):



Below is an example of the list not displaying the material's vectorial hatching (icon up):

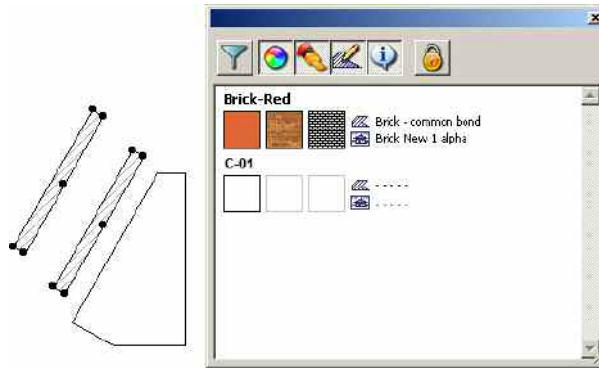




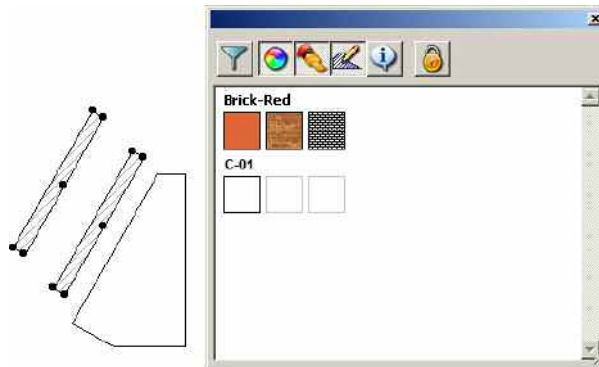
### Fill/texture name strings toggle

This is not a filter which modifies the contents of the data displayed (and therefore the number of information items), but simply a toggle which displays or otherwise the name of the fill and name of the texture assigned to the material.

Below is an example of the list displaying the fill/texture name strings (icon down):



Below is an example of the list not displaying the fill/texture name strings (icon up):



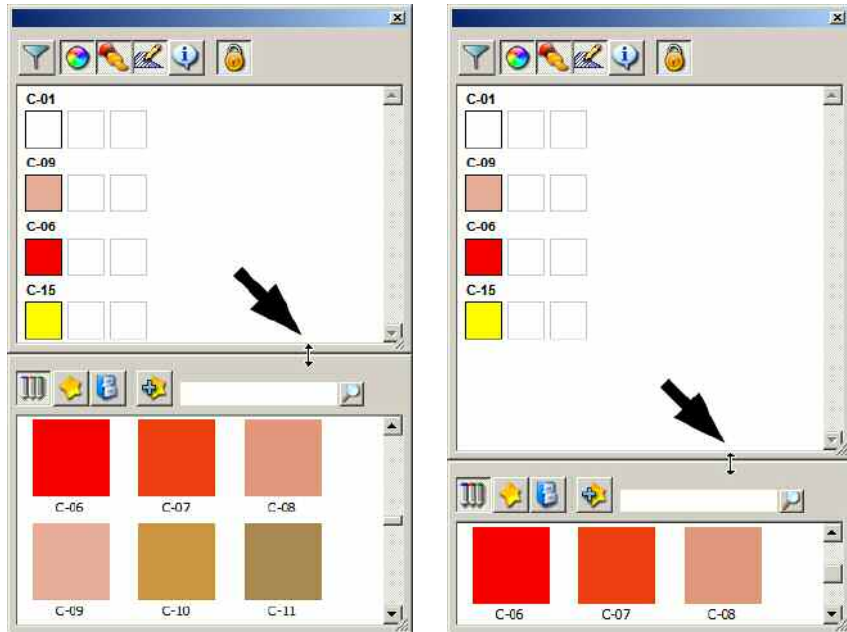
### Dock/undock Materials Tracker and List of Materials windows

Clicking this button docks the ArchiCAD Materials Tracker and List of Materials windows (you cannot modify the order, the Tracker window is always at the top).

When the two windows are docked, they behave as if they were a single window. Moving one automatically moves the other which remains docked.

The same is true if you resize the window. When docked, the two windows will be resized and will therefore always have the same width.

The division between the two lists enables you to resize the Tracker window while the List of Materials window will be resized in proportion (shortened):





The bottom edge of the List of Materials can be used to resize this window (the height of the Tracker will not be changed):



## List of Materials

The ArchiMaterial List of Materials displays a list of all the materials present in the project currently open.

The materials listed (in alphabetical order) are represented with a preview of their texture or colour (if there is no texture image associated with the material).

Later in the section describing the **ArchiCAD/LightWorks materials toggle**, we will explain how to display the preview of the material used by the ArchiCAD Internal Rendering Engine or the preview of the material used by the LightWorks Rendering Engine.

At the top of the List of Materials window, a series of icons provide access to the various functions.



From left to right, these are:

- List of ArchiCAD Materials
- List of Favourite Materials
- Personal Hierarchical List of Materials
- Add/Remove Favourite Material
- Search String
- List of Materials containing the search string.

The first three icons enable one of the three available lists to be displayed.

They are mutually exclusive. In other words, pressing one deactivates the other two as only one list can be displayed at a time.

### List of ArchiCAD Materials

This list simply displays all the materials defined in the project and which can therefore be assigned to any ArchiCAD building element.

*The list is in alphabetical order and is automatically updated whenever a material is created, deleted or modified in ArchiCAD.*





## List of Favourite Materials

This list displays all the materials you have defined as favourites, enabling you to find a material more conveniently and quickly than if you had to search for it in the list of materials present in the project.

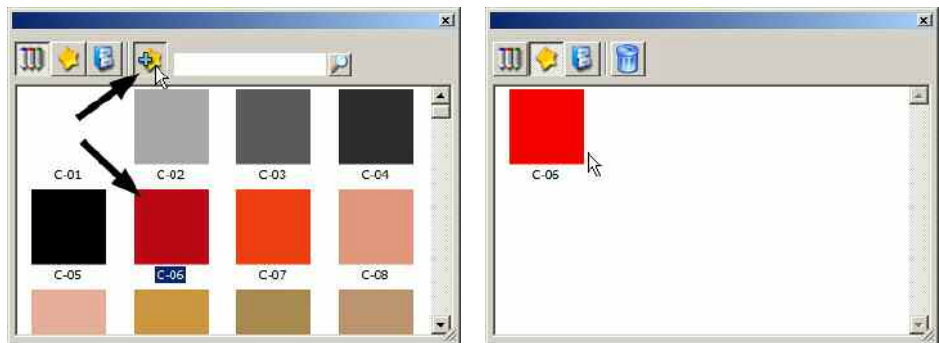
The first time you use ArchiMaterial, the list of favourites will be empty as you will not yet have defined any favourite materials.



## Creation of Favourite Materials

To create new favourite materials, display the List of ArchiCAD Materials, select the material to be added to the favourites and click on the **Add Favourite** button.

The material will be immediately added to the list of Favourites:



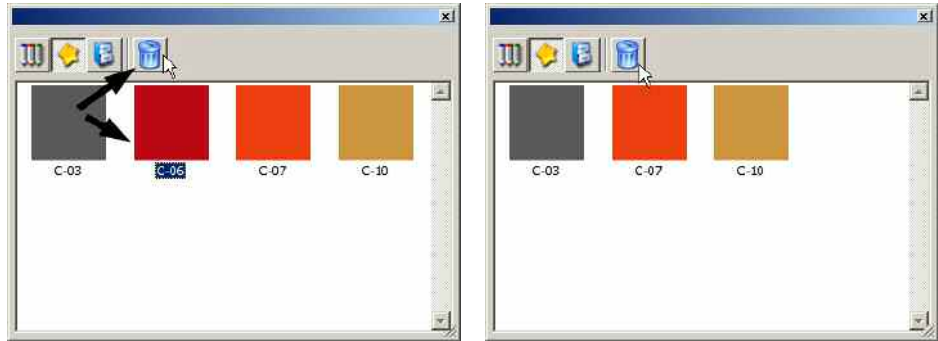
The configuration of your List of Favourite Materials is saved in the ArchiMaterial directory.

Once your Favourites List has been configured, it will be available in all your ArchiCAD projects (obviously only the materials available in the project currently open will be available as Favourites).



## Deleting Favourite Materials

To delete a material from the List of Favourites, display the List of Favourite Materials, select the Material to be removed and click on the **Delete Favourite** button (the **Add Favourite** button is transformed into **Delete Favourite** when the List of Favourite Materials is displayed).



**N.B.:**

*when the List of Favourites is displayed, the functions **Search String** and **List of Materials containing the search string** are not available.*



## Personal Hierarchical List of Materials

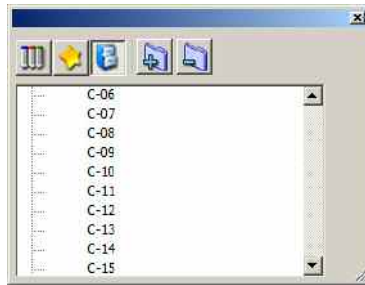
This list displays the hierarchical list of materials you have defined.

Many users have requested the possibility of grouping materials according to a customised hierarchy.

ArchiCAD lists materials in alphabetical order and when the list of materials present is very long, finding a material in order to assign it to a given surface can be tedious.

Grouping the materials together, for example by type (Masonry, Metals, etc) helps the user to manage the materials, keeping them organised and enabling them to be found and used as efficiently as possible.

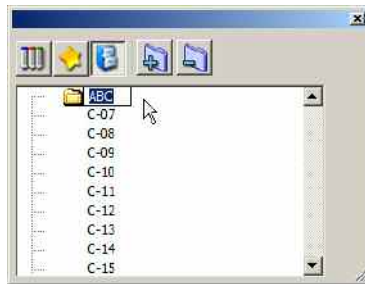
The first time you use ArchiMaterial, the hierarchical list of materials will be empty as you will not yet have defined any favourite materials and the hierarchical list will be in every way similar to the ArchiCad list of materials.



To create a new group/directory of materials and start defining your hierarchy, click on the button with the icon of a file and a plus sign.

The new directory is immediately created in the list.

Click on its name and when the field is active, type in the name of the new directory/group:



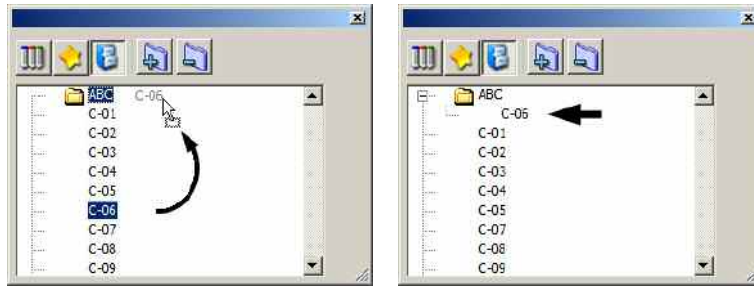
Repeat the same procedure for all the groups/directories to be defined.

To assign the materials to the various groups, simply select the material required from the list and drag it onto the name of the directory concerned.

You can also select multiple materials using the standard ArchiCAD combinations of keys:

- click – **shift** – click: selects all the elements included between the first click and the second click
- **Ctrl** - click: adds an element to the current selection.

Using the drag-&-drop technique, you can move a material from one directory to another or return it to the initial position.



Materials which are not part of any hierarchy are listed after the directories.

The configuration of your Personal Hierarchical List of Materials is saved in the ArchiMaterial directory.

Once your hierarchical file has been configured, it will be available in all your ArchiCAD projects (including for other versions of ArchiCAD if you copy the **ArchiMaterial.prefs** document from the add-on directory created to generate the hierarchy to the same position for the add-on used with a different version of ArchiCAD).

Obviously only those materials whose name is recorded in this configuration file will retain the defined hierarchy, in other words, membership of a particular group.

If a material not previously present in the hierarchy exists in a project, this material is listed at the end, after all the hierarchical directories you have defined.

To delete a directory/group of materials from the list, select the directory to be removed and click on the button with the file icon and minus sign. The directory will be immediately eliminated from the list. The materials it contains will not be deleted, but as they no longer belong to a group, they will be listed at the end after all the hierarchical directories still present.

**N.B.:**

*when the Personal Hierarchical List of Materials is displayed, the functions **Search String** and **List of Materials containing the search string** are not available Their place will be taken by the Create Directory and **Remove Directory** icons.*



### List of Materials containing the search string

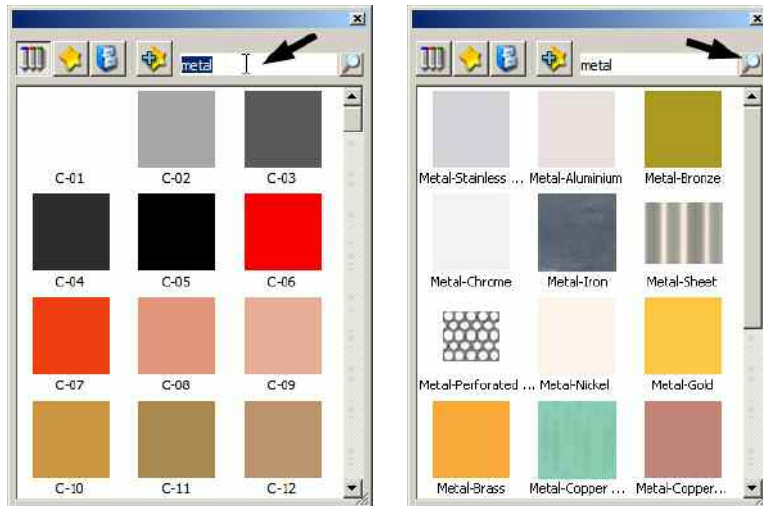
Despite the optimisation and simplification provided by ArchiMaterial by means of the List of Favourites and Hierarchy of Materials, sometimes you need to list a given material even more rapidly.

The material might not be defined as a Favourite, or you might have forgotten which directory/group you saved it in, but remember its name, or part of it.

In this case, you can use the ArchiMaterial material search function.

Write part (or all) of the name of the material in the search box and then start searching by clicking on the button at the right with the magnifying glass icon.

ArchiMaterial immediately performs the search using the string you defined and displays all materials present in the project currently open whose name contains the defined string.



## Assigning Materials to ArchiCAD elements

By combining the two list windows (Materials Tracker and List of Materials in the project), you can rapidly assign surface materials to the building elements in your design, without having to use the relative tool settings box dialogs.

The two list windows, and therefore assignment of surface materials, are available in the following ArchiCAD windows:

- Plan Window
- Section/Elevation Window (Section window and Elevation window for ArchiCAD 11)
- Interior Elevation window (ArchiCAD 11 only)
- 3D Window.

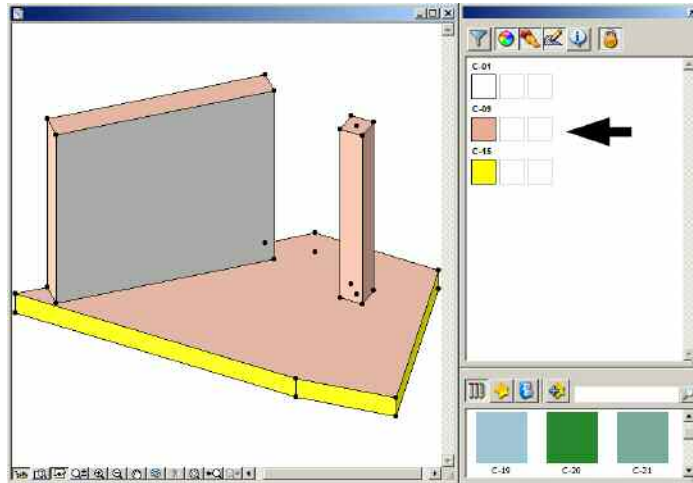
Assigning surface materials is very simple:

1. select the element (or elements) to which you want to assign the required material
2. the Tracker window displays a list of materials currently used
3. select the new material to assign in the project's List of Materials window
4. drag the selected material from the project's List of Materials window to the item in the Tracker list
5. ArchiMaterial immediately modifies the element (or elements) you have assigned the new material to and the modifications are displayed immediately in the 3D window (in the Section/Elevation, Section, Elevation and Interior Elevation windows, you will have to update the window with the relative ArchiCAD command).



Here is a practical example.

The following images show two windows and a slab.



As can be seen in the Tracker, the three elements use three different materials.

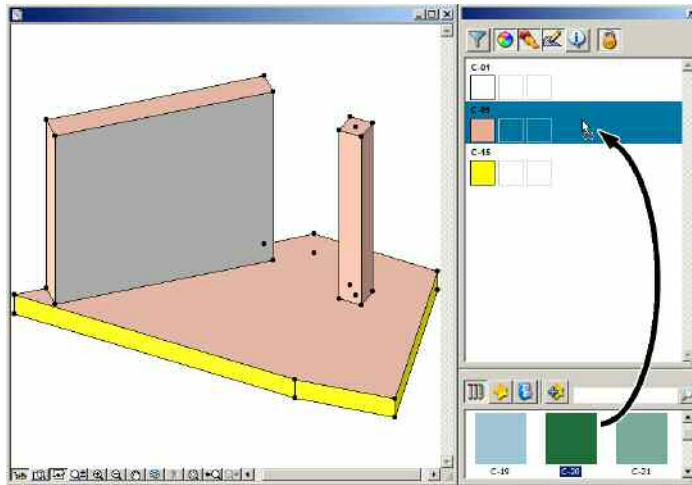
We want to modify the material "C-09" which is currently assigned to:

1. the vertical surface of the wall opposite our point of view
2. the side edge of the same wall
3. the surface of the column
4. the top surface of the slab

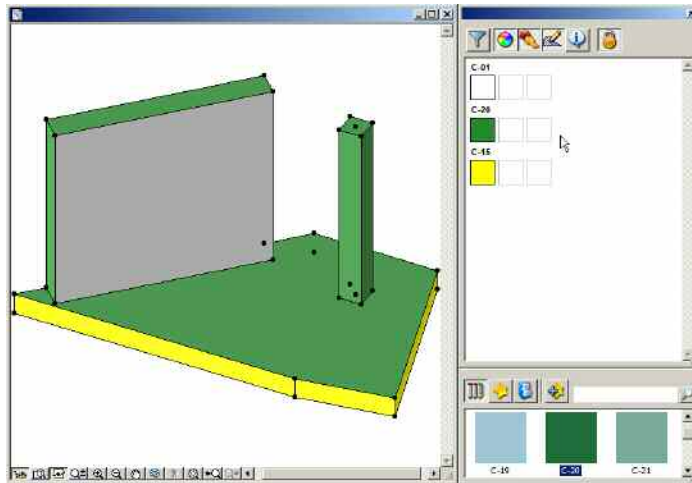
If we use the standard ArchiCAD procedure, we would have to select one element at a time (or one element per type - wall, slab, column) and then assign the material using the classic ArchiCAD pop-up menu.

Obviously in the particular case of the wall, we would have to assign the material twice as two different faces of the wall are involved (vertical and edge).

Using the ArchiMaterial functions on the other hand, we simply select the new material in the project's List of Materials and then drag it (drag-&-drop technique) onto the material to be replaced in the Tracker list:

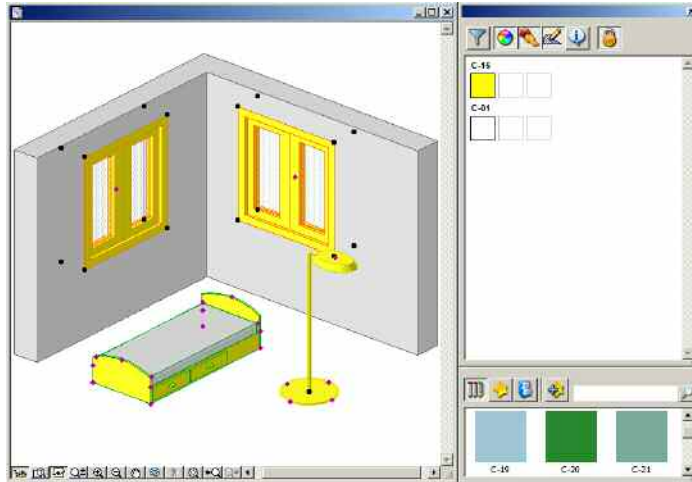


*And the modification will be made immediately in just one operation:*



Here is another example.

There are three different GDL objects on the screen (a lamp, two windows and a bed):

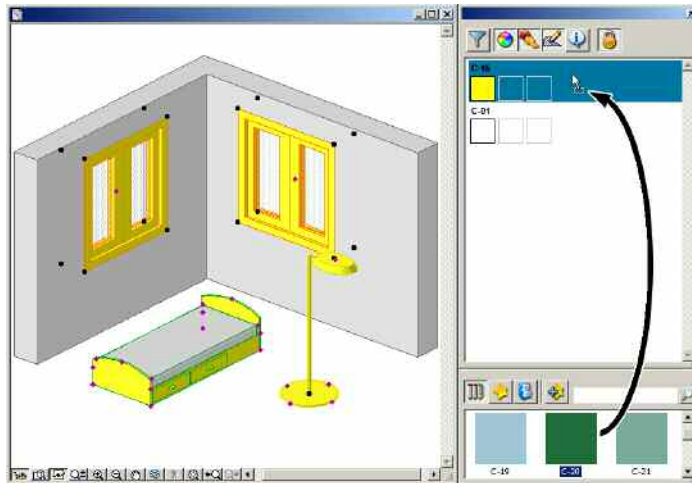


Once again, modifying the materials would be time consuming using the standard ArchiCAD procedure.

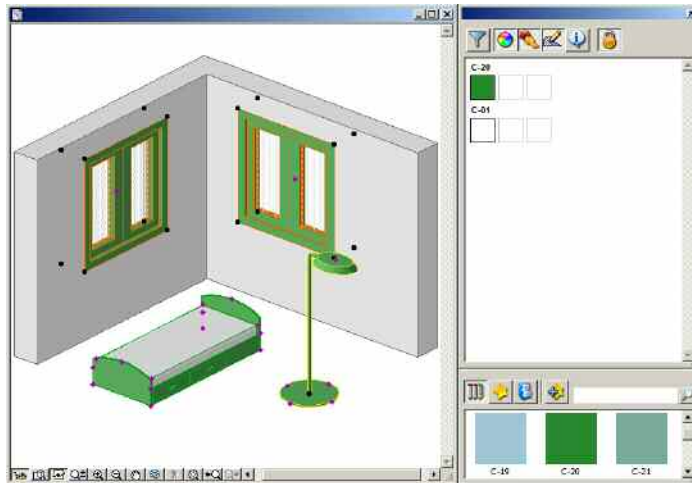
First we would have to select the two windows and enter their settings dialog, locate the element material variables (there could be more than one, particularly in the case of the window where each individual component may have a different material, modify them, then confirm the modifications.

Then the same procedure would have to be repeated for the other two elements (as they are of a different type).

With ArchiMaterial it is much simpler and quicker. We select the new material from the project's List of Materials and then drag it (drag-&-drop technique) onto the material to be replaced in the Tracker list:



And the modification will be made immediately in just one operation:



Try it to realise how much time you have saved...

## Copy materials (Eyedropper) and Transfer materials (Syringe)

The parameter transfer function is a well known procedure in the ArchiCAD work environment.

However, the standard procedure copies all values of all parameters (acquired from the element clicked by the user) and transfers them en masse to the destination element.

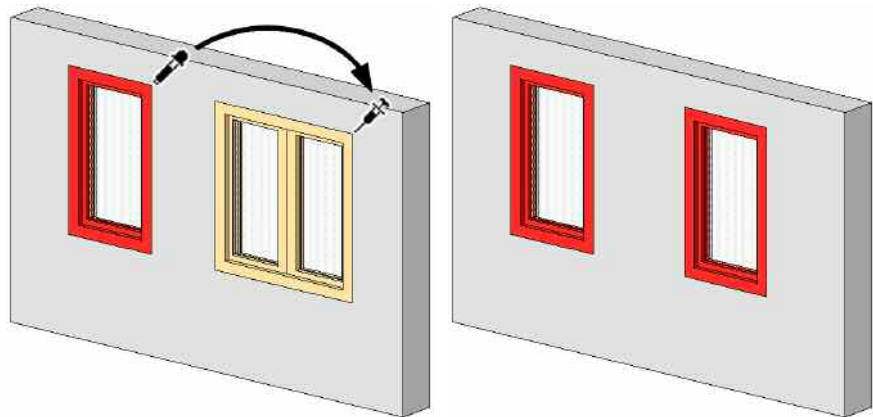
Here is an example using a single and double window.

The single window on the left already has all the material related parameters configured as required and we want to assign the same materials to the window on the right, retaining the geometry and characteristics of the individual components.

Here is how you would do this with the standard ArchiCAD procedure:

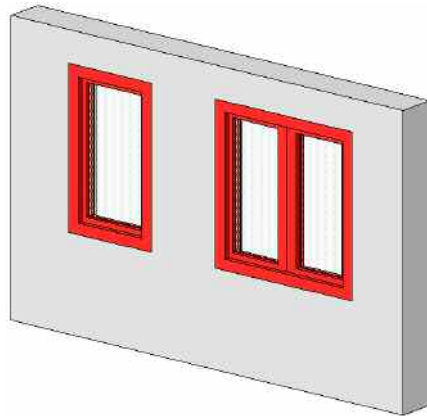
- with the eyedropper tool active, click on the left window to copy the parameters
- with the syringe tool active, click on the right window to assign the parameters acquired from the previous window.

Here is the result of this standard procedure:



As you can see in the image above, ArchiCAD has modified the window on the right, transforming it into the left window, while we wanted to transfer the material related parameters only.

Below is the result obtained following a similar procedure with ArchiMaterial:



As can be seen in the illustration, only the material related parameters have been transferred from one window to the other.

The result would be even worse if the two objects were of different types, for example, acquiring parameters from a window and transferring them to a door, and so on.

ArchiMaterial on the other hand acts on the material related parameters only (irrespective of the type of object: Window, Door, Object, Stairs, etc) and copies them from one library element to another, taking as its basis the name of the material variable).

The ArchiMaterial procedure is in every way similar to the standard ArchiCAD procedure:



1. click on the eyedropper icon to start acquiring the material related parameters:
2. click on the object from which you want to acquire the material information
3. click on the syringe icon to start transferring the material related parameters:
4. click on the object to which you want to transfer the material related information.

When using the eyedropper tool, you must click on any ArchiCAD building element containing information on the surface material (for example, it does not work for two-dimensional elements).

ArchiMaterial gathers information on the materials assigned (material parameter name, material assigned in the case of library elements or relevant face - material assigned in the case of other building elements) and retain it in memory (the information will remain available until you exit ArchiCAD).

When using the syringe tool (having first acquired the information on the parameters using the eyedropper, otherwise an error message will prompt you to do so), you must click on an element of any of the types listed above.

Remember that transfer of the parameters is based on the name of the parameter or face assigned!

For example, in the standard ArchiCAD library, two different types of element, doors and windows, share the same name for certain material related parameters, while other parameters have different names (for example, in the door, certain parameters with specific names manage the materials for the door leaf, a component obviously not present in a window).

Only the parameters with the same name (even if in different types of element) will be considered by ArchiMaterial. The other parameters will retain the values assigned.

**N.B.:** *the ArchiMaterial transfer procedure does NOT effect the default settings of the element (unlike the ArchiCAD procedure).*

## Create texture image



When managing materials, users often find it difficult to create seamless textures starting from an original image.

*Here is a specific example.*

*The image below must be used to create a material with a texture representing pebbles:*



*If the image is used like this, the result is unacceptable as the seams between the various tiles of the texture would be very obvious:*



*To obtain a result usable as a texture, the image must be modified using specific programmes or photo retouching applications to modify the original image and transform it into an image which can be repeated horizontally and vertically without visible seams.*

*The result would be as follows:*





Which would give the following result when used in PhotoRendering:



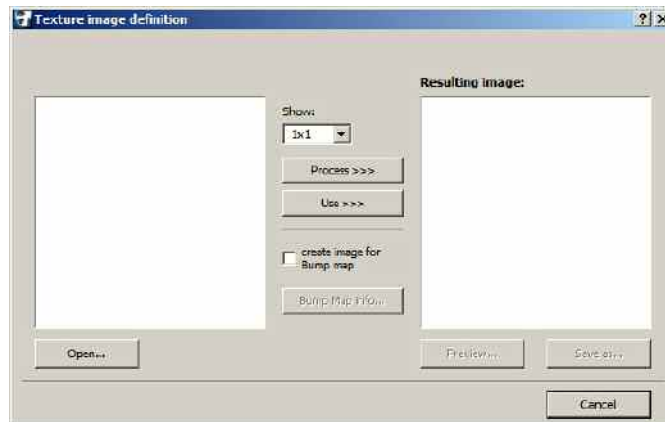
ArchiMaterial makes it extremely easy to obtain an image which can be seamlessly tiled.

### Procedure for creating texture images

This is how the above result can be obtained starting from a simple digital image.

Firstly, click on the **Create texture image** icon in the ArchiMaterial palette.

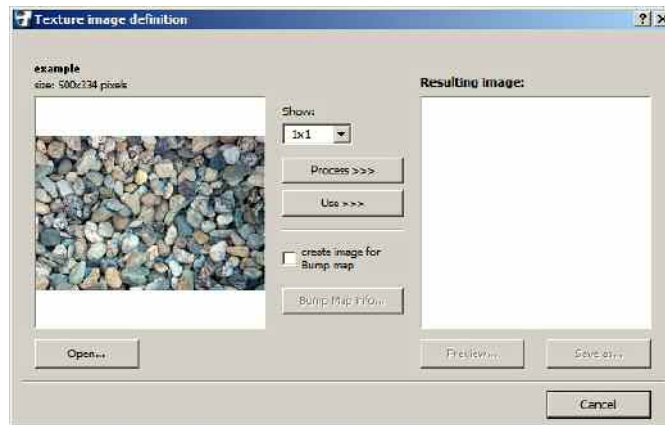
ArchiMaterial opens a create texture image dialog box:



The dialog is divided into two parts. The original image to be processed is displayed on the left and the image resulting from the ArchiMaterial process on the right.

The first step is to open the image by clicking on the **Open...** button

A standard dialog box enables the image to be located on the hard disk and selected. When selected, the image to be processed appears in the preview window on the left.

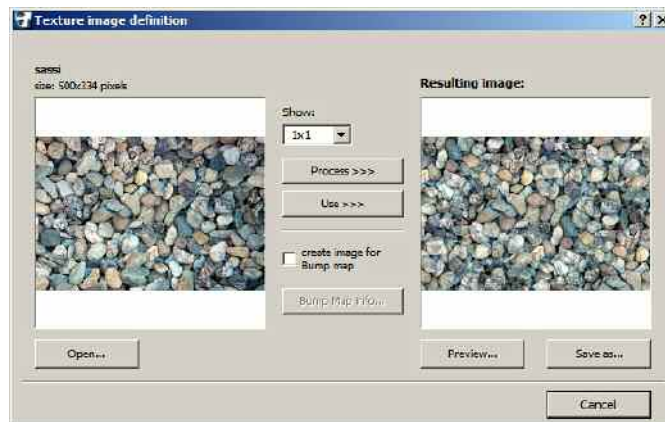


Above the image is the name of the file and size of the image in pixels.

In the middle, a pop-up menu (in every similar to the ArchiCAD material definition pop-up window) enables you to define the preview displayed. You can view one single image or a mosaic of the image made up of the number of elements defined in the pop-up menu.

Immediately below, the **Process** button launches transformation of the selected image.

No further configuration by the user is required. Just click on the button to see the resulting image in the area on the left:



Under the **Process** button, the **Use** button enables the selected image to be used as it is, without processing.

It is easy to explain why you might want to use the image without further processing... you may have an image which can already be used as a

texture (suitable for obtaining seamless tiling), but from which you want to generate an image to be used for the bump map effect.

### Bump map effect in LightWorks PhotoRendering

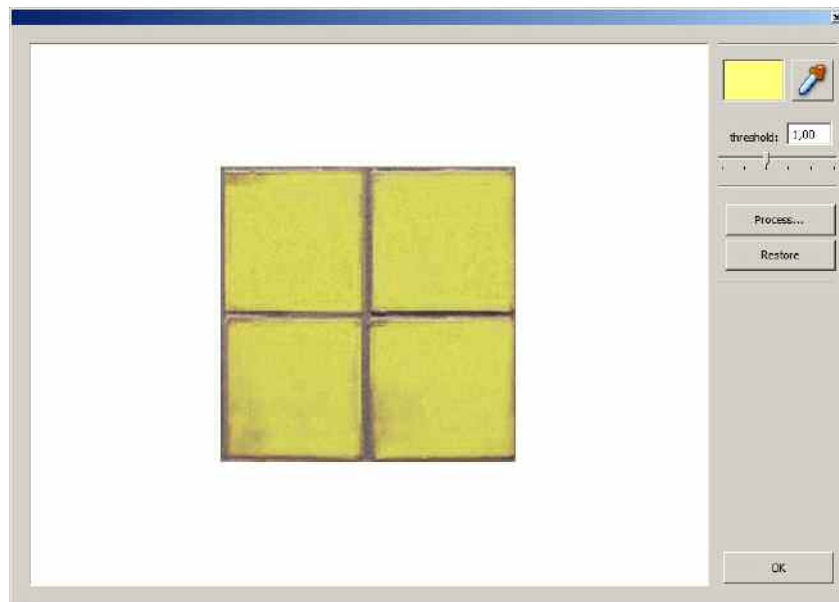
Together with the resulting image, under the **Use** button, a check-box enables a second greyscale image to be obtained for use to create a bump map effect during materials definition.

This second image is formed by emphasising the light and shade of the main image and can be used whenever you want to define a texture representing a rough, relief surface.

The **Bump Map Info...** button opens the dialog to configure calculation of the image to be used for the bump map effect. If you do not customise the configuration by means of this dialog, ArchiMaterial simply creates a greyscale duplicate of the main image, improving the levels to accentuate the light and shade.

**N.B.:** *the Bump Map Info... button is not enabled until you have processed the image (using the Process button).*

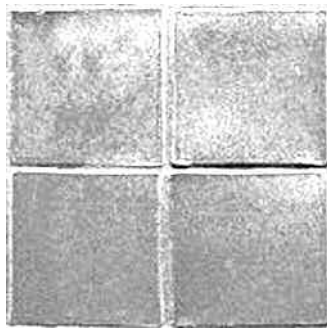
When you click on the **Bump Map Info...** button, the following dialog box appears:



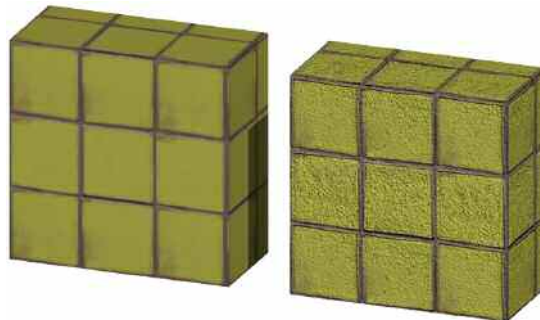
The preview displays your image (not the original image, but the image processed to obtain seamless tiling).

As described above, if you do not use the settings proposed in this window (by using the Process... button) or if, before exiting by clicking the **Done** button, you click the **Restore** button (cancelling the calculation performed with the **Process** button), ArchiMaterial produces the image to be used for the bump map effect by simply creating a greyscale duplicate of the image, improving the levels to accentuate the light and shade.

In this latter case (no personal configuration) you will obtain an image similar to the one below:



Below are two materials illustrating the result, on the left using just the main image created by ArchiMaterial (processed to obtain seamless tiling) and on the right, also using the image for the bump map effect:



As can be seen, the texture with bump map enhances the relief effect, adding "roughness" to the surface of the material.

Although this uses the standard configuration without user intervention, the depth effect of the image has nevertheless been improved. However, the surface of the tiles is also rough and this may not be the desired effect.

To assign the relief effect without making the entire texture rough, the user must intervene by means of the **Bump Map Info** dialog.

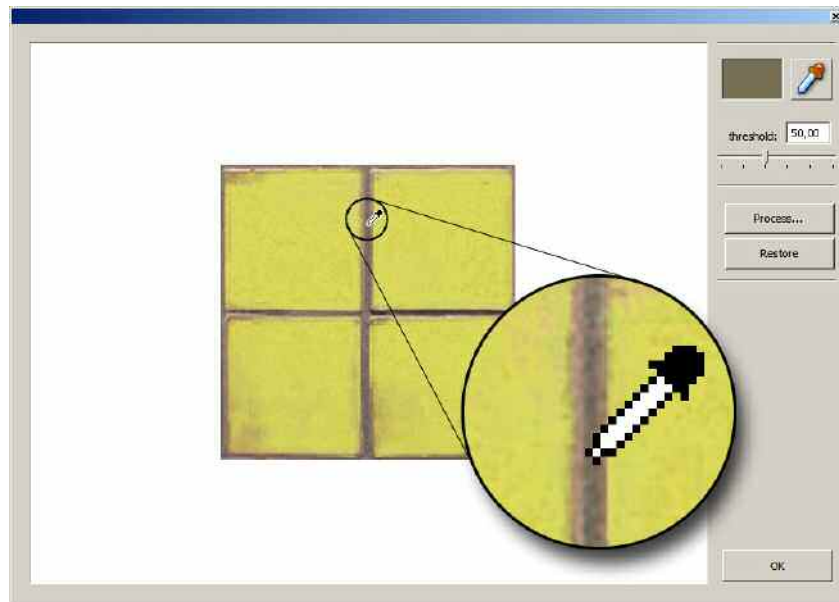
This is how.



At the top left, the eyedropper can be used to select the parts of the image with the same colour.

When the button with the eyedropper icon is clicked and the cursor is moved over the image preview area, it turns into a eyedropper.

Click on the image to define the colour to select, in this case, the joint between the tiles:



When you click on the image, the small sample square alongside the eyedropper button is updated with the colour acquired from the image and, on the image itself, the selected areas are highlighted in red.

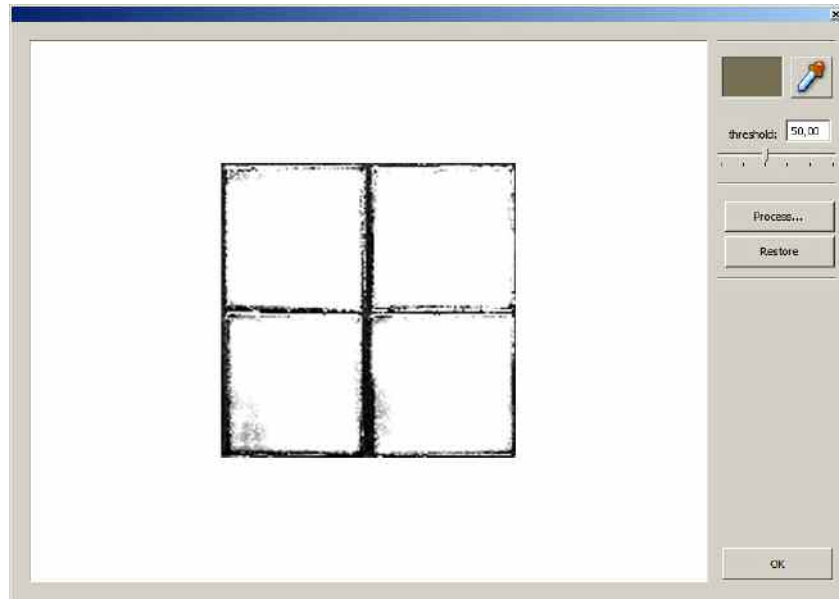
By clicking on the image with the eyedropper again, you can modify the sample colour used for the selection and therefore the selection itself. Only one colour can be used at a time with this procedure.



Under the button with the eyedropper there is an editable number field (values from 0 to 255) and a slider enabling you to define a threshold for the maximum colour difference.

A value near zero reduces the selection filter, a value near 255 extends the selection range.

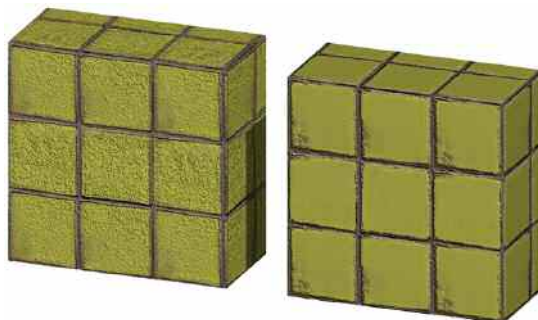
Click on the **Process...** button and the image created by the current selection is displayed:



If the result is not what you want, just click on the **Restore** button to reset the configuration and modifications made.

Now let's look at the different result obtained in the PhotoRendering by using this customised image instead of the default.

On the left, the material using the default image for the bump map effect, on the right, the material using the customised image just created:



As you can see, the "depth" effect is now applied to the joints only, while the surface of the tiles still retains the original characteristics of the texture.

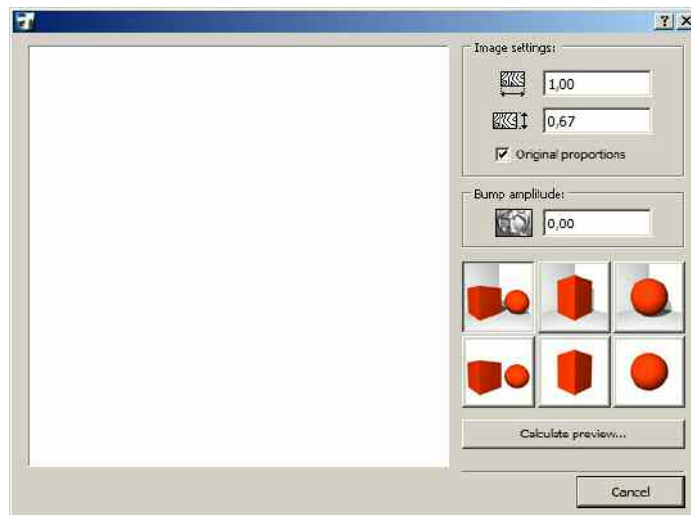
**N.B.:**

You cannot access the **Bump Map Info** dialog box until you have used the **Process...** or **Use** buttons. The image for bump map is, in fact, an elaboration of the final image on the right (or the original image if you click the Use button).

**Preview of the resulting image**

Under the image preview area, the **Preview...** button (active only if the image has already been processed by ArchiMaterial) enables you to verify the result of the PhotoRendering immediately.

When you click on the **Preview...** button, the following dialog box appears:



The area on the left contains the PhotoRendering test and is empty until you have used the **Calculate Preview...** button.

At the top right, the two editable fields can be used to define the actual dimensions of the image.

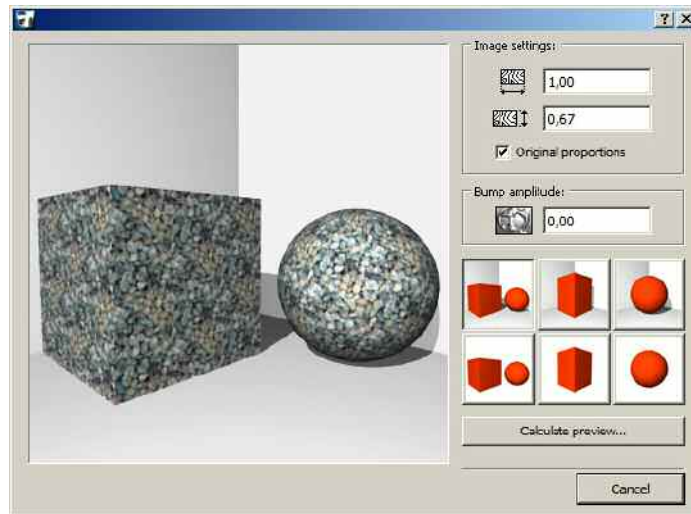
The **Original proportions** check-box locks the proportion between the two dimensions.

These controls are in every way similar to those offered by ArchiCAD in the materials definition dialog.

Immediately below, an editable field defines the Amplitude of the bump map effect. It is active only if the option for calculating a second image for the bump map effect has been activated (see above).

The six buttons below define the model to use as a base for the PhotoRendering test. Click on one of the buttons to select which model to use.

Finally, the **Calculate Preview...** button launches a background PhotoRendering calculation of the selected model using the image processed by ArchiMaterial as the material texture.



You can continue modifying the settings until you achieve the required effect, using the **Calculate Preview...** button to calculate a new PhotoRendering.

When you have finished experimenting, click on the Cancel button to return to the previous dialog box.

To save the resulting image (the image used to create the seamless tiling) and any secondary image created (the one used to create the bump map effect), click on the **Save as...** button.

A standard dialog box enables you to define the name and format of the document to be saved and its destination on your hard disk (if the image is to be used as an ArchiCAD texture, remember to save it in one of the active libraries and load the library after it has been saved).



The secondary image for bump map will have the same name as the main image, plus the suffix "\_BM".

After saving, you can begin the procedure again by opening a new image to be transformed, or return to ArchiCAD by pressing the **Cancel** button.

**N.B.:** *consult the appendix to this manual for instructions on how to use the images processed by ArchiMaterial as ArchiCAD materials textures.*

## Straighten texture image

Sometimes the images you want to use as textures for PhotoRendering come from photographs (perhaps taken on site) and therefore have an unwanted perspective effect which prevents them from being used easily for this purpose.

The ArchiMaterial straighten texture image function helps resolve this problem.

Let's take the image below:



It is a photograph of a majolica tiled wall taken in a historic building.

When the photograph was taken, despite efforts to take as frontal a view as possible, the result is still not suitable for creating a tileable image to be used as texture.

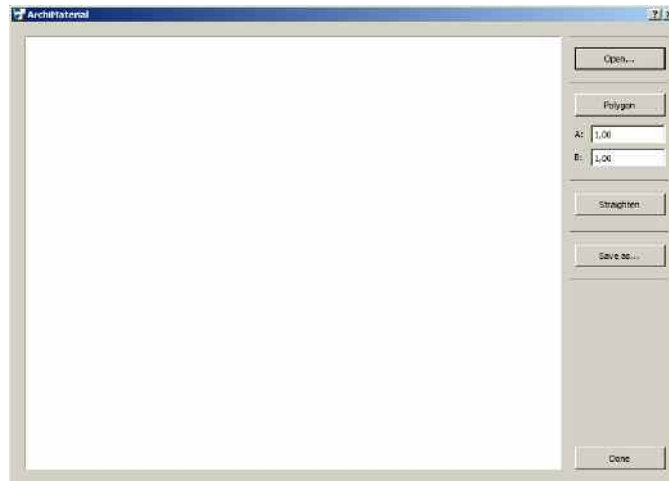
The lines drawn on the photograph show how the perspective angle makes the image unusable for this purpose.



This is how ArchiMaterial can correct this photograph.

Click on the **Straighten texture image** icon in the ArchiMaterial palette.

ArchiMaterial immediately opens the following dialog box:



The large area (now white) on the left will contain the image to be processed.

Click on the **Open...** button and select the photograph to be straightened. It immediately appears in the preview area.



If you move the cursor over the image it changes into a small hand.

When the Shift button is pressed, the cursor changes into a magnifying glass with a plus sign.

When the Ctrl button is pressed, the cursor changes into a magnifying glass with a minus sign.

The use of these three functions is obvious:

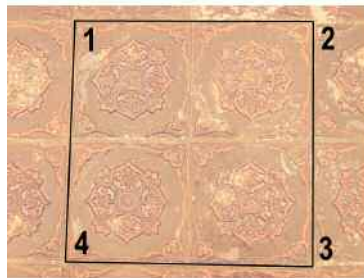
- when the cursor has the form of a small hand, you can move the image to frame the part you are interested in
- when the cursor has the form of a magnifying glass with a plus sign, you can click on the image to zoom in on the area indicated by the click
- when the cursor has the form of a magnifying glass with a minus sign, you can click on the image to zoom out on the area indicated by the click.

Now you must define a four-sided polygon on the photograph.

This polygon will be straightened to form a rectangle (or square, depending on the dimensions of the sides). This straightening will correct the perspective distortion.

Click on the **Polygon...** button and then on the image as shown below to define the polygon to be straightened.

You can use the enlarge/reduce/panorama functions to make define the shape more precisely. It must follow the outline of the section of photograph to be straightened as accurately as possible.



If the result is not what you wanted, don't worry. After completing the polygon, just drag the corners to position them as required:

1. move the cursor over a corner and it changes into a checkmark symbol
2. click once and drag to the required position (the cursor turns into four small arrows)

3. click on the point where you want to reposition the corner.

A:	1,00
B:	1,00

When you have defined the polygon to be straightened to your satisfaction, use the two editable fields at the top right to define the actual dimensions of the resulting rectangle.

### **N.B.:**

*These two numerical fields define the proportions between the two dimensions of the resulting straightened rectangle only. The actual dimensions of the image will be defined during configuration of the texture to be associated with the material only.*

Configure the dimensions and click on the **Straighten...** button to begin processing the image which will be immediately displayed in the preview area.

As you can see in the image below, the processing involves two operations:

1. it straightens the photograph according to the shape of the polygon you defined and the dimensions of the resulting rectangle
2. it crops the original image so that the final result coincides with the straightened rectangle (the areas outside the rectangle would be too distorted).



Finally, click on the **Save as...** button to save the resulting image (with the required name and format) for use as a texture in your PhotoRendering:



After saving, you can repeat the procedure with another image to be straightened or exit from the dialog using the **Done** button.

## ArchiCAD/LightWorks materials toggle

As described at the beginning of this manual, the List of ArchiCAD Materials provided by ArchiMaterial has been designed to give the user immediate information, we believe more effectively than with the standard ArchiCAD pop-up menu.



Together with the name of the material, the window also displays a preview of the material, a suitably reduced image of the texture or the colour if no texture is associated with the material.

As any ArchiCAD user will know, the appearance of the material in the PhotoRendering depends on the rendering engine used.

The LightWorks rendering engine, the most effective in producing realistic representations, uses its own material definitions which may be different from those used by the other ArchiCAD rendering engines.

This difference may involve not only quality (more effects can be used in LightWorks than in ArchiCAD), but also appearance. For example, a given material might use LightWorks predefined shaders or procedural shaders with no equivalent in the internal ArchiCAD engine.

This limitation has frequently been noted by users who, when assigning materials to the various components of the building, often suffer as a result of this incompatibility.

Obviously we could not change the way ArchiCAD handles materials, but we have tried to simplify (or rather, make more compatible) the way materials are handled in the ArchiCAD materials palette offered by ArchiMaterial.



As described above, the textures and colours used by the ArchiCAD internal engine (and OpenGL) are displayed by default. Now we will explain how to change the settings so as to use LightWorks materials for these previews.

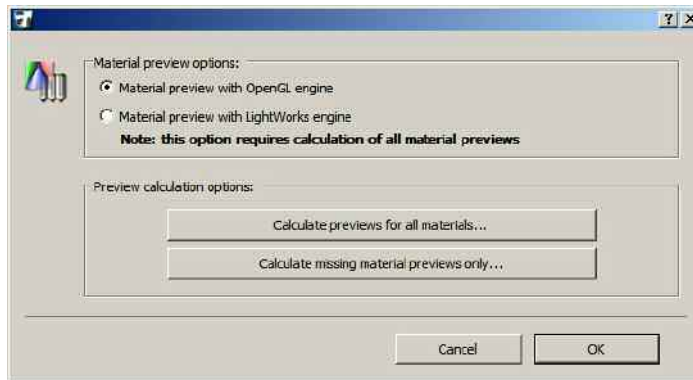
Firstly, without going into too much detail, in the ArchiCAD API development environment, there is currently no way to have access to information on the LightWorks materials settings.

ArchiMaterial gets round this obstacle and provides a valid (we believe) alternative.



Click on the **ArchiCAD/LightWorks materials toggle** icon in the ArchiMaterial palette.

A configuration window opens.



In the top section, Material Preview Options, two radio buttons can be used to define whether to use the Material Preview with OpenGL engine or LightWorks engine previews.

As explained above, from the ArchiCAD API development environment, there is no access to information on LightWorks materials configurations.

To utilise the material previews used by the LightWorks engine, ArchiMaterial must calculate all these previews one by one for each material defined in the project.

This totally automatic operation is performed in the background.

Once the procedure has been launched, each material in the project is calculated and a PhotoRendering of a small sample is produced. This PhotoRendering image will be saved in a specific directory in the directory containing the ArchiMaterial add-on.



The project may contain hundreds of materials.

Each preview calculated and saved by ArchiMaterial needs about one/two seconds (obviously depending on the performance of your computer), so calculating these previews may take several minutes.

Obviously once saved, the previews will be used again by ArchiMaterial and will not have to be calculated again each time.

A project could, however, contain materials not found in other projects and therefore (as the association preview-material is based on the name of the material) some of the previews could be missing.

In this case, ArchiMaterial will use a generic preview which warns you that there is no preview associated with the material concerned:



Going back to the **ArchiCAD/LightWorks materials toggle**, there are two buttons in the Preview Calculation Options.

### **Calculate previews for all materials...**

Clicking on this button calculates the preview of all materials present in the project. It must be used the first time you want to use LightWorks material previews in the ArchiMaterial List of ArchiCAD materials.

It is the longest procedure and may require several minutes to complete.

Once performed, it need not be performed again.

### **Calculate missing material previews only...**

Clicking on this button calculates the preview of those materials for which ArchiMaterial does not yet have a preview.

The time taken depends on the number of material previews missing.

You should perform this procedure whenever you notice a question mark icon instead of a material preview in the ArchiMaterial List of ArchiCAD materials.

## **Help**

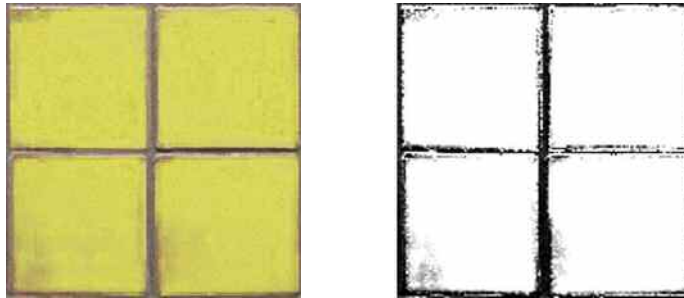
As in all Cigraph add-ons, clicking this button opens the user manual in pdf format.

To function correctly, you must have Acrobat Reader installed on your computer and the relative help document in pdf must be in the same folder as the ArchiMaterial add-on.

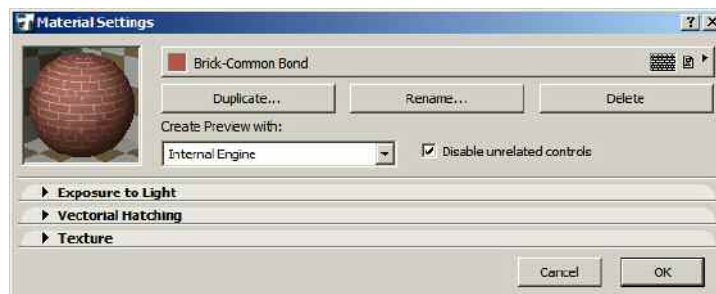
## Appendix

Although the ArchiCAD user manual already explains how to create a material with texture, in this appendix we will briefly summarise the procedure for creating this type of material, including definition of the bump map effect in LightWorks materials, in order to use the images generated by ArchiMaterial as effectively as possible.

Supposing we have already used ArchiMaterial to produce the two images below, the first as a texture image, the second as a bump map image.



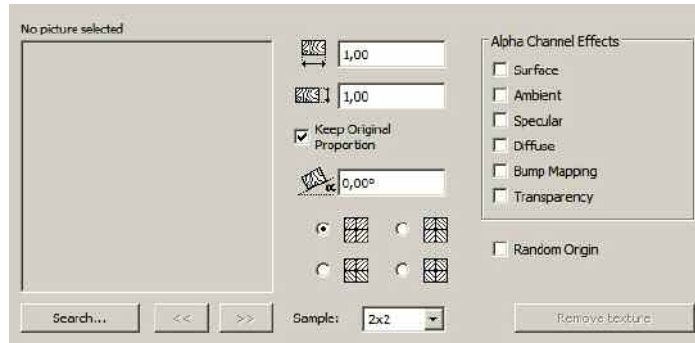
First, open the **Element/Materials Options/Properties...** dialog:



Using the **Duplicate...** button, duplicate one of the existing materials, ideally the one whose characteristics are most similar to the material we want to create.

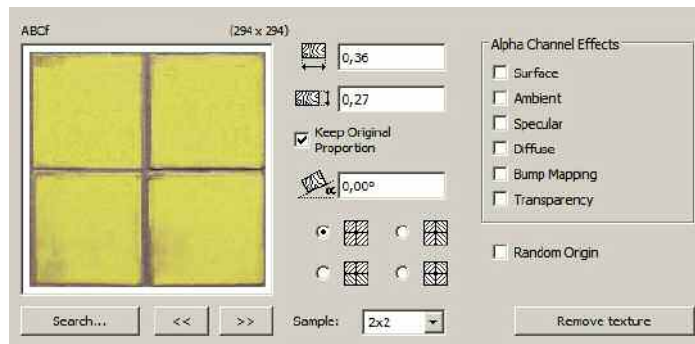
To configure the parameters in the **Exposure to light and Vectorial hatching** panel, see the ArchiCAD user manual.

In this example limited to handling of the texture image only, we will just look at configuration of the **Texture** panel.



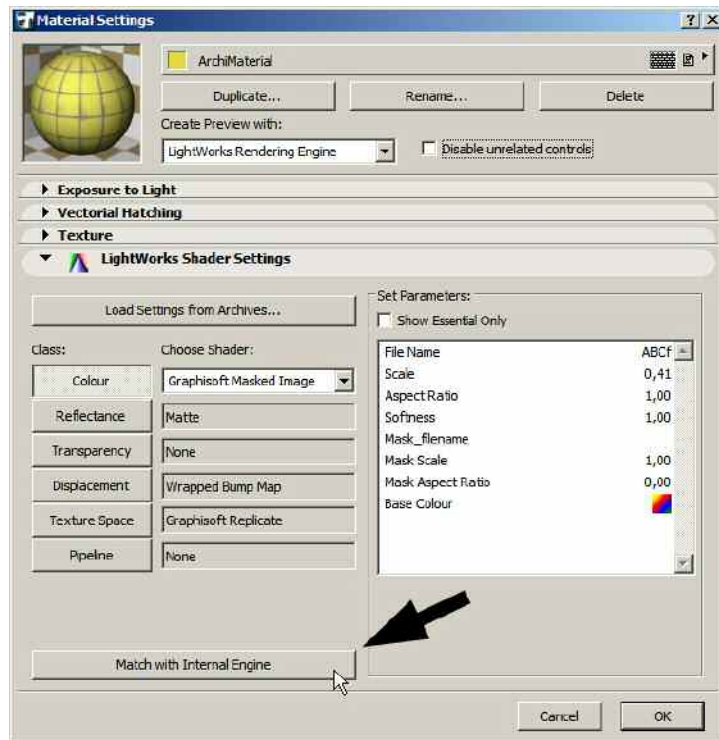
First click on the **Find...** button and in the dialog box which appears, select the first image, the one to be used as a texture for the material (the two images must first have been copied into one of the active library directories).

Now, configure the two editable fields defining the actual dimensions of the texture:



We have now defined the material for use with the OpenGL and ArchiCAD internal rendering engines.

Configuring the material for use in LightWorks as well is extremely easy, just use the Compatibility with Internal Engine button in the LightWorks Shader Settings panel.



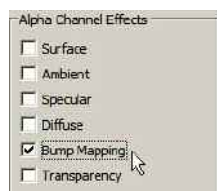
Done.

This creates a material using the texture image transformed with ArchiMaterial (the one to produce the seamless tiling).

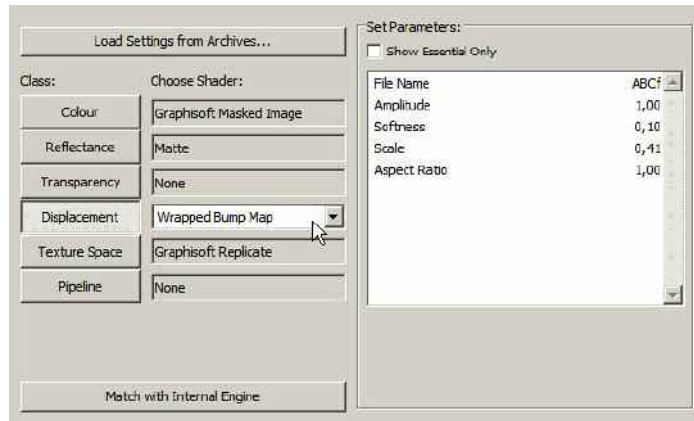
In this case, the texture does not use the bump map effect (in fact, the word "**None**" appears alongside the Shift button in the LightWorks Shader Settings panel).

Using the second image generated by ArchiMaterial for the bump map effect is equally simple.

Go back to the **Texture** panel and, on the right, activate the **Bump map** check-box:



When you go back to the **LightWorks settings** panel and click on the **Compatibility with Internal Engine** button, the **Offset** shader has changed automatically:

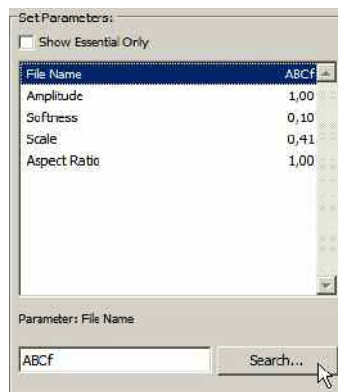


Alongside the **Offset** button, the wording **Graphisoft Bump Map** now appears.

Click on the **Offset** button to display the shader parameters on the right (if the "**Show essential only**" option is on, turn it off to see all the shader parameters).

The name of the image used for the texture (the image generated by ArchiMaterial to create the seamless tiling) appears to the right of **Filename**.

Click on Filename to display the parameters:



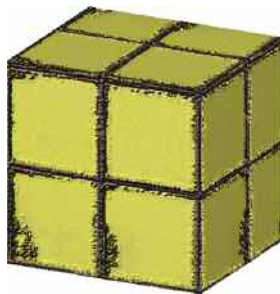
Click on the **Find...** button to select the second image, the one generated by ArchiMaterial for the bump map effect.

Using the procedure described above, the **Scale** and **Aspect proportion** parameters need not be configured as, by using the **Compatibility with Internal Engine** option, they are already correctly set.

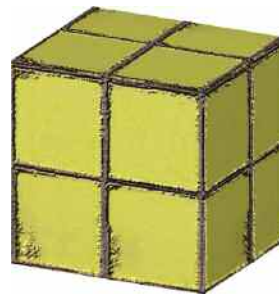
You can, however, set the two parameters **Softness** and **Amplitude**, respectively:

- the **Softness** parameter controls the level of blur of the texture image, making the relief effect more or less defined.
- the **Amplitude** parameter determines the depth of the bump map effect. High values accentuate the differences between the relief and depression of the bump map. Negative values reverse the direction (relief areas become depressions and vice versa).

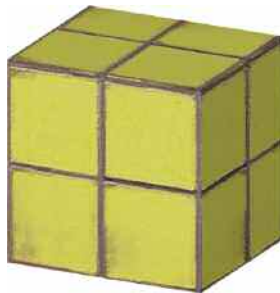
The following images illustrate the different effects obtained (using the two images in our example) according to the value set for the **Amplitude** parameter (in our example, positive values make the joints stand out, negative values make them retract).



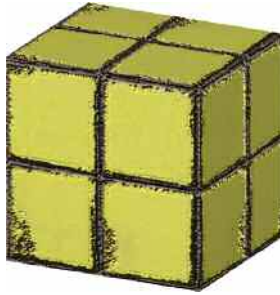
*Amplitude = 1.00*



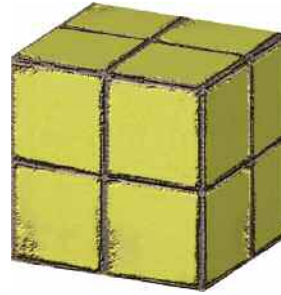
*Amplitude = 0.1*



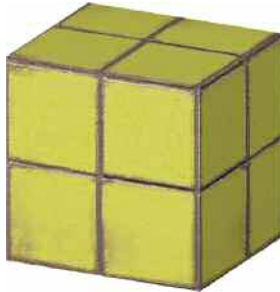
*Amplitude = 0.01*



*Amplitude = -1.00*



*Amplitude = -0.1*



*Amplitude = -0.01*