

User Guide

Guide d'Utilisateur

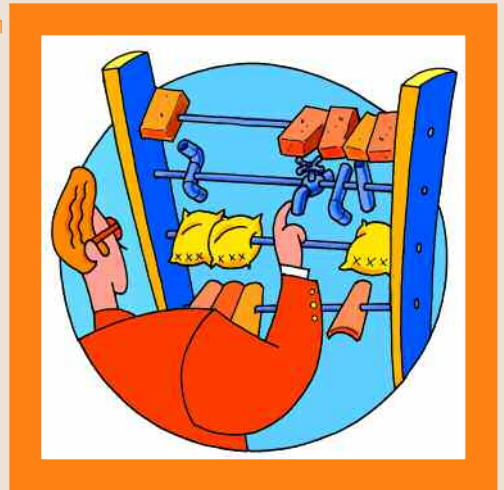
Benutzerhandbuch

Guía del Usuario

Guida Utente

# ArchiQuant<sup>TM</sup>

vers. 1.0



PLUGIN FOR ARCHICAD®

ArchiQuant "User Guide"  
Version 1.0 for Microsoft Windows and Apple Macintosh  
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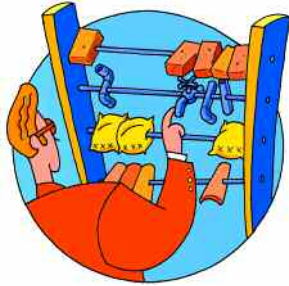
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# ArchiQuant



## What is an ArchiCAD plug-in?

A plug-in is a Software component that allows you to add functions to 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. ArchiQuant 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

ArchiQuant 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 ArchiQuant 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 ArchiQuant Palette depending on your needs.

The method used when working with ArchiQuant 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.

# ArchiQuant

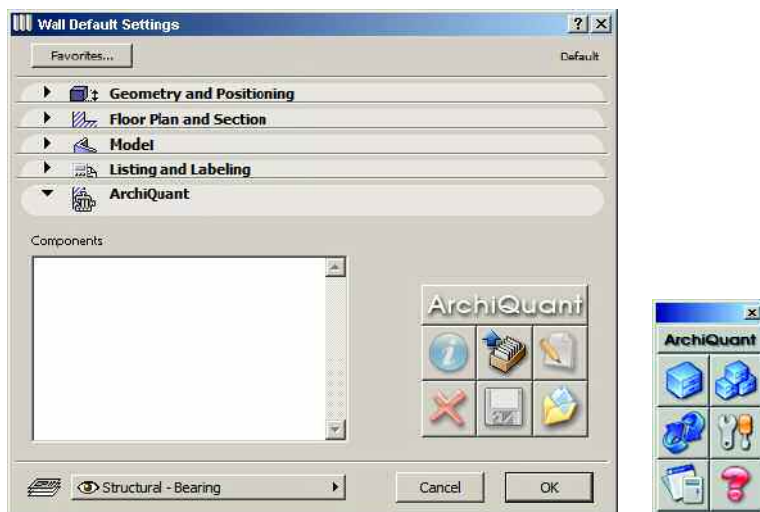
ArchiQuant is an ArchiCAD plug-in developed to provide users with a simpler and more immediate way of calculating estimates linked to the construction (and other) elements in an ArchiCAD Virtual Building.

Using ArchiQuant requires no knowledge of GDL language, nor the use of Property Objects or the ArchiCAD calculation database.

You simply need to assign a component to the construction element in question, then define the calculation method (quantity calculation formula) for that element and it will be automatically calculated from the list of calculations provided by ArchiQuant.

## How ArchiCAD changes when you install ArchiQuant

If ArchiQuant is correctly installed in the ArchiCAD add-ons directory, there will be a new panel inside most of the element setting dialog boxes (in practice, for all elements which can be calculated by ArchiQuant) and a dedicated tool palette providing access to the various ArchiQuant functions:



The tool palette can be displayed via a special command in the ArchiQuant menu. The settings panel appears automatically if you are using the most recent versions of ArchiCAD (or paradoxically ArchiCAD 8 as the work environment and therefore the tool settings boxes were not

configurable), or it must be activated (as in the case of the Graphisoft IFC add-on) by means of the customise work environment procedure (see the section of the ArchiCAD manual on customising tool settings boxes).

You will be able to calculate quantity estimates using just these two elements (settings panel and tool palette).

## How ArchiQuant works

Before describing all the commands and functions of ArchiQuant in detail, the information below explains the working philosophy of this add-on.

### The components database

The components database file (in other words, the price list) contains all the items which can be calculated in our ArchiCAD project.

- It is essentially based on two types of element:
- the Chapter (identical to the concept of the Key in the ArchiCAD database)
- the Component (identical to the concept of the Component in the ArchiCAD database)

As we will describe in more detail later in this manual, the data in the database can be imported from external files or defined manually using ArchiQuant itself.

### Chapter

The components database can be divided into a hierarchy of groups, facilitating consultation and structuring the components into themed groups.

Each Chapter includes:

- an alphanumeric code identifying it unambiguously
- a text description.

### Component

The component is the basic unit of the database.

Each Component includes:

- an alphanumeric code identifying it unambiguously
- a text description
- a brief description
- a measurement unit
- a unit price

The total quantity of the component and total cost are calculated automatically by ArchiQuant based on the sizes of the linked element obtained from ArchiCAD itself.

## Quantity calculation formula

When a component is assigned to an ArchiCAD construction element, the way in which that component is calculated must be defined according to the sizes/quantities of that construction element.

The rule used for this calculation, simply a mathematical equation defined by the user, is known as the calculation formula.

## List of linked components

You can link a number of components and therefore a number of formulas to each ArchiCAD construction element:

For example, in the case of a certain type of wall, the individual components could be:

- bricks (number of bricks per cubic metre of wall)
- external plaster (linked to the external surface area of the wall)
- internal plaster (linked to the internal surface area of the wall)
- external finish (linked to the external surface area of the wall)
- internal painting (linked to the internal surface area of the wall)
- skirting (linked to the internal length of the wall minus the width of the doors in the host wall)
- etc....

The list of components could be quite long and the formulas quite complex.

ArchiQuant enables the user to save these lists of components and link them again to the various construction elements at a later stage by re-importing them.

## Calculation Lists

These lists display the estimates calculated by ArchiQuant.

There are two types:

- tabbed calculation lists (where the data are presented within a grid of cells)
- formatted calculation lists (where the data are arranged in a structured layout).

## **List Settings**

As will be described below, the calculation lists can be customised, choosing which data to display, the filters to be used and the graphics of the list itself.

Once again, the settings can be saved for use at any moment without having to waste time reconfiguring the list as required.

## The ArchiQuant tool palette



The ArchiQuant tool palette provides the user with six tools:

### **Modify file**

Click on this button to access the dialog to edit/define the Components File.

In this dialog box, you can create/modify/delete the Chapters and Components in the current database.

### **File management**

Click on this button to load a Components File saved previously.

The selected file will replace the file currently active.

### **Update Data**

This tool updates all the previous component settings after the components database has been modified.

### **ArchiQuant settings**

Accesses a dialog to configure a number of general settings used by ArchiQuant.

### **Calculation Lists**

Click on this button to customise and display the calculation lists produced by ArchiQuant.

### **Help**

Displays ArchiQuant help in pdf format.

## Modify File tool

The Modify File tool displays the Components File window where you can create, delete or modify the Components in the current price list and the Chapters defining their hierarchy.

Before going into the functions of this dialog box in more detail, let's take a look at what exactly Components and Chapters are and how they are managed by ArchiQuant.

Almost all the information required by ArchiQuant to create its Calculation Lists is contained in the current Components Database.

The user can use or modify the information, add new items or delete existing ones in order to customise the file as required.

Multiple files (which can, however, only be used one at a time) can also be configured to satisfy specific requests (for example when using two files with the same components but different unit prices).

The basic elements of these files are the Components which are organised into logical groups known as Chapters (identical to ArchiCAD Keys).

## The Components in the file

The Components can be:

- **the constituent materials of a structure** (steel, concrete, etc)
- **complete processes** (12 cm thick external two-brick masonry with unfinished plaster on the inside, appropriately insulated with semi-rigid mineral fibre panel, etc).
- or any **component of the building** (window in Scandinavian pine with tilt-and-turn opening, melamine veneer inside, with radio frequency remote control, motor, rain sensor and multiple power supply unit, etc.)

Each Component includes:

- a **unique identification code**
- a **complete description**
- a **brief description**
- a **measurement unit**
- a **unit price**.



The component code is unique and identifies the component without possible alternatives or ambiguity within the file.

In the code syntax, the dot is used to separate the constituent groups of alphanumeric strings (e.g. ABC.0123.C12).

The separator dots in the code help define the hierarchy of the Components File: each group of characters identified by the separators defines a Chapter (Key) in the file, while the last group of the code is the actual code of the component.

For example, a component with the identification code:

016.0042.013.12345

Definisce la seguente gerarchia:

- **016** *(the first group identifies Chapter 016 at file root level)*
- 016.**0042** *(the second group identifies Chapter 0042 contained in Chapter 016)*
- 016.0042.**013** *(the third group identifies Chapter 013 contained in Chapter 00042)*

016.0042.013.**12345**

## The Chapters in the file

Chapters are categories which help group the components logically.

Each Chapter includes:

- a **unique identification code**
- a **description**.

Chapters can be defined to group the attributes by contractor, materials, profession, costs, etc.

As described in the section above, the order and hierarchy of the Components are defined by codes.

Secondary chapters appear at a lower level, for example, on the same level as the components of a higher Chapter.

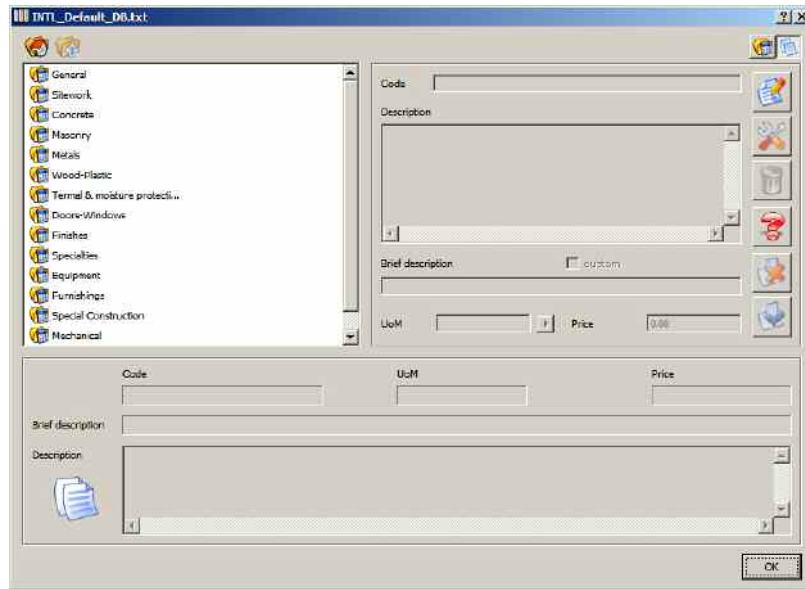
The separator dots in the Chapter code help define the hierarchy. For example, Chapter 016.004.013 is subordinate to Chapter 016.004 which is in Chapter 016.

The Chapters on the top level must not have a dot after the code number.

The Chapters must be unique within the database and this is in any case determined automatically by the fact that the identification code is unique.

## The Modify File dialog box

The Modify File dialog box is divided into three main sections:



At the top left, a hierarchical list displays all the items contained in the file (Chapters and Components).

The icon with the file symbol alongside the text identifies a Chapter:



The icon with two pages alongside the text identifies a Component:



Navigation within the file hierarchy is extremely simple:



- Click on a Chapter to enter it and display the contents
- click on the icon above the list with the house symbol to go to the highest level of the file (root level)

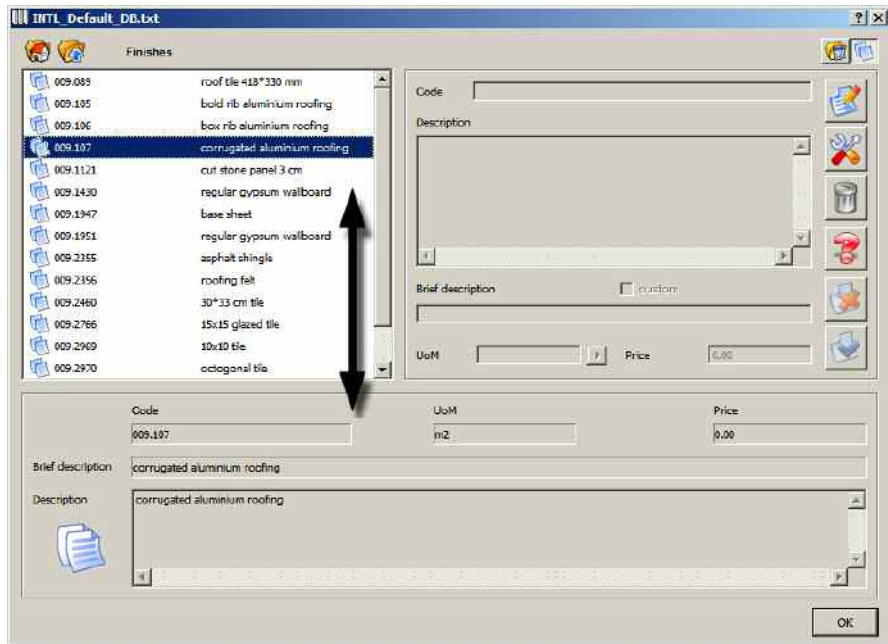


- click on the icon above the list with the arrow pointing upwards to go back to the previous level (the Chapter containing the item currently displayed).

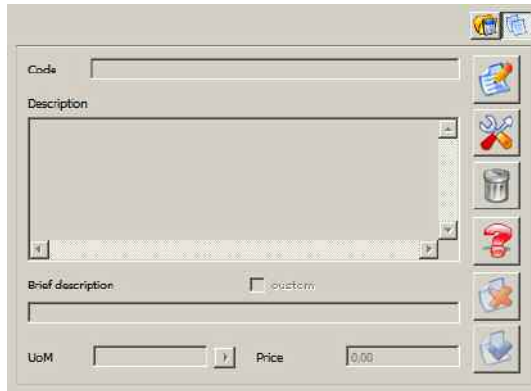
Above the list alongside the second icon is the name of the Chapter whose contents are currently listed:



In the bottom section of the dialog box is a preview area displaying all the information linked to the item currently selected in the list:



The section at the top right of the dialog box is dedicated to editing the items in the file:



Firstly, the two icons at the top right define whether we want to edit chapters or components. If the first icon (with the file symbol) is pressed, we intend to edit the Chapters in our file; if the second icon (with the two pages symbol) is pressed, we intend to edit the Components in the file.

## Modifying the File components

To create, delete or modify the components of the file, you first need to click on the icon with two pages at the top right, so that it appears pressed:



## Create a new Component

To create a new component in the current file, use the first button at the top of the panel on the right:



A tip to simplify your work: before creating the component (in other words, before clicking the button mentioned above), navigate in the file until you are directly on the Chapter the component will be part of. The initial part of the code identifying the component will thus be automatically compiled by ArchiQuant.

When you click on the pencil button, ArchiQuant activates all the editable fields in the components editing area, allowing you to enter the required values:

The first field at the top is the **identification code**.

Part of the code (at the beginning) will be automatically compiled by ArchiQuant (unless you are at file root level when the element is created) in order to assign the correct hierarchy to the component being created.

After the proposed code (ArchiQuant automatically adds the separator dot at the end), enter the actual code of the component.

Immediately below, there is a large editable field where you can write a description of the component.

Unlike with ArchiCAD components, there is no length limit.

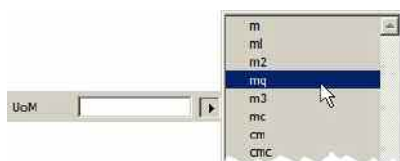
The brief description (maximum 30 characters) is automatically compiled on line by ArchiQuant, based on the text of the complete description.

If you are not satisfied with the result, you can simply click on the custom check-box and modify the contents as required.



Immediately below on the left, there is a field to define the measurement unit for the component.

You can enter the required string or use the icon with the arrow to access a pop-up menu listing all the measurement units already defined:



Finally, in the last field at the bottom right, enter the unit price of the component being edited.



After defining the component, it can be saved in the File by clicking on the last button at the bottom of the panel with the tick symbol.

Alternatively, all the modifications made can be ignored by clicking on the penultimate button at the bottom of the panel with the red X icon.

If the settings are confirmed and the component just created is saved, it will appear immediately in the list on the left.



### Non-unique codes

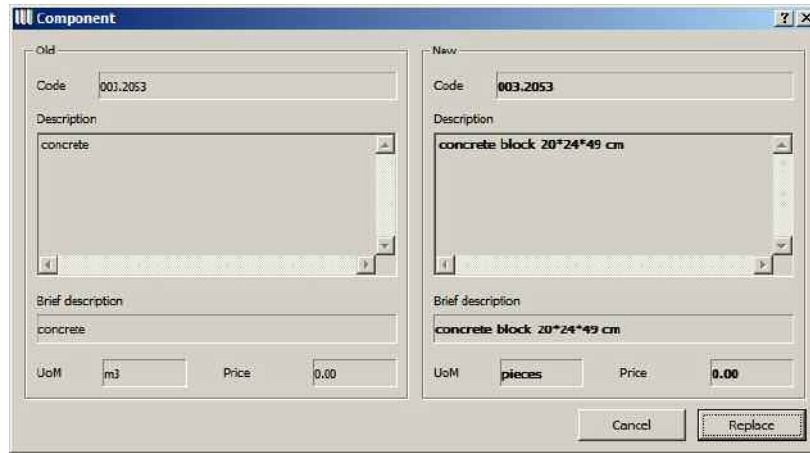
As already described, the identification codes are unique.

If you try to save a component with the same code as one already present in the current file, ArchiQuant will note the error and display a warning dialog box.

In the box which appears, ArchiQuant proposes both components with the same identification code, on the left the component already in the file and on the right, the component you are trying to save.

Clicking on the **Cancel** button takes you back to the element editing box where you can modify the identification code, while clicking on the

Replace button eliminates the existing component with the same identification code and keeps and saves the component you have just edited.



## Modifying an existing component



Obviously, the button to modify items is active only if a component has been selected in the list on the left.

When you click on the button, ArchiQuant activates all the editable fields in the components editing area, displaying the current values and allowing you to enter the required values:

To confirm or ignore the modifications, use the same buttons as described above.

The button with the tick symbol saves the modifications, the button with the red X closes the editing box without modifying the existing values.

## Deleting an existing Component



To delete a component from the current file, use the third button at the top of the panel on the right.

Obviously, the button to delete items is active only if a component has been selected in the list on the left.

When the button is clicked, ArchiQuant displays a dialog box prompting you to confirm deletion of the element. If you click **OK**, the component will be immediately deleted from the file.



## Help

The button with the question mark icon functions in the same way as the equivalent in the ArchiQuant tool palette, displaying the online manual in pdf format.

If you are not sure or have forgotten the function of one of the dialog box buttons, you can access the manual without having to close the box to access the second button in the palette.

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

*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 add-on.*



## Modifying the Chapters in the file

To create, delete or modify the chapters in the file, you first need to click on the icon with the file symbol at the top right, so that it appears pressed.

As will be described, changing from Component editing mode to Chapter editing mode does not greatly change the functions described above.

The only change involves exploration of the file list as when you click on a Chapter, you do not enter that chapter (in other words, the next level), but select it (the selection serves when using the **Modify** or **Delete** tools which, as described above, are enabled only when an item is selected).

It is therefore best not to click on the file icon at the top right to pass to chapter editing mode until you are viewing the required hierarchy level.

The two icons which toggle the editing mode can be used at any time, so if you want to explore the list (going up or down through the hierarchy levels), switch to component editing mode, move to the required level and then go back to chapter editing mode using the corresponding button.

## Create a new Chapter



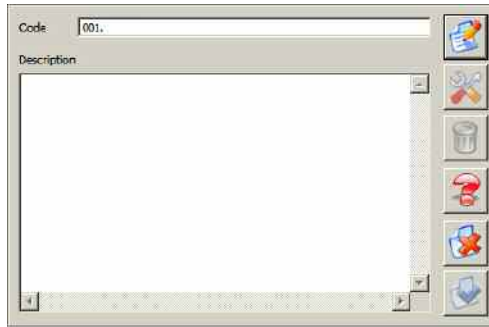
To create a new chapter in the current file, use the first button at the top of the panel on the right.

A tip to simplify your work: before creating the Chapter (in other words, before using the button mentioned above), navigate within the file until you are directly on the Chapter which will include the Chapter to be



created: The initial part of the code identifying the Chapter will thus be automatically compiled by ArchiQuant.

When you click on the pencil button, ArchiQuant activates all the editable fields in the Chapter editing area, allowing you to enter the required values:



The first field at the top is the **identification code**.

Part of the code (at the beginning) will be automatically compiled by ArchiQuant (unless you are at file root level when the element is created) in order to assign the correct hierarchy to the Chapter being created.

After the proposed code (ArchiQuant automatically adds the separator dot at the end), enter the actual code of the Chapter.

Immediately below, there is an editable field where you can write a description of the Chapter.

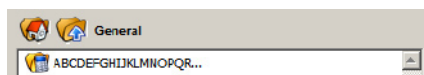
Unlike with ArchiCAD Keys, there is no length limit.



After defining the Chapter, it can be saved in the File by clicking on the last button at the bottom of the panel with the tick symbol.

Alternatively, all the modifications made can be ignored by clicking on the penultimate button at the bottom of the panel with the red X icon.

If the settings are confirmed and the Chapter just created is saved, it will appear immediately in the list on the left.



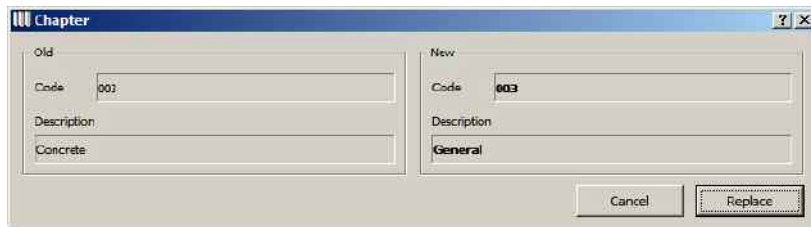
## Non-unique codes

As already described, the identification codes are unique.

If you try to save a Chapter with the same code as one already present in the current file, ArchiQuant will note the error and display a warning dialog box.

In the box which appears, ArchiQuant proposes both Chapters with the same identification code, on the left the Chapter already in the file and on the right, the Chapter you are trying to save.

Clicking on the **Cancel** button takes you back to the element editing box where you can modify the identification code, while clicking on the **Replace** button eliminates the existing Chapter with the same identification code and keeps and saves the Chapter you have just edited.



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

*the only difference with respect to the components is that if you replace an existing chapter, all the "child" components and chapters within the chapter eliminated (in other words, the items it contained) will become "children" of the new Chapter.*



## Modifying an existing Chapter

To modify a Chapter in the current file, use the second button in the button panel on the right.

Obviously, the button to modify items is active only if a Chapter has been selected in the list on the left.

When you click on the button, ArchiQuant activates all the editable fields in the Chapter editing area, displaying the current values and allowing you to enter the required values:

To confirm or ignore the modifications, use the same buttons as described above.

The button with the tick symbol saves the modifications, the button with the red X closes the editing box without modifying the existing values.



## Deleting an existing Chapter

To delete a Chapter from the current file, use the third button at the top of the panel on the right.

Obviously, the button to delete items is active only if a Chapter has been selected in the list on the left.

When the button is clicked, ArchiQuant displays a dialog box prompting you to confirm deletion of the element. If you click **OK**, the Chapter will be immediately deleted from the file.



## Help

The button with the question mark icon functions in the same way as the equivalent in the ArchiQuant tool palette, displaying the online manual in pdf format.

If you are not sure or have forgotten the function of one of the dialog box buttons, you can access the manual without having to close the box to access the second button in the palette.

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

*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 add-on.*

## Real Chapters and derived Chapters

As we hope is clear, Chapters serve to hierarchically organise your file and derive from, or are directly linked to, the codes of the individual components.

As already described, each group of alphanumeric characters defined by the separators (dots) in the code defines a hierarchical level, in other words, a Chapter in the file.

When you start defining a Components File, you normally start by defining the Chapters and then, while positioned inside the Chapter which will contain the component, creating the "child" component it contains.

### ***Let's take a look at the following example:***

First, we create (using an empty file to avoid confusion) a test Chapter with the code "AAA" and description "Test Chapter":



We take up a position inside this Chapter:



We then create a new component with the code "AAA.001" and description "Test Component":

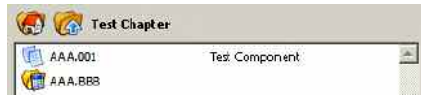


Now, still inside the same Chapter, we create a second component with the code "AAA.BBB.001" and description "Test Component 2". Look what happens:



As can be seen from the previous image, based on the code of the component just created, ArchiQuant has automatically created the chapter/level "BBB" contained in Chapter "AAA".

If we click on the Chapter, we access its level and can see the component just created:



The chapter "BBB", derived from a component code rather than being created by the user, is exactly the same as the other chapters created by the user, but because it is "derived", it does not actually exist in the file and cannot therefore be edited by the user.

If we go back to the parent chapter (chapter "AAA") and while inside that chapter use the corresponding tool on the panel to create a new chapter with the code "AAA.BBB", the "derived" chapter automatically disappears (as it is no longer necessary given that the chapter actually exists) and "Test Component 2" is automatically positioned on the correct level:



This behaviour, necessary to preserve the hierarchy of the items in the file, could occur when you delete chapters which are not empty, but contain items (whether chapters or components).

### ***Let's take an example***

We have a chapter with the code "AAA" and description "Parent Chapter".

This contains a component with the code "AAA.001" known as "Component 1".

It also contains a further Chapter with the code "AAA.BBB" and description "Child Chapter" which in turn contains a component with the code "AAA.BBB.001" known as "Component 2".

Summing up, the hierarchy is as follows:

- **AAA** (chapter)
  - **AAA.001** (component)
  - **AAA.BBB** (chapter)
    - **AAA.BBB.001** (component).

The list proposed by ArchiQuant at main level ("Parent Chapter") will therefore be as follows:



And below, at secondary level (Child Chapter):



At the main level, we now select the Child Chapter and delete it:



The "real" chapter (the one we created) is actually deleted from the file, but its place is immediately taken by the chapter deriving from the structure of the component code which, as it was contained in the deleted chapter with the code "AAA.BBB.001", expects to be contained by a second level inside the main "parent" chapter.

We perform the same operation going up a level and deleting the "Parent Chapter".

Once again, the "real" chapter (the one we created) is actually deleted from the file, but its place is immediately taken by the chapter deriving from the structure of the code of the components it contains.

At the main level, the situation is now as follows:



And as below at secondary level:



If we now delete "Component 2" with the code "AAA.BBB.001" from the list, as soon as the component is deleted from the file, the chapter

deriving from its code is no longer required and also therefore disappears from the list.



Finally, if we also delete the last component with the code "AAA.001", we have an empty file, as the last chapter also disappears, given that it was derived from the code of the component it contained.



To conclude, in terms of the hierarchical structure of the Components File, the two types of chapter (user created or derived from the code) are identical, but you must pay attention to the difference if you are editing chapters (only real chapters can be edited as they actually exist).

## File Management tool

The File Management tool is used to:

- define which Components File ArchiQuant should use with the current project
- rename/duplicate/delete an existing file
- create an empty file
- import data from the ArchiCAD databases
- import an external database.

When you click on the tool icon in the ArchiQuant tool palette, the following dialog box will be displayed:



The list at the top contains all the files you created using ArchiQuant.

For these files to be used, they must be in the ArchiQuant directory (the directory containing the add-on) in the ArchiQuant\_DATA directory.



**N.B.:**

ArchiQuant can handle only text files contained in this directory. If you open the project on another computer where you have ArchiQuant installed, remember to also copy the file used by the project into the relative ArchiQuant\_DATA directory on the destination computer.

Below the list of available files are the following five buttons:

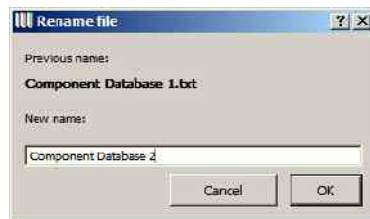
**Use selected file**

After selecting a file from the list above, use this button to let ArchiQuant know that this file should be used in place of the current one with the currently open project.

**Rename selected file**

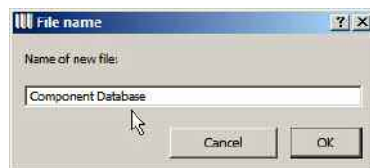
After selecting a file from the list above, use this button to rename it.

When you click on this button, ArchiQuant opens the following dialog box allowing you to rename the file:


**Duplicate selected file**

After selecting a file from the list above, use this button to duplicate it.

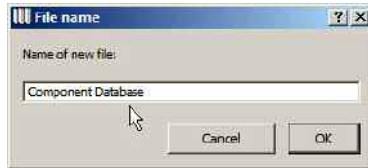
When you click on this button, ArchiQuant opens the following dialog box allowing you to name the duplicate file:



### Create a new empty file

When you click on this button, you generate a new empty file (without chapters or components).

When you click on this button, ArchiQuant opens the following dialog box allowing you to name the new file:



### Import an ArchiCAD database

Before the arrival of ArchiQuant, users used the internal ArchiCAD calculation engine based on data databases (text files). As described above, these memorise Keys (ArchiQuant Chapters), Components, Descriptions and Measurement Units in exactly the same way as those used by ArchiQuant.

ArchiQuant enables you to recover the majority of these data, transforming them into a Components File in ArchiQuant format.

To import the data, you must select three text documents:

- the text document containing data on the Keys in the ArchiCAD Database
- the text document containing data on the Components in the ArchiCAD Database
- the text document containing data on the Measurement Units in the ArchiCAD Database.

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

*ArchiQuant does not control the syntax or congruence of the selected files (this would be excessively complex). You must therefore pay great attention to the files you select and the import order (ArchiQuant will ask you each time for the type of file required for the import). Any error due to incorrect syntax or human error could produce unexpected results (incongruent Components Files).*

When you click on the **Import ArchiCAD database** button, ArchiQuant displays a first standard Open dialog box prompting you to select the text file containing the data on the Keys in the ArchiCAD database.

Browse for the file on your hard disk then select it, confirming the import with the **Open** button.

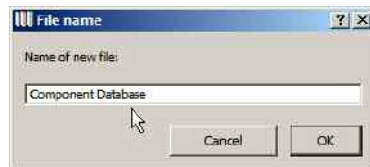
At the end of this first phase of data import, ArchiQuant displays a second standard Open dialog box prompting you to select the text file containing the data on the Components in the ArchiCAD database.

Browse for the file on your hard disk then select it, confirming the import with the **Open** button.

At the end of this second phase of data import, ArchiQuant displays a final standard **Open** dialog box prompting you to select the text file containing the data on the Measurement Units in the ArchiCAD database.

Browse for the file on your hard disk then select it, confirming the import with the **Open** button.

When the three text files required to create the new Components File have been selected and imported, ArchiQuant will open the following dialog box allowing you to assign a name to the new Components File:

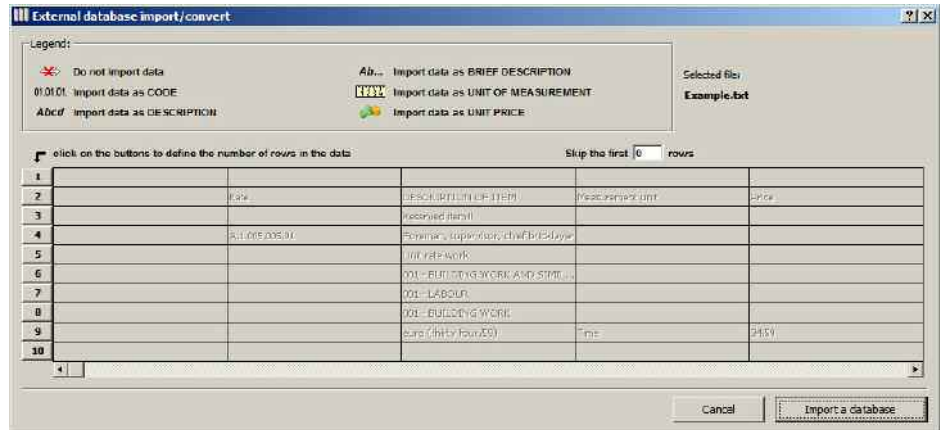


When you have entered the name of the file and confirmed with the **OK** button, the Components File immediately appears in the list of available files, ready to be selected and used in the current project.

### ***Import an external database***

Use this function to import data from external files in tabbed text format.

Clicking on the button opens a dialog box where you can select the file to be imported. ArchiQuant then displays a box to define the structure of the file to be imported.



In practice, this is where you tell ArchiQuant where to find the data you are interested in (in other words, the information to be imported) and what type of information it is.

ArchiQuant can import the following types of information:

- the **CODE** of the entry
- the **DESCRIPTION** (the complete or long description)
- the **BRIEF** description
- the **MEASUREMENT UNIT**
- the **UNIT PRICE**.

Of these, the following are fundamental, in other words, obligatory for importation of the file:

- CODE
- DESCRIPTION
- MEASUREMENT UNIT

The other items are not necessary as:

- if not imported and therefore not present in the components file, the BRIEF DESCRIPTION will be automatically generated by ArchiQuant based on the complete description.
- The UNIT PRICE may also be missing as it may not be necessary if the user wants a simple calculation only, without needing to display the costs (for example, to send a calculation to a company preparing an offer).

The procedure is quite simple to use.

At the top left, a simple legend describes the meaning of the various icons used to define the data import:

Legend:

 Do not import data

 Import data as CODE

 Import data as DESCRIPTION

 Import data as BRIEF DESCRIPTION

 Import data as UNIT OF MEASUREMENT

 Import data as UNIT PRICE

The name of the file selected for import appears to the right of the legend and immediately below, a preview of the first 10 rows of the file to be imported shows the contents of the information fields:

click on the buttons to define the number of rows in the data

Skip the first 0 rows

1					
2		File	DESCRIPTION OF ITEM	Measurement unit	Price
3		Assigned Row			
4		A 100500201	Foreign substation, 0.4/0.2/0.1kV		
5			Private work		
6			001 - ROUTING WORK AND SIMIL.		
7			001 LABOUR		
8			001 - BUILDING WORK		
9			001 (0.1kV to 0.2kV)	Time	34.51
10					

The horizontal scroll bar can be used to view the columns on the right if your file contains more than five columns.

At the top right, there is an editable number field where you can define how many of the first rows must be skipped during import:

Skip the first 0 rows

The file to be imported may, in fact, include header rows containing information on the software generating the file or headings for the data contained in the various columns.

If a number greater than zero is entered, the preview is immediately updated, concealing the rows which must be skipped.

After defining the rows to be skipped (if necessary), you must define the information record to be imported.

The buttons on the right (numbered 1 to 10) define the number of rows in the data record. Just click on the corresponding buttons to include all the information in a record.



Once this has been assigned, the content of the entry is shown in bold and the description icon appears alongside the entry just defined:



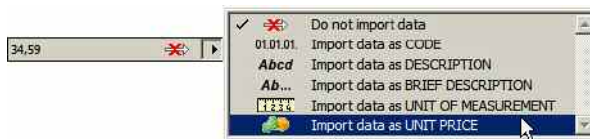
Going back to the preview, you can see that the cell in row 6, column 4 contains information on the measurement unit of the entry. Click on the pop-up menu on the right and choose the option **"Import data as MEASUREMENT UNIT"**:



Once this has been assigned, the content of the entry is shown in bold and the measurement unit icon appears alongside the entry just defined:



Immediately to the right of the measurement unit in the preview of the file is the cell containing the unit price of the entry. Click on the pop-up menu on the right and choose the option **"Import data as UNIT PRICE"**:

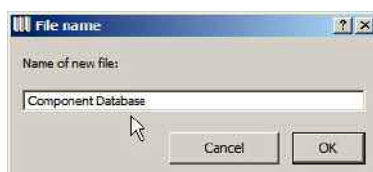


Once this has been assigned, the content of the entry is shown in bold and the unit price icon appears alongside the entry just defined:



After defining the fields to be imported, click on the **Import database** button to begin reading the file and converting it to ArchiQuant file format.

At the end of the interpretation phase preparatory to creating the new file, ArchiQuant will open the following dialog box allowing you to assign a name to the new File:



When you have entered the name of the file and confirmed with the OK button, the Components File immediately appears in the list of available files, ready to be selected and used in the current project.





## Update Data tool

As described below, as well as defining and developing Components Files, ArchiQuant can also link the Components to ArchiCAD construction elements.

After having linked the Components to the ArchiCAD construction elements present in the worksheet (Walls, Slabs, Roofs, etc), the user may modify the Components File (for example, changing the description of a given component).

The data linked to construction elements present in the plan are not updated automatically (to avoid rebuilding which in the case of very complex projects containing thousands of items could be a more or less lengthy process).

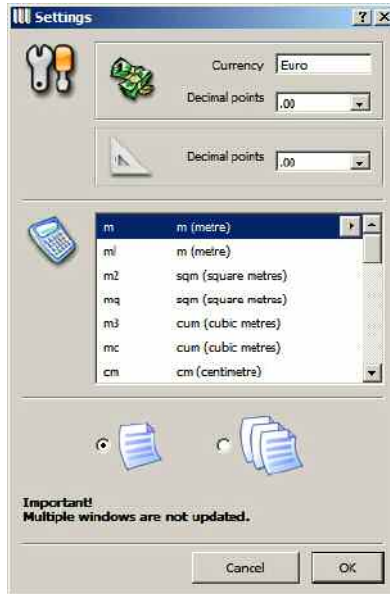
You therefore need to use the Update Data button to synchronise the data linked to the construction elements with the data in the current Components File.

It is extremely simple to use. Just click on the button to launch the procedure which checks each construction element to which components in the current file are linked, updating the linked components to take account of the modifications made to the relevant file.

## ArchiQuant settings



When you click on the ArchiQuant Settings tool, the following dialog box appears:



The dialog allows you to customise some of the basic settings used by ArchiQuant.

### Currency settings

At the top of the dialog box you can enter a text string defining the currency used to calculate the costs linked to the components.

Immediately below is the number of decimals used for the quantities calculated in the defined currency.



## Decimals for quantities

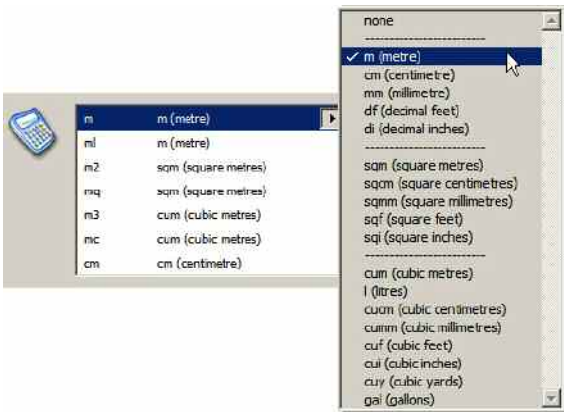
Below the currency settings, an editable field allows you to define the number of decimals used for the quantities linked to the components.

This setting is "exclusive" to ArchiQuant and has no connection with or effect on settings provided by ArchiCAD.



## Conversion Units

The list below gives all the measurement units in the current file (and files opened previously).



Select an item and use the pop-up Conversion Units menu obtained by clicking on the arrow to the right of the name to link the selected measurement unit to one of the measurement units used by ArchiCAD.

Choose "**none**" from the pop-up list if you do not want to use any conversion unit.

Selecting the appropriate conversion unit reduces errors in the quantity calculations.

## Method of displaying calculation lists



The lists of ArchiQuant calculations can be displayed in two ways:

- Single window (each time ArchiQuant calculates the components, the results are always listed in the same window).
- Multiple windows (each time ArchiQuant calculates the components, the results are listed in a new window).

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

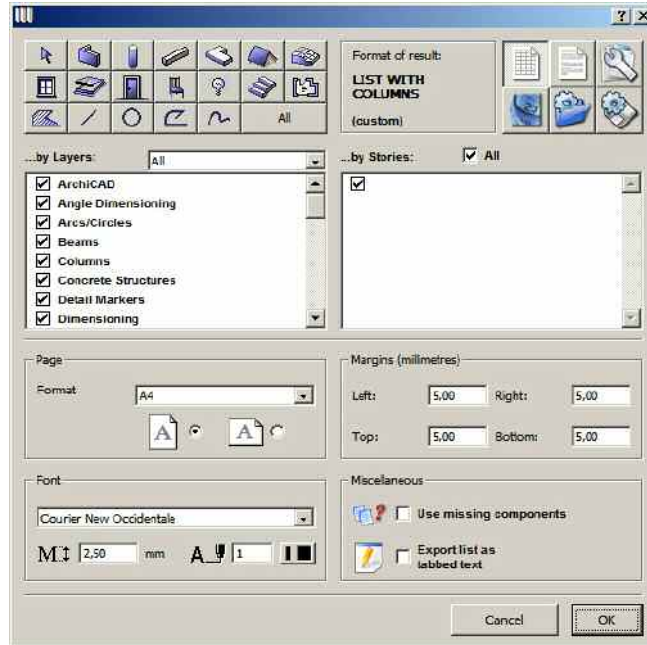
*If you use multi-window mode, remember that only the last window calculated/displayed will be updated with the project. Previously opened windows will simply be "snapshots" of the quantities of the project at the moment the calculation windows were calculated/displayed.*



## Calculation Lists

The "Calculation Lists" tool is extremely important as it allows you to calculate/display the calculation lists produced by ArchiQuant and customise the appearance of those lists by defining what to calculate, the graphic appearance of the lists and the type of information to be displayed.

When you click on the tool icon, the following dialog box will be displayed:



## Element filter

The first series of buttons at the top left define the type of element you want to calculate with ArchiQuant.



These buttons resemble those of standard ArchiCAD calculation lists. A pressed button means you want to calculate the relative element, a raised button (not pressed) means that ArchiQuant must not calculate that type of element in its calculation lists.

It differs from the ArchiCAD element filter as follows:



**Arrow icon.** This icon determines whether the calculation is to be performed on the current selection irrespective of the active filters. If the icon is pressed (option active), ArchiQuant will calculate all the components relating to the elements currently selected.



**2D primitive icons.** Unlike ArchiCAD, with ArchiQuant you can also calculate the following 2D primitives: Line, Arc/Circle, Polyline and Spline. Components can be linked to each of these elements in exactly the same way as with other 3D construction elements.



Clicking the last button at the bottom right ("**All**") calculates all types of element to which ArchiQuant components can be linked.

### Layer filter:

Immediately below the Element Type filter button panel on the left, the **...for Layers** list allows you to include the elements located on the selected layers in the calculations.



The elements on layers not selected will not be calculated.

The pop-up menu enables you to activate all layers, visible layers only or manually selected layers.

### Story filter

The **...for Stories** list on the right of the **...for Layers** list enables you to include elements on the selected stories in the calculations.



The elements on stories not selected will not be calculated.

Simply activate the **All** box to select all the stories in the current project.

## Calculation List options



At the top right in the **Calculation Lists** dialog box there are six buttons corresponding to the following functions:



Calculation List in table format



Calculation List in text with layout format



List Settings



Export quantities in tabbed text format



Open custom calculation list configuration



Save custom calculation list configuration.

### **Calculation List in table format**

Activating this option obtains a result identical to the following image:

Chapter/code	Description	Quantity
Masonry		
004.002	Lime plaster	83.11m2
004.004	"Hand-made" 25 cm bricks (d...)	20.78mc
004.012	Solid 12 cm bricks	9.97mc
Page 1 of 1		

All data and quantities are organised in a table which can be customised by the user.

The description of the component is derived from its brief description. The long description is NEVER used.

### Calculation List in text with layout format

Activating this option obtains a result identical to the following image:

```
Masonry
004.002
Lime plaster
      83.11m2

004.004
"Hand-made" 25 cm bricks (d=1740)
      20.78mc

004.012
Solid 12 cm bricks
      9.97mc
```

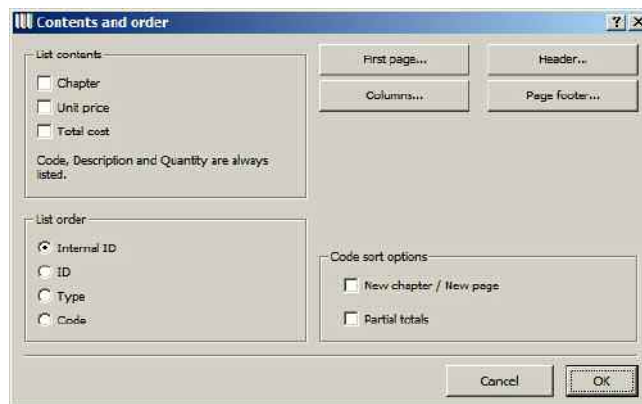
Page 1 of 1

In this case, data and quantities are laid out differently with respect to the table format and the complete (long) description for the component is used.

### List Settings

To a certain extent, ArchiQuant calculation lists can be customised by the user.

Clicking on the **List Settings** button opens the following dialog box where a series of dialogs enable you to customise your calculation list



In the **List Content** section, you can choose what information to use in the ArchiQuant calculation lists.



The Code, Description and Quantity of the component will always be listed in the calculation, while you can choose the optional information to display by means of the relative check-boxes:

- **Chapter.** The chapter (real or derived) to which the calculated components belong. ArchiQuant will always display the description (if the chapter is real, not derived), not the code of the chapter.
- **Unit price.** The unit price of the component as defined in its Components File.
- **Total cost.** The total cost of all the components with the same identification code (quantities calculated by unit price).

The following section, List Order, defines the order of the resulting list. In this case, the radio buttons are mutually exclusive:

- **Internal ID.** The unique internal ID of the host element whose quantities are extrapolated. The radio button to the left of the item enables this information to be displayed or hidden in the calculation list and the list to be ordered by this value (the secondary order is always by Code).
- **ID.** The ID of the host element (as defined by the user and therefore not unique) from which the quantities are extrapolated. The radio button to the left of the item enables this information to be displayed or hidden in the calculation list and the list to be ordered by this value (the secondary order is always by Code).
- **Type.** The type of host element (Wall, Slab, Roof, etc) from which the quantities are extrapolated. The radio button to the left of the item enables this information to be displayed or hidden in the calculation list and the list to be ordered by this value (the secondary order is always by Code).
- **Code.** The code of the components calculated. The hierarchy defined in the Components File will be used.

As in the case of the ArchiCAD lists, displaying these items or otherwise leads to a different grouping of the data.

If, for example, we decide to list information relating to the internal ID of the host elements, each component calculated will appear in the calculation list as the internal ID is unique.

If, for example, the same plaster component has been assigned to two walls, the list will not group the two components (although in every way

identical), but will list them separately as each item must also include the unique ID of the host element.

This characteristic could be useful if, for example, we want to produce lists displaying the quantities used in each individual element of the project.

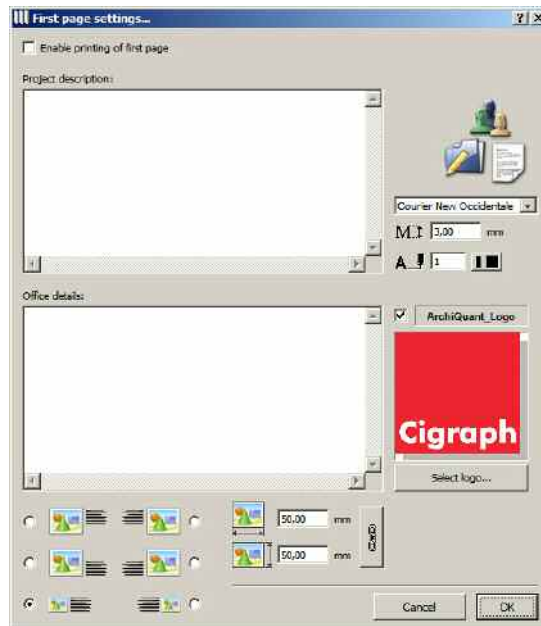
If, on the other hand, we decide to list the ID (as defined by the user), the items with the same user ID will be grouped together.

For example, we could decide to assign an identical user ID to the construction elements we want to group together according to certain criteria in order to subdivide the calculation in this way.

If, for example, we assign the same ID "East Area" to all the elements (walls, slabs, etc) in a given area of the project, and the ID "West Area" to all the others, we would obtain a different calculation for each of the two areas identified by the user ID.

### **First page**

The **First page...** button opens a secondary configuration dialog where you can define the appearance of an optional first page:



The check-box at the top, **Enable printing of first page** is obviously used to turn the first page of your Calculation List on or off.

The check-box at the top, **Enable printing of first page** is obviously used to turn the first page of your Calculation List on or off.

Immediately below, there is a large editable field where you can write a **Description of the Project**.

The field can contain multi-line text.

In the next text field, you can define the **Studio Details** which will appear on the first page.

The field can contain multi-line text.

Obviously as these two fields are parametric, they can be used as you wish (in other words, they do not have to contain the project description and studio details in a given order).

The difference is purely graphical. The first field contains text which will be centred on the page at the maximum size you define, the second field of text will appear immediately below and can be linked to an optional image/logo.

Alongside the Studio Details, a check-box enables use of an optional **Logo**.

If you want to include your logo on the first page, activate the check-box and then click on the **Select logo...** button to select an image from the currently active libraries.

Once you have selected the image to be used as the Logo, a preview of the selected logo will appear above the **Select Logo...** button.

At the bottom of the dialog box, six radio buttons allow you to choose the **type of layout** to use with the logo and text giving details of the studio:



Logo on the left at a size defined by the user and text aligned at the top left (with reference to the size of the logo).



Logo on the left at a size defined by the user and text aligned at the bottom left (with reference to the size of the logo).



Logo on the left resized to the maximum vertical size of the text (according to the character size defined by the user) and text left justified.



Logo on the right at a size defined by the user and text aligned at the top right (with reference to the size of the logo).

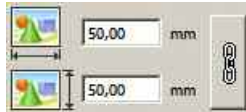


Logo on the right at a size defined by the user and text aligned at the bottom right (with reference to the size of the logo).



Logo on the right resized to the maximum vertical size of the text (according to the character size defined by the user) and text right justified.

To the right of these six option buttons, two editable fields enable you to define the actual size of the image/logo (the chain locks the proportions):



Obviously, these two dimensions need to be defined only if you have not chosen the two layout options with the logo resized to the maximum vertical size of the text.

At the top right of the dialog box, on the right of the text describing the project and above the logo definition section, a series of controls enable you to configure the **Text settings**:



The first pop-up menu defines the type of character, the numerical field below defines the size of the text and, immediately below that, the editable numerical field and pop-up menu define the pen used for the text on the first page.

### Column titles

The **Columns...** button allows you to define customised headings for the titles of the columns in the calculation list.



The dialog contains the headings of the nine possible columns in the calculation list.

If the check-box is enabled, ArchiQuant will use the string you entered in the field immediately on the right as the column heading.

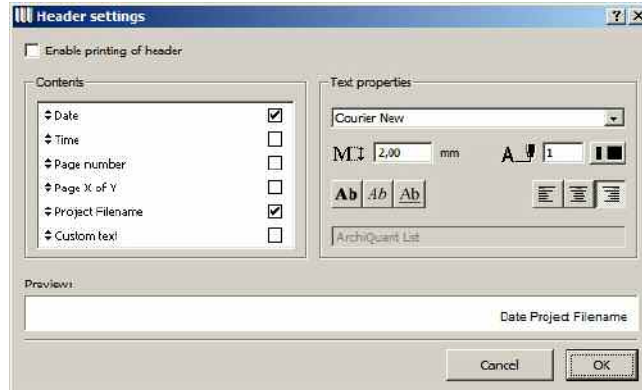
If the check-box is not enabled, ArchiQuant will use the standard heading (basically the one displayed on the left).

**N.B.:**

*all these customisable strings are used by the table type list, while a number of them (Chapter, Code, Description) are not used in the text with layout lists.*

## Header

The **Header...** button opens a secondary configuration dialog where you can define the appearance of the page header, in other words, an optional block of text which appears at the top of all the pages in the ArchiQuant lists:



The check-box at the top, Enable printing of header, turns the Calculation List header on or off.

Below is a list of all the data which can be displayed in the header block:

- **Date.** The date the list was generated.
- **Time.** The time the list was generated.
- **Page number.** The number of the current page
- **Page X of Y.** The number of the current page with respect to the total number of pages.
- **Project filename.** The name of the currently open ArchiCAD project file.
- **Custom text.** Any text defined by the user in the field on the right.

On the right of each item, a check-box allows you to turn use of the item in the header on or off.

On the left alongside the name of each item is an icon with two small arrows.

Click and drag this icon to define the order in which the items selected are used in the header text.

The attributes of the header text are displayed in the area on the right:

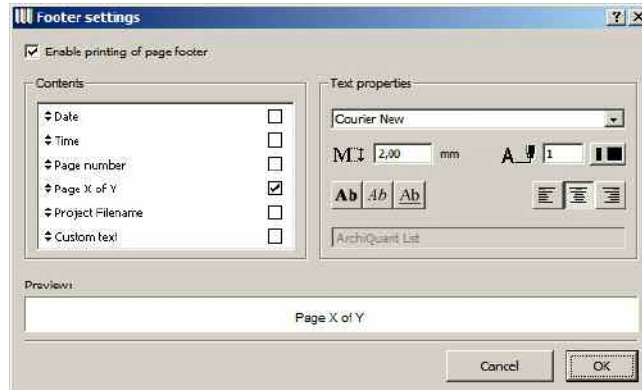
- The **font** used
- The **size** of the font
- The **pen** used for the text
- The **style** of font (Bold, Italic, Underlined or any combination of these)
- **Justification** of the header with respect to the width of the page (left aligned, centred, right aligned)

Under the font attributes, there is an editable text field where you can define optional custom text to use in the header (the field is activated when the Custom Text option is enabled).

During editing, a preview field at the bottom of the dialog box displays the end result of the header configuration.

### Footer

The **Footer...** button opens a secondary configuration dialog where you can define the appearance of the page footer, in other words, an optional block of text which appears at the bottom of all the pages in the ArchiQuant lists:



The check-box at the top, **Enable printing of footer**, turns the Calculation List footer on or off.

The list below gives all the data which can be displayed in the footer block:

- **Date**. The date the list was generated.
- **Time**. The time the list was generated.
- **Page number**. The number of the current page

- **Page X of Y.** The number of the current page with respect to the total number of pages.
- **Project filename.** The name of the currently open ArchiCAD project file.
- **Custom text.** Any text defined by the user in the field on the right.

On the right of each item, a check-box allows you to turn use of the item in the footer on or off.

On the left alongside the name of each item is an icon with two small arrows.

Click and drag this icon to define the order in which the items selected are used in the footer text.

The attributes of the footer text are displayed in the area on the right:

- The **font** used
- The **size** of the font
- The **pen** used for the text
- The **style** of font (Bold, Italic, Underlined or any combination of these)
- **Justification** of the header with respect to the width of the page (left aligned, centred, right aligned).

Under the font attributes, there is an editable text field where you can define optional custom text to use in the footer (the field is activated when the Custom Text option is enabled).

During editing, a preview field at the bottom of the dialog box displays the end result of the footer configuration.



### **Export quantities in tabbed text format**

ArchiQuant enables you to extrapolate all the main quantities of the ArchiCAD elements without using GDL programming language, property objects or any additional configuration.

These data (the individual quantities of each element in your project) could be useful if you want to process them with a dedicated calculation programme.



When you click the **Export quantities in tabbed text format** button, you launch the export procedure which will run as soon as you have confirmed the settings with the OK button.

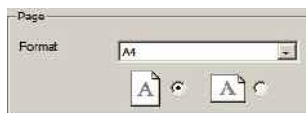
While the button is pressed, in other words, the export option is active, the quantities of the project are exported in tabbed text format.

Obviously when you exit the dialog using the OK button, ArchiQuant displays a standard dialog box prompting you to define the name of the file to be exported and the destination of the saved file.

**N.B.:** *if you activate the option to export the list in tabbed text format, when you confirm the settings with the OK button, the calculation list is not displayed, but only the dialog to save the file to be exported.*

### **Page format**

In the **Page** section of the dialog box, you can define the page **size** and **orientation** (vertical or horizontal).

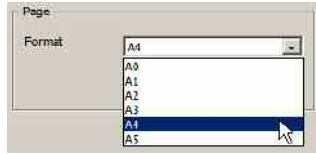


**N.B.:** *The API ArchiCAD development environment (the one we use to create our plug-ins), does not currently provide access to information on the selected printer and page format settings configured by the user.*

ArchiQuant lays out the data in its calculation lists on the basis of the configuration here (and for the page margins, immediately on the right).

You need to remember this configuration so that you can set it in the print dialog proposed by ArchiCAD when you want to print your calculation, or alternatively, set the configuration to correspond to the configuration for printing.

The pop-up format menu lists all the possible formats which can be selected to print the calculation:



## Page margins

In the **Margins** section of the dialog box, you can define the margins of the page on the four sides.



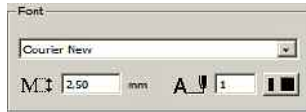
### **N.B.:**

*The API ArchiCAD development environment (the one we use to create our plug-ins), does not currently provide access to information on the printer selected and page format settings configured by the user.*

*ArchiQuant lays out the data in its calculation lists on the basis of the configuration here (and for the page margins, immediately on the right).*

*You need to remember this configuration so that you can set it in the print dialog proposed by ArchiCAD when you want to print your calculation, or alternatively, set the configuration to correspond to the configuration for printing.*

## Font



In the **Font** section of the dialog box, you can define the characteristics of the text in the ArchiQuant calculation lists:

- The **font** used
- The **size** of the font
- The **pen** used for the text.

## Miscellaneous

In the bottom right of the dialog box, the miscellaneous section provides two options relating to your calculation:



### *Use missing components*

As described above, you can use the **File Management** tool at any time to activate a new Components File for your project.

This change of reference file can also be performed after you have linked components from the previously selected file to elements in the project.

You can use the **Update Data** tool described above to partly synchronise the components already linked to elements of the project with those in the current file.

If, for example, we had previously linked a component with the code AAA.BBB.001 to a given Wall and in the Components File just activated there is already a component with the same identification code, then the **Update Data** tool will update that component with the data of the corresponding component (in other words, it will use the complete description, brief description, measurement unit and unit price of the component with the same code residing in the active file).

If, however, there is no component with the code AAA.BBB.001 in the current file, ArchiQuant cannot update the component as it will be found to be missing from the current file.

With the **Use missing components** option, you can choose whether to list and therefore calculate these missing components in the calculation list or ignore them.

**N.B.:** *ArchiQuant extrapolates the complete description of the component from the current file. If the component is missing but its use has nevertheless been enabled with this option, then ArchiQuant will use the brief description as it is automatically recorded inside the host element.*

### **Export list as tabbed text**

Although the graphic layout of ArchiQuant calculation lists can be customised, the user may prefer to lay out his or her calculation in dedicated programmes which provide more freedom of layout.

By activating the **Export list as tabbed text** option, you can save your calculation in a format compatible with all word processing or electronic worksheet programmes.

Obviously when you exit the dialog using the OK button, ArchiQuant displays a standard dialog box prompting you to define the name of the file to be exported and the destination of the saved file.

**N.B.:** *if you activate the option to export the list in tabbed text format, when you confirm the settings with the OK button, the calculation list is not displayed, but only the dialog to save the file to be exported.*



## Help

Clicking on the **Help** tool icon will display the ArchiQuant user manual in pdf format.

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

*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 add-on.*

## The ArchiQuant settings panel

The ArchiQuant settings panel allows you to link components in the file to ArchiCAD elements and define calculation formulas for them based on the quantities of the host element:



### Activate the ArchiQuant settings panel

According to the version of ArchiCAD in which you are using ArchiQuant, you may need to activate configuration of the panel.

#### ArchiCAD 8.1

ArchiCAD 8.1 does not allow customisation of the work environment and therefore the ArchiQuant settings panel will be activated automatically (and cannot be deactivated) if ArchiQuant has been correctly installed in the ArchiCAD 8.1 add-on directory.

#### ArchiCAD 9 and ArchiCAD 10

The API development environment of these two versions does not provide the developer with the possibility of installing/displaying custom panels automatically in the ArchiCAD tool settings dialog boxes.

In this case, if the ArchiQuant settings panel is not displayed in the settings of dialog boxes "calculable" by ArchiQuant, then use the **Options / Work Environment / Tool Settings** Dialogs box to activate the panel in the required boxes:



Once you have activated the ArchiQuant panel in all dialog boxes, it could be useful to save your customised Work Environment so that you can load it whenever you need.

## ArchiCAD 11

The API development environment of this version of ArchiCAD provides the developer with the possibility of automatically installing/displaying custom panels in the ArchiCAD tool settings dialog boxes and therefore the ArchiQuant settings should already be automatically displayed in all your ArchiCAD tool settings boxes.

However if for any reason (for example, if you are using customised Work Environments), the ArchiQuant settings panels are not available in the settings dialog boxes of the tools "calculable" with ArchiQuant, then use the **Options / Work Environment / Tool Settings Dialog** box to active the panel in the required windows.

Once you have activated the ArchiQuant panel in all dialog boxes, it could be useful to save your customised Work Environment so that you can load it whenever you need.

## Types of element calculable with ArchiQuant

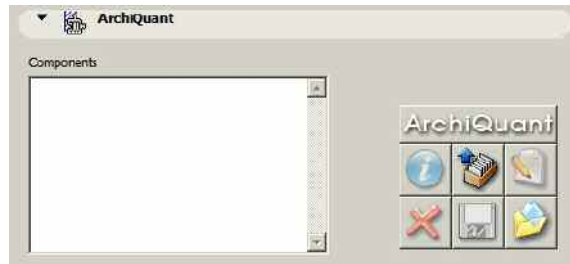
ArchiQuant enables you to calculate all ArchiCAD construction elements (as ArchiCAD itself does), plus a number of 2D elements.

The following types of element can be calculated with ArchiQuant:

- WALL
- COLUMN
- BEAM
- SLAB
- ROOF
- MESH
- WINDOW
- SKYLIGHT
- DOOR
- OBJECT
- LAMP
- STAIRS
- ZONE
- FILL
- LINE
- ARC/CIRCLE
- POLYLINE
- SPLINE

## Contents of the ArchiQuant settings panel

If you display the ArchiQuant settings panel in any ArchiCAD settings window, you will obtain the result shown in the following image:



On the left is a list of all the components currently linked to the type of element whose settings are displayed.



The first time you use it, the list will obviously be empty as no component has yet been linked to the construction element. As you link the components to the host element, the list will be immediately updated and the linked components will be displayed.

At the bottom right of the dialog box, a button panel provides access to the various functions of the panel:



The **ArchiQuant** button displays ArchiQuant online help in pdf format.



The **Information** button displays a summary of the data specific to the component selected in the list on the left.



The **Link Component** button allows you to select from the current Components File the component you want to link to the construction element whose settings box is displayed.



The **Define Formula** button allows you to specify the formula for calculating the quantities of the component.



The **Delete Component** button allows you to definitively eliminate the link between the component selected in the list on the left and the construction element whose settings window is displayed.



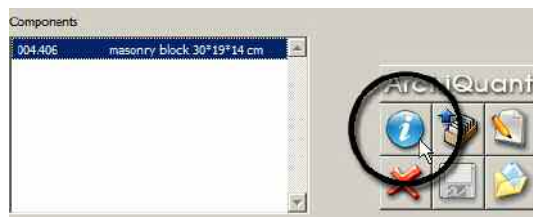
The **Save Components List** button enables you to save the list of linked components displayed on the left together with their respective formulas.



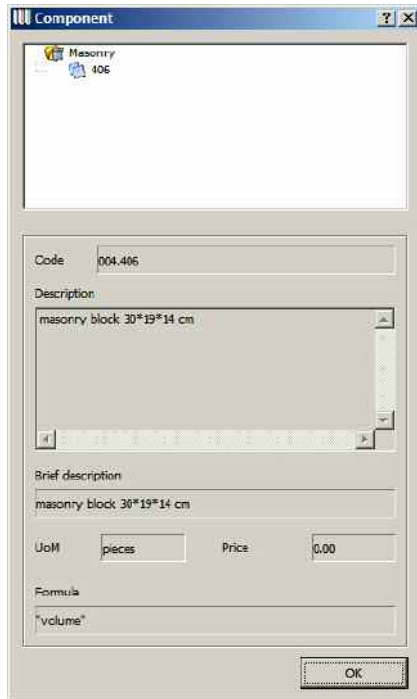
The **Load Components List** button enables you to import a list of components and their respective formulas from an external file.

## Information on the component

If one of the components linked to the element in the list on the left is selected and you then click on the Information button icon:



a secondary dialog box is displayed summarising all the data linked to the selected component.



At the top, a tree structure shows the position of the component in the tree hierarchy of the current Components File.

Immediately below, from top to bottom, the following information on the selected component is displayed:

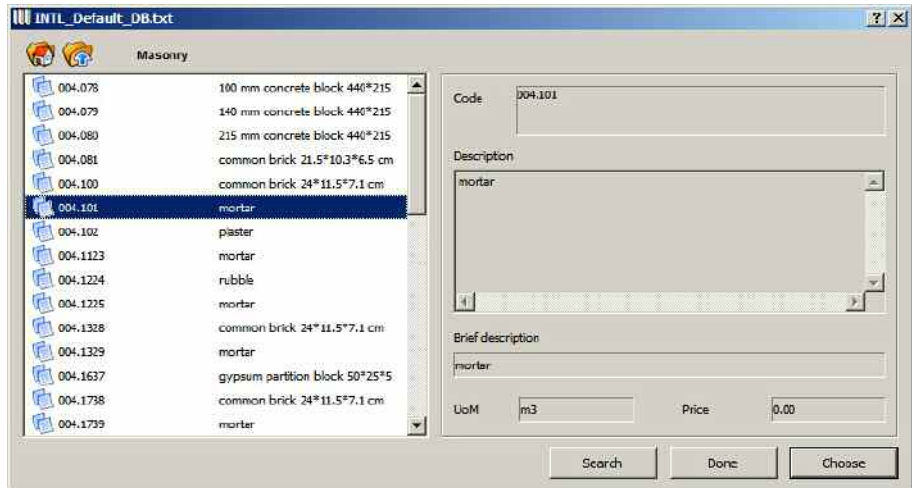
- the component code
- the complete description of the component
- the brief description of the component
- the measurement unit of the component
- the unit price of the component
- the formula defined for the component.

**N.B.:**

*If the selected component is missing from the current Components File (for example, because it has been deleted from the file or because you have used the File Management tool to modify the original Components File), then ArchiQuant will display a dialog box warning you that information on the selected component cannot be obtained.*

## Linking Components to ArchiCAD elements

Clicking on the **Link Component** button displays a dialog box identical to the one described for the **Modify File** tool:



The main difference is that this box is for consultation only.

You cannot modify the Chapters or Components, but you can explore the active Components File to select the components it contains and link them to the ArchiCAD element.

The title bar of the box contains the name of the current Components File:



On the left, a hierarchical list displays all the items in the file (Chapters and Components).

The icon with the file symbol alongside the text identifies a Chapter:



The icon with the two pages symbol alongside the text identifies a Component:

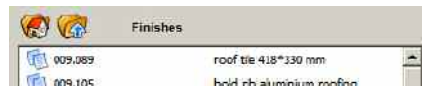
	004.078	100 mm concrete block 440*215
	004.079	140 mm concrete block 440*215
	004.080	215 mm concrete block 440*215
	004.081	common brick 21.5*10.3*6.5 cm

Navigating within the file hierarchy is extremely easy:



- click on a Chapter to enter it and display the contents
- click on the icon above the list with the house symbol to go to the highest level of the file (root level)
- click on the icon above the list with the arrow pointing upwards to go back to the previous level (the Chapter containing the item currently displayed).

The name of the Chapter whose contents are currently listed appears above the list alongside the second icon:



If you click on a component in the list to select it, all information on the selected component will be displayed on the right of the dialog box.

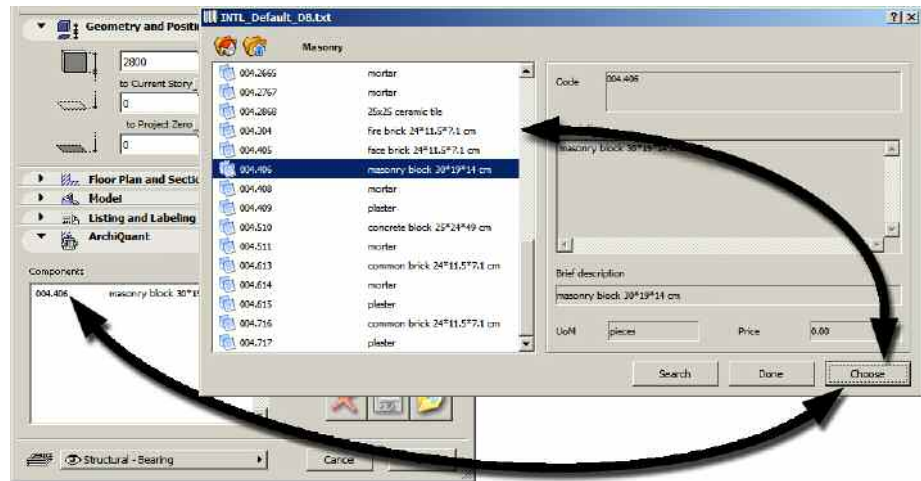
The last two buttons at the bottom right close the box and link the component currently selected to the ArchiCAD element:



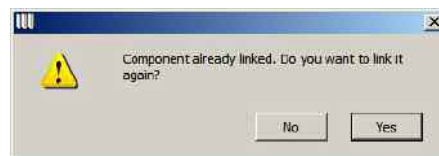
The **End** button ends linking of the components to the element and closes the box.

The **Choose** button links the selected component to the ArchiCAD element immediately without closing the box, enabling you to continue selecting the components to be linked to the element.

The component is linked when you click on the **Choose** button and the list of linked components is immediately updated in the background.



If you try and link the same component more than once to the ArchiCAD element, ArchiQuant displays a dialog box asking you to confirm the operation:

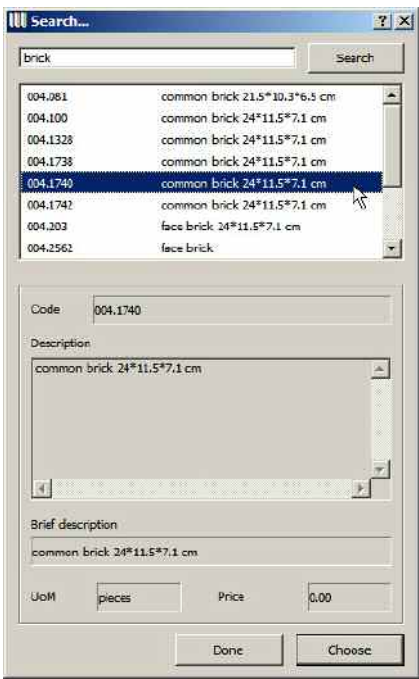


If you did not want to link the component twice, click on the No button, or you can confirm the operation by clicking on the Yes button if you actually wanted to link the component to the ArchiCAD element more than once (for example, you might want to link the same plaster component to a wall twice as it must be calculated once for the external face of the wall and again for the internal face).

### Searching for components by keyword

At the bottom right of the window immediately to the left of the **End** button, the **Search** button can be used to find a component in the archive by means of a user defined keyword, without having to navigate through the Components File hierarchy.

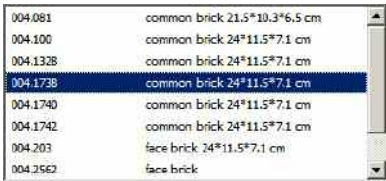
Clicking on the button displays the component search dialog box:



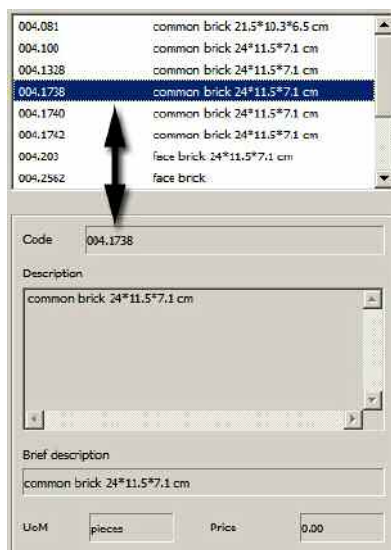
In the editable text field at the top of the dialog, enter the string to be used for the search, then click on the **Search** button to start the procedure:



If ArchiQuant finds components in the current file whose long description includes the keyword you entered, it lists them below:



When you click (and thus select) one of the components listed, the corresponding data are displayed in the area below the list of found components:



If you select a component from the list of those found and click on the **Choose** button, the selected component is linked to the ArchiCAD construction element.

On the other hand, clicking on the **End** button closes the component search box and goes back to the Components File navigation box.

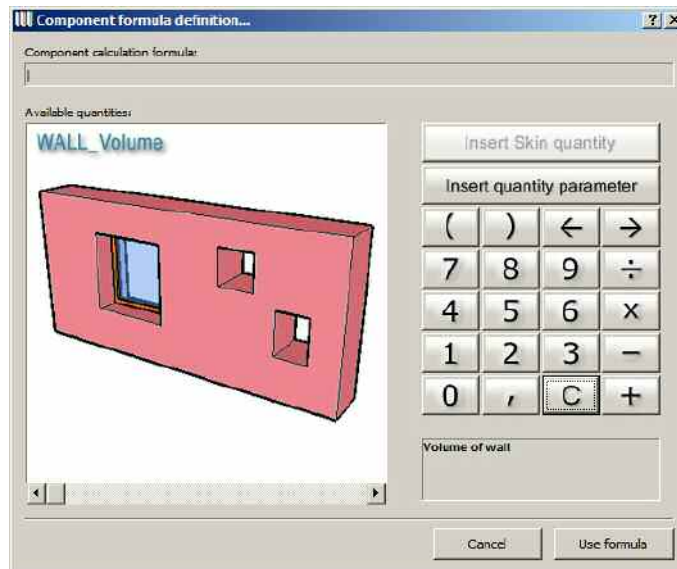
## Defining component calculation formulas

The **Define Formula** button allows you to specify the formula for calculating the quantities of the selected component.

Clicking on this button displays a formula definition dialog box in every way similar to the box for all ArchiCAD elements calculable with ArchiQuant.

There are only two differences (explained in detail below): firstly, the quantities available for the formula vary according to the type of component (for example, the information on quantity linked to the top surface of a slab is not available for other types of element) and secondly, in the case of ArchiCAD library parts (Doors, Windows, Objects, etc), you can also relate the quantities to the library part parameters.

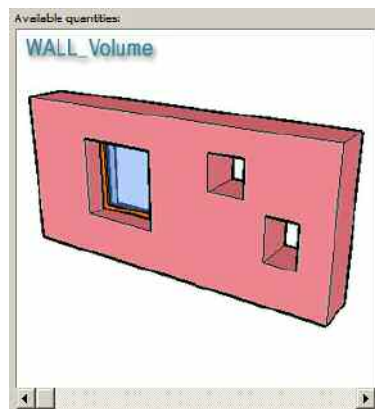
The formula definition dialog box will be similar to the box shown below:



At the top, a non-editable field displays the user-defined component calculation **formula**:



Immediately below, you can run through the images in the **Available Quantities** area until you find the quantity to enter in your formula:





As explained above, given that this information is specific to each type of element, it will vary depending on the ArchiCAD tool you are using.

The **Appendix** to this manual gives all the available quantities (in practice, all the quantities calculable by ArchiCAD) per type of element.

If the image does not provide a sufficiently clear description of the quantity concerned, a box at the bottom right contains a descriptive string.



At the top right, there is a key panel to define the component calculation formula:



The first button at the top may have three states depending on the type of ArchiCAD element for which you are defining the formula

The state may be:

- **Insert skin quantity** when the ArchiCAD element you are defining the formula for is:

- a composite wall or complex profile
- a composite slab
- a composite roof
- a beam with a complex profile
- a column with a complex profile

If the element does not have a composite structure or complex profile, the button will not be active.

- **Insert GDL parameter** when the ArchiCAD element for which you are defining the formula is an ArchiCAD library part.
- It is not active, on the other hand, for the other elements calculable by ArchiQuant (either because they are not library parts and therefore do

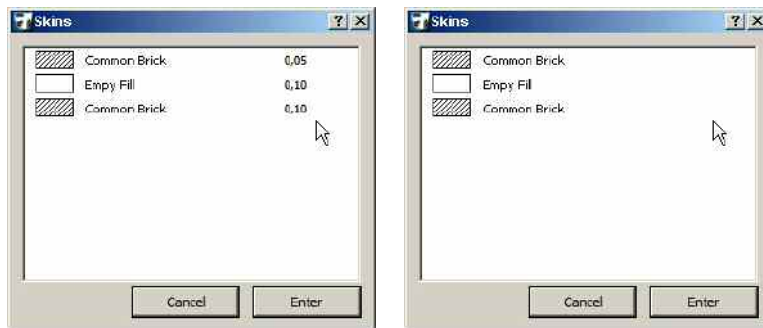
not have GDL parameters, or because they do not have composite structures or complex profiles).

**Important:** *This function (in other words, the possibility of referring to the quantities of skins in a composite structure or the quantities of components in a complex profile) is only available if you are using ArchiQuant with ArchiCAD 11 or later versions.*

### Insert skin quantity

The first button at the top, **Insert skin quantity**, is active and usable only if the element for whose component you are defining the formula is a wall, a slab or a roof and only if configured with a composite structure, or a wall, a beam or a column using a complex profile.

In this case, you can also refer to the volumes of the individual skins/elements by clicking on the button to display the list of skins usable in the calculation (in other words, the component skins of the composite structure or complex profile used):



The image on the left shows the list of skins in a composite structure in the order in which they were defined by the user, with information on the thickness of the skin on the right.

The image on the right, on the other hand, shows the list of fills used to define the complex profile.

**N.B.:** *In the first case, it is very easy to identify a skin as the skins are listed in the order in which they were defined in the composite structure and accompanied by information on their thickness. On the other hand, in the second case involving a complex profile, the list includes all the fills*

*used to define the profile and could also include double fills difficult to identify.*

*We therefore suggest you use different, easily identifiable fills for each quantity you want to calculate uniquely.*

*If, on the other hand, a number of fills of the same type have been used when designing the profile, but they must be calculated together as they identify the same component, simply add them all to the formula (select the first, add a "+" sign in the formula, then add all the subsequent ones).*

To select the reference skin, select it in the list and click on the **Enter** button.

To close the dialog without selecting any skin, click on the **Cancel** button.

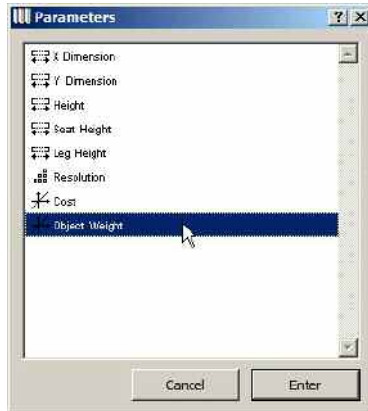
When the skin corresponding to the quantity (the volume of the selected skin) has been selected, click on the **Enter** button to immediately enter the parameter into your formula (immediately after the position indicated by your cursor):



### Insert GDL parameter

The first button at the top, **Insert GDL parameter**, is active and thus usable only if the element whose component is being defined is an ArchiCAD library part.

If this is the case, you can refer to its parameters by clicking on the button to display the list of parameters available for use in the calculation:






To choose the required parameter, select it in the list and click on the **Enter** button.

To close the dialog without select any GDL parameter, click on the **Cancel** button.

### N.B.:

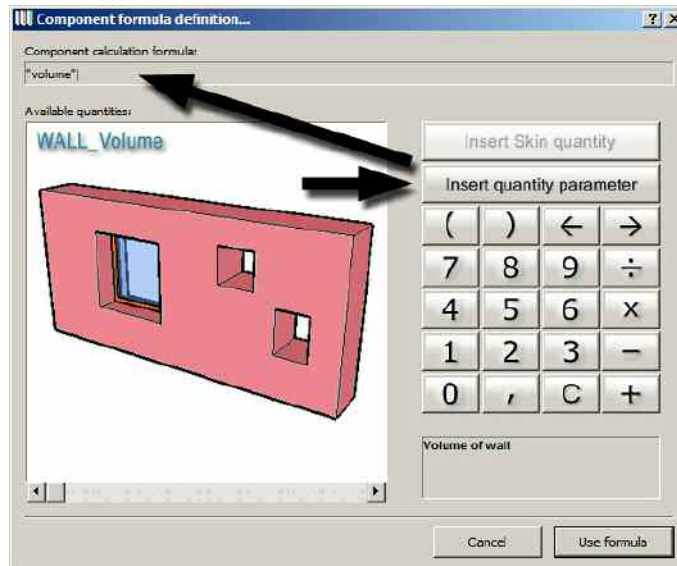
*Not all types of parameter are available for calculations. Only the following types of parameter will be listed and can therefore be used by ArchiQuant:*

-  Length parameters
-  Real number parameters
-  Entire parameters

When the parameter corresponding to the quantity has been chosen, click on the Enter button to immediately enter the parameter into your formula (immediately after the position indicated by your cursor):



Use the button immediately below, **Insert Quantity Parameter**, to insert the quantity parameter currently displayed in the **Available Quantities** section into the formula.



The meaning of the other 20 buttons is obvious, but we will nevertheless describe them one by one:

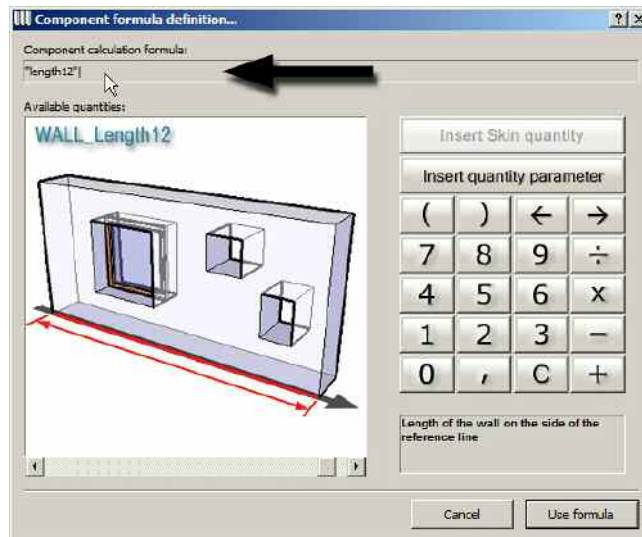
- the buttons with the two **brackets** are used to open and close brackets within your formula. ArchiQuant performs the calculations according to the priority established by the brackets included.
- The buttons with the two **arrows** (to the left and to the right) enable you to move the cursor within the formula currently being defined. Movement of the cursor is "intelligent", in other words, it automatically recognises the keywords and moves accordingly.
- The buttons with the **numbers** 0 to 9 are obviously used to enter the numbers into the formula.
- The buttons with the **operation signs** (division, multiplication, subtraction and addition) define the type of calculation to be performed.
- The button with the **comma** defines the decimals.
- The button with the letter "**C**" is used to define the item (or character) immediately to the left of the cursor.

Below is a simple example of how to define a formula, more complete examples are given in the **Appendix** to this manual.

We want to link a "skirting" component to the internal walls of our project, in other words, we want to calculate the number of metres of skirting we will need for our rooms.

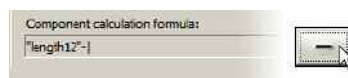
In the wall settings box (after selecting the internal walls in our project), we link the required component (twice as the skirting will be included on both sides of the wall), then after selecting it we click on the **Define Formula** button.

We run through the list of Available Quantities until the quantity **"Wall\_Length12"** is displayed (as described at the bottom right, this identifies the length of the wall on the side of its reference line), then click on the Enter Quantity Parameter button to insert it into the formula:

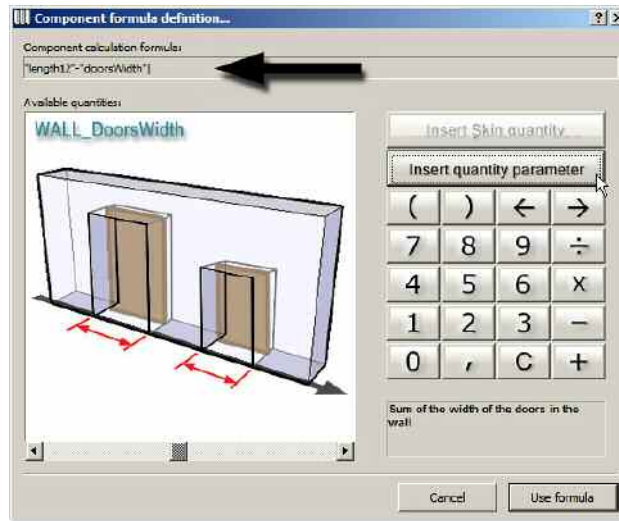


This gives us the calculation to calculate the length of the side of the wall corresponding to its reference line, but obviously the skirting will be interrupted by wall openings such as the doors present in the host wall. We therefore need to subtract their value from the length we just entered into the formula.

We therefore click on the button with the minus sign and the formula will be modified as follows:



We run through the list of Available Quantities until the quantity **"Wall\_DoorsWidth"** is displayed (as described at the bottom right, this identifies the sum of the widths of the doors present in the host wall), then click on the Enter Quantity Parameter button to insert it into the formula:



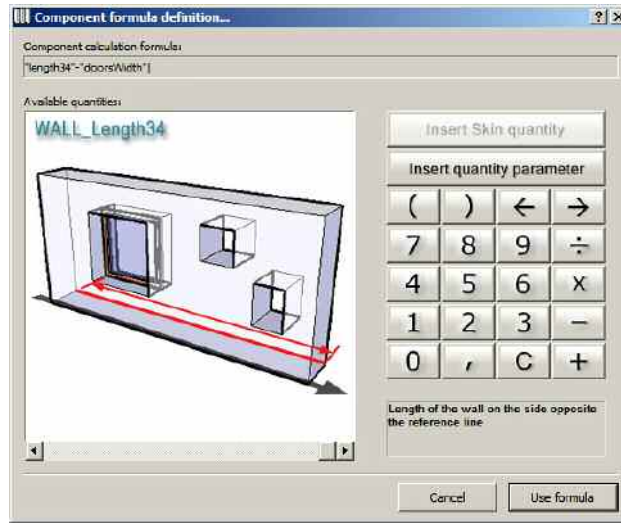
The resulting formula is now as follows:

"length12" - "doorsWidth"

In other words, the length of the skirting will be equal to the length of the wall on the side of its reference line less the sum of the widths of the doors.

We end definition of the formula by clicking the **Use Formula** button to confirm the modifications and close the dialog.

The same operation must then be repeated for the second component. In this case, however, we will use the quantity parameter **"WALL\_Length34"** as this refers to the length of the skirting on the opposite side of the wall:



The final formula for this component will therefore be:

`"length34" - "doorsWidth"`

In other words, the length of the skirting will be equal to the length of the wall on the side opposite the reference line less the sum of the widths of the doors.

We end formula definition by clicking the **Use Formula** button to confirm the modifications and close the dialog.

### Deleting a component from the list of components linked to the element

The Delete Component button deletes the selected component from the list of components linked to the ArchiCAD element.

It is extremely simple to use:

- in the list, select the component to be deleted
- click on the Delete Component button
- the component is immediately deleted from the list of linked components.

**N.B.:**

*this operation does not delete the selected component from the Components File. It simply eliminates the link with the host element.*



## Saving the List of Components linked to the element

As described above, you can link any number of components in the file to an ArchiCAD element and configure any type of quantity calculation formula for each of them.

These "packages" of definitions can be re-used in other projects.

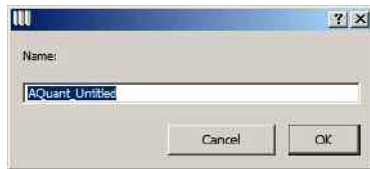
For example, once we have defined all the processes linked to an internal wall in the current project (bricks, mortar, plaster, surface finish, skirting, etc), we will probably want to use the same "type" of wall again in other projects.

Or it could be simpler to start from those basic data to then modify them by deleting or adding other components.

The **Save Components List button** provides this function. It saves the list of components (and associated formulas) so that you can use it again in any other project.

The procedure is extremely simple to use:

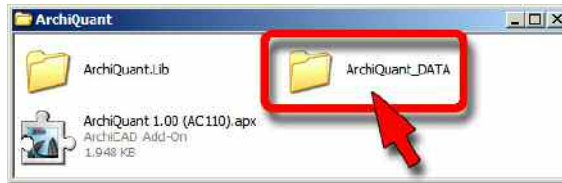
- after selecting the components and if necessary defining the linked formulas, click on the **Save Components List** button
- ArchiQuant displays a dialog box where you can define the name of the file to be saved (use an easy to remember name so you can identify the file later):



ArchiQuant immediately saves the file with the name you defined in the "**ArchiQuant\_DATA**" directory in the directory containing the ArchiQuant add-on.

### The ArchiQuant\_DATA directory

For the programme to function correctly, the ArchiQuant\_DATA directory must be in the directory containing the ArchiQuant add-on.



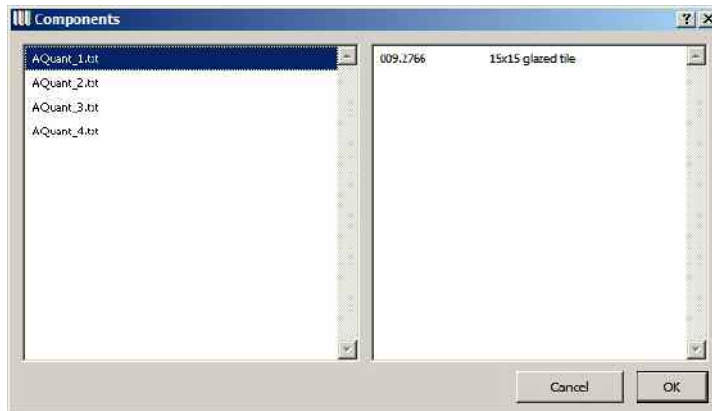
When the package is installed, the directory is already present (but empty).

If for any reason it has been accidentally deleted or is missing, create an empty directory in this position and name it "ArchiQuant\_DATA".

### Loading previously saved Components Lists

The **Load Components List** button enables you to import a list of components and their respective formulas from an external file.

Clicking on this button opens a dialog box similar to the one below:



The available Components Lists (only those saved in the ArchiQuant\_DATA directory) are shown on the left, while on the right the components contained in the list selected on the left are displayed in a preview area.

**N.B.:**

*when you save lists of linked components using the **Save Components List** button, together with the components and their formulas, ArchiQuant also saves the type of ArchiCAD element whose components have been*

*saved. The display of available lists filters the lists by type, in other words, not all lists in the **ArchiQuant\_DATA** directory will be displayed, but only those lists corresponding to the current type of ArchiCAD element.*

Clicking on the **Cancel** button closes the dialog without performing any import.

Clicking on the **OK** button imports the components (and linked formulas) in the selected Components List.

These components will be added to those defined previously (if present).

### **How the configurations made in the ArchiQuant Settings Panel work**

The ArchiQuant panel performs in exactly the same way as any other ArchiCAD tool settings box panel. This means that it can be used to modify existing settings or define default settings, depending on whether a selection has been made.

#### ***No selection - Default settings***

If you open the tool settings dialog without any current selection, the configuration entered in the ArchiQuant panel will be the default configuration for that tool, in other words, all elements created subsequently using that tool will inherit this configuration.

#### ***Elements of the same type selected - Settings modified***

If you open the settings dialog for a given tool and the current selection contains at least one element of the same type, then the ArchiQuant panel will display the configuration of the components corresponding to the selected element (or the last element of that type present in the selection).

Any changes made will affect all elements of that type in the selection.

The changes will not modify the default settings.

#### ***Transferring settings***

The usual ArchiCAD procedure for transferring the settings from one element to another (Edit > Element Settings > Pick-Up Parameters and Inject Parameters) will also function for component settings made in the ArchiQuant panel.

After configuring the components of a certain type of element, if you want to transfer the settings to another element of the same type already present in the project, you can use the ArchiCAD pick up/inject parameters technique.

## Appendix

### List of quantities available for formula definition by Element type:

#### WALL

WALL_Volume	Volume of the wall
WALL_Surface1	Surface area of the wall on the side of the reference line
WALL_Surface2	Surface area of the wall on the side opposite the reference line
WALL_Surface3	Surface area of the edges of the wall
WALL_Length	Average length of the wall - average of the length on the side of the reference line and the length on the opposite side
WALL_WindowsSurf	Surface area of the windows in the wall (excluding the wall openings)
WALL_DoorsSurf	Surface area of the doors in the wall (excluding the wall openings)
WALL_EmptyHolesSurf	Surface area of the wall openings
WALL_ColumnsVolume	Volume of the columns in the wall
WALL_ColumnsNumber	Number of columns in the wall
WALL_WindowsWidth	Sum of the width of the windows in the wall
WALL_DoorsWidth	Sum of the width of the doors in the wall
WALL_MinHeight	Minimum height of the wall
WALL_MaxHeight	Maximum height of the wall
WALL_CenterLength	Length of the wall to the centreline
WALL_Area	Surface area of the plan of the wall
WALL_Perimeter	Perimeter of the wall
WALL_GrossVolume	Gross volume of the wall
WALL_GrossSurf1	Gross surface area of the wall on the side of the reference line

WALL_GrossSurf2	Gross surface area of the wall on the side opposite the reference line
WALL_EmptyHolesVolume	Analytical volume of the openings in the wall
WALL_EmptyHolesSurf1	Analytical surface area of the openings in the wall on the side of the reference line
WALL_EmptyHolesSurf2	Analytical surface area of the openings in the wall on the side opposite the reference line
WALL_Length12	Length of the wall on the side of the reference line
WALL_Length34	Length of the wall on the side opposite the reference line

## COLUMN

COLUMN_CoreSurface	Lateral surface area of the column core
COLUMN_VeneSurface	Lateral surface area of the column veneer
COLUMN_CoreVolume	Volume of the column core
COLUMN_VeneVolume	Volume of the column veneer
COLUMN_MinHeight	Minimum height of the column
COLUMN_MaxHeight	Maximum height of the column
COLUMN_Perimeter	Perimeter of the column
COLUMN_Area	Area of the plan of the column
COLUMN_CoreGrossSurf	Gross lateral surface area of the column core
COLUMN_VeneGrossSurf	Gross lateral surface area of the column veneer
COLUMN_CoreGrossVolume	Gross volume of the column core
COLUMN_VeneGrossVolume	Gross volume of the column veneer
COLUMN_CoreTopSurf	Top surface area of the column core
COLUMN_CoreBotSurf	Bottom surface area of the column core
COLUMN_VeneTopSurf	Top surface area of the column veneer
COLUMN_VeneBotSurf	Bottom surface area of the column veneer
COLUMN_CoreGrossTopBotSurf	Gross top and bottom surface area of the column core
COLUMN_VeneGrossTopBotSurf	Gross top and bottom surface area of the column veneer

## BEAM

BEAM_RightLength	Length of the right side of the beam
BEAM_LeftLength	Length of the left side of the beam
BEAM_BottomSurface	Surface area of the bottom face of the beam
BEAM_TopSurface	Surface area of the top face of the beam
BEAM_EdgeSurfaceLeft	Surface area of the left side of the beam
BEAM_EdgeSurfaceRight	Surface area of the right side of the beam
BEAM_EdgeSurface	Surface area of the two ends of the beam
BEAM_HolesSurface	Surface area of the holes in the beam
BEAM_HolesEdgeSurface	Surface area of the edges of the holes in the beam
BEAM_HolesNumber	Number of holes in the beam
BEAM_Volume	Volume of the beam
BEAM_HolesVolume	Volume of the holes in the beam

## SLAB

SLAB_BottomSurface	Surface area of the bottom face of the slab
SLAB_TopSurface	Surface area of the top face of the slab
SLAB_EdgeSurface	Surface area of the edges of the slab
SLAB_Volume	Volume of the slab
SLAB_Perimeter	Perimeter of the slab
SLAB_HolesSurf	Surface area of the holes in the slab
SLAB_HolesPrm	Sum of the perimeters of the holes in the slab
SLAB_GrossBotSurf	Gross surface area of the bottom face of the slab
SLAB_GrossTopSurf	Gross surface area of the top face of the slab
SLAB_EdgeSurf	Gross surface area of the edges of the slab
SLAB_GrossVolume	Gross volume of the slab

## ROOF

ROOF_BottomSurface	Surface area of the bottom face of the roof
ROOF_TopSurface	Surface area of the top face of the roof
ROOF_EdgeSurface	Surface area of the edges of the roof
ROOF_Volume	Volume of the roof
ROOF_Perimeter	Perimeter of the roof
ROOF_HolesSurf	Surface area of the holes in the roof
ROOF_HolesPrm	Sum of the perimeters of the holes in the roof
ROOF_GrossBotSurf	Gross surface area of the bottom face of the roof
ROOF_GrossTopSurf	Gross surface area of the top face of the roof
ROOF_EdgeSurf	Gross surface area of the edges of the roof
ROOF_GrossVolume	Gross volume of the roof

## MESH

MESH_BottomSurface	Surface area of the bottom face of the mesh
MESH_TopSurface	Surface area of the top face of the mesh
MESH_EdgeSurface	Surface area of the edges of the mesh
MESH_Volume	Volume of the mesh
MESH_Perimeter	Perimeter of the mesh
MESH_HolesSurf	Surface area of the holes in the mesh
MESH_HolesPrm	Sum of the perimeters of the holes in the mesh

## WINDOW / CORNER WINDOW

WINDOW_Surface	Surface area of the window (of the object)
WINDOW_Volume	Volume of the window (of the object)
WINDOW_SillHeight	Nominal height of the sill
WINDOW_SillHeight1	Height of the sill on the reveal side
WINDOW_SillHeight2	Height of the sill on the side opposite the reveal
WINDOW_HeadHeight	Nominal height of the head



WINDOW_HeadHeight1	Height of the head on the reveal side
WINDOW_HeadHeight2	Height of the head on the side opposite the reveal
WINDOW_Width1	Width of the window on the reveal side
WINDOW_Width2	Width of the window on the side opposite the reveal
WINDOW_Height1	Height of the window on the reveal side
WINDOW_Height2	Height of the window on the side opposite the reveal
WINDOW_Surface1	Surface area of the window on the reveal side
WINDOW_Surface2	Surface area of the window on the side opposite the reveal
WINDOW_nWidth1	Nominal width of the window on the reveal side
WINDOW_nWidth2	Nominal width of the window on the side opposite the reveal
WINDOW_nHeight1	Nominal height of the window on the reveal side
WINDOW_nHeight2	Nominal height of the window on the side opposite the reveal
WINDOW_nSurface1	Nominal surface area of the window on the reveal side
WINDOW_nSurface2	Nominal surface area of the window on the side opposite the reveal
WINDOW_OpeningVolume	Volume of the opening
WINDOW_GrossSurf	Gross surface area of the opening
WINDOW_GrossVolume	Nominal volume of the opening

## SKYLIGHT

SKYLIGHT_Surface	Surface area of the skylight (of the object)
SKYLIGHT_Volume	Volume of the skylight (of the object)

## DOOR

DOOR_Surface	Surface area of the door (of the object)
DOOR_Volume	Volume of the door (of the object)
DOOR_SillHeight	Nominal height of the sill
DOOR_SillHeight1	Height of the sill on the reveal side
DOOR_SillHeight2	Height of the sill on the side opposite the reveal
DOOR_HeadHeight	Nominal height of the head
DOOR_HeadHeight1	Height of the head on the reveal side
DOOR_HeadHeight2	Height of the head on the side opposite the reveal
DOOR_Width1	Width of the door on the reveal side
DOOR_Width2	Width of the door on the side opposite the reveal
DOOR_Height1	Height of the door on the reveal side
DOOR_Height2	Height of the door on the side opposite the reveal
DOOR_Surface1	Surface area of the door on the reveal side
DOOR_Surface2	Surface area of the door on the side opposite the reveal
DOOR_nWidth1	Nominal width of the door on the reveal side
DOOR_nWidth2	Nominal width of the door on the side opposite the reveal
DOOR_nHeight1	Nominal height of the door on the reveal side
DOOR_nHeight2	Nominal height of the door on the side opposite the reveal
DOOR_nSurface1	Nominal surface area of the door on the reveal side
DOOR_nSurface2	Nominal surface area of the door on the side opposite the reveal
DOOR_OpeningVolume	Volume of the opening
DOOR_GrossSurf	Gross surface area of the opening
DOOR_GrossVolume	Nominal volume of the opening

## OBJECT

OBJECT_Surface	Surface area of the object
OBJECT_Volume	Volume of the object

## LAMP

LAMP_Surface	Surface area of the lamp
LAMP_Volume	Volume of the lamp

## STAIRS

STAIR_Surface	Surface area of the stairs
STAIR_Volume	Volume of the stairs

## ZONE

ZONE_Area	Measured area of the zone
ZONE_Perimeter	Perimeter of the zone (excluding internal holes)
ZONE_HolesPrm	Sum of the perimeters of the holes in the zone
ZONE_WallsPrm	Length of the perimeter walls of the zone
ZONE_AllCorners	Total number of corners in the zone
ZONE_ConcaveCorners	Number of concave corners in the zone
ZONE_WallsSurf	Surface area of the edges of the walls in the zone
ZONE_DoorsWidth	Sum of the width of the doors in the zone
ZONE_DoorsSurf	Sum of the surface areas of the doors in the zone
ZONE_WindowsWidth	Sum of the width of the windows in the zone
ZONE_WindowsSurf	Sum of the surface area of the windows in the zone
ZONE_BaseLevel	Base level of the zone
ZONE_FloorThick	Thickness of the floor in the zone
ZONE_Height	Height of the zone
ZONE_NetArea	Net surface area of the zone
ZONE_NetPerimeter	Net perimeter of the zone

ZONE_Volume	Volume of the zone
ZONE_ReducementArea	Reduced area of the zone (percentage reduction)
ZONE_CalcArea	Calculated area of the zone (total surface area of the zone minus the sum of the surface areas of the walls, columns, fills and area reduced for low ceiling multiplied by a factor K)
ZONE_TotalExtrArea	Total extracted surface area of the zone (sum of the surface areas of the walls, columns, fills and area reduced for low ceiling)
ZONE_ReducedExtrArea	Reduced surface area of the zone (total surface area of the zone minus the sum of the surface areas of the walls, columns, fills and area reduced for low ceiling)
ZONE_LowExtrArea	Surface area of the zone reduced for low ceiling
ZONE_WallExtrArea	Surface area of the plan of the walls in the zone
ZONE_ColuExtrArea	Surface area of the plan of the columns in the zone
ZONE_FillExtrArea	Surface area of the fills in the zone
ZONE_InsetTopSurf	Inner surface area of the heads of the openings in the zone
ZONE_InsetBackSurf	Surface area of the front of the openings in the perimeter of the zone
ZONE_InsetSideSurf	Surface area of the reveals of the openings in the perimeter of the zone

## FILL

FILL_Surface	Surface area of the fill
FILL_Perimeter	Perimeter of the fill
FILL_HolesPrm	Sum of the perimeters of the holes in the fill
FILL_HolesSurf	Sum of the surface areas of the holes in the fill

## LINE

LINE_Length	Length of the line
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**ARC/CIRCLE**

ARC/CIRCLE_Length	Length of the arc/circle
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**POLYLINE**

POLYLINE_Length	Length of the polyline
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**SPLINE**

SPLINE_Length	Length of the spline
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