

# AHatch Pro 1.1

Hatch Pattern Editor  
for Autodesk AutoCAD®



Standard Edition

***fell&kernbach***

[www.fell-kernbach.de](http://www.fell-kernbach.de)

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## User Manual



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## **Welcome to AHatch Pro 1.1**

In many fields of activity such as civil engineering (ISO 710 1-6, USCS, DIN 4023, ...), architecture, geosciences, cartography, complex hatch patterns are required for a clear graphical representation.

With AHatch Pro you may create your own hatches and use them in Autodesk AutoCAD.

AutoCAD is a trademark of AutoDesk.



# **1 Hardware and Software Requirements**

## **1.1 Installation**

The recommended minimum system configuration to run AHatch Pro is:

- Windows 98® or more recent
- Pentium II, >= 300 MHz, >= 64 MB RAM

To install AHatch Pro, please execute the setup program and follow the instructions.

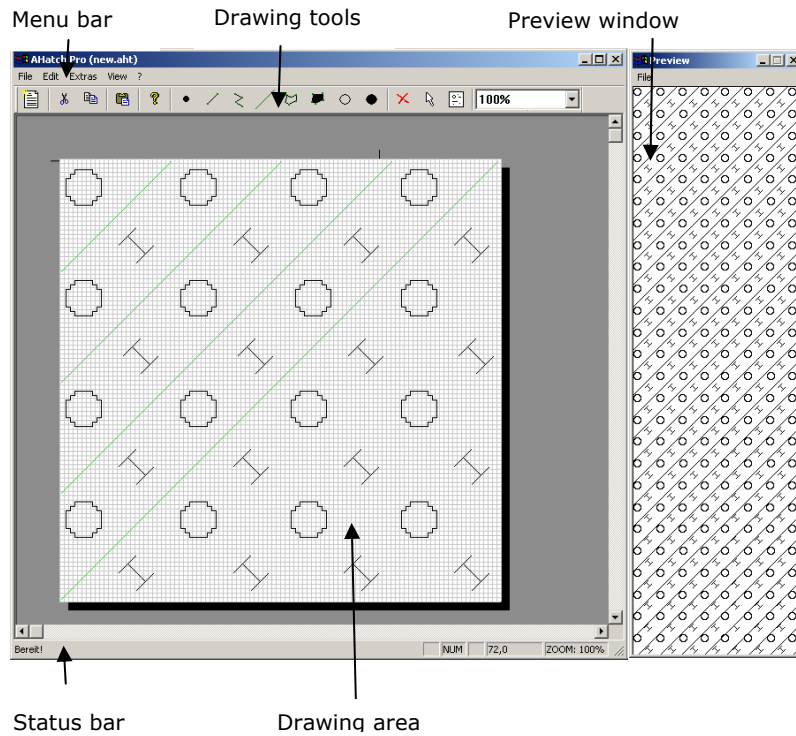
## **1.2 Registration**

To register your full version of AHatch Pro, fill in your registration information when starting the program for the first time. Please note capitalization and use of small letters.



## 2 User interface

Start AHatch Pro and the application window will open. It contains elements depicted in the figure below.



The application window can be reduced, maximized / minimized or closed with the buttons in the upper right corner.

The preview window can be reduced or closed.

### 2.1 Menu bar

The menu is located at the top of the application window of AHatch Pro. An option is chosen as follows:

Click on a menu item and a list of commands will be shown. To choose a command, click on it or toggle through the items with the arrow-buttons, then confirm.



## **2.2 Drawing tools**

The drawing tools provide a fast access to the functionality of AHatch. If you move the cursor over a button a tool tip will be shown right beside. In the status bar you a short description of the command is displayed.

The drawing toolbar can be switched on and off through the menu item "view".

## **2.3 Drawing area**

New hatches are created on the drawing area. To facilitate orientation, the position of the cursor is indicated by marks at the upper and left edge of the window. The coordinates of the cursor are shown in the right part of the status bar.

## **2.4 Status bar**

Short information on the commands as well as the name of the selected tool will be displayed in the status bar. The status bar also displays the zoom level as well as the position of the cursor in the drawing area.

The status bar can be switched on and off through the menuitem „View“.

## **2.5 Preview window**

The preview window shows how created hatches will appear if printed out. Using the zoom functions the preview can be scaled according to the individual user's needs.

### **Opening and closing**

The preview window will automatically be shown at the start of AHatch. To close the window click the cross at the upper right corner or deactivate the window through the menu item "view". To reduce the window, also use the corresponding button at the upper right corner.



To re-open the preview window, use the preview-symbol in the toolbar or activate it through the menu item "view".

### **Changing size**

The window size may be changed by moving its edges. An arrow pointing to both sides will be shown if the cursor is positioned over an edge. Now the window size may be changed while pressing the left mouse button.

### **Changing zoom**

The representation of your hatches can be zoomed smaller or bigger without changing the dimensions.

You change the representation of your hatches as follows:

Choose the command „zoom“ at the menu „file“ and enter the zoom level.



**3.1 Create a new file**

A file is created as follows: choose item "New" from the menu item "File" or choose the symbol for new document from the drawing tools or enter Ctrl + N.

You will be asked for the resolution of the drawing grid. Select the required resolution and confirm with "Ok". An empty working sheet will be shown in the drawing area.



**Hint:** You may not change the grid-resolution subsequently, since this would cause changes in your drawing.

**3.2 Opening an existing file**

An existing file is opened as follows: choose item "Open" from the menu item "File" or enter Ctrl + O. Choose a file and confirm.

**3.3 Saving a file**

A file is saved as follows: choose item "save" from the menu item "File" or choose the symbol for save or enter Ctrl + S. If you do not assign a filename, AHatch will provide one and save the file in the project directory.

If you want to save the file under a different name, choose item "Save as" from the menu "File" and enter the new file name.

**3.4 Creating hatches**

New hatches may be created using the following drawing objects:

- Point
- Line
- Polyline
- Endless line



- Polygon
- Filled Polygon
- Circle
- Filled Circle

All vertices are placed in the middle of the concerned cell. By selecting an object, all vertices will be marked by a little blue rectangle.

It is not possible to draw outside the drawing area. For that reason, the size of circles close to an edge is reduced.

The return-key repeats the last command. The esc-key interrupts the last command. After that the arrow-symbol will be used as cursor.



### **Drawing a dot**

Choosing the dot icon from the menu bar allows to draw a dot inside the drawing area.



### **Drawing a line**

Choosing the line icon from the menu bar allows to draw a straight line.



### **Drawing a polyline**

Choosing the polyline icon at the menu bar allows to draw a polyline. To finish the polyline drawing, double click or press the return key.



### **Drawing an infinite line**

Choose the infinite line icon from the menu bar allows to draw an infinite line by specifying two points.

AHatch exceeds the line over the drawing area to both sides.

Therefore the length of the line inside the drawing area is insignificant. Important for the drawing is just the direction of the line.





### Drawing a polygon / a filled polygon

Choose the polygon or filled polygon icon from the menu bar and draw a polygon inside the drawing area. To close the polygon double click or press the return key.



### Drawing a circle / a filled circle

Choose the circle or filled circle icon from the menu bar and draw first the centre and then the radius of the circle inside the drawing area.



**Hint:** The outline of the circle will be drawn by small rectangular grid elements. The bigger the circle and the smaller the grid cells, the more circular the outline will be drawn.

## 3.5 Adding to a file

The command "Add a file" from the menu "Edit" is used to add a hatch stored as AHatch-file to the drawing area. The insertion point relates to the upper left corner.

The size of the added element depends on the original grid size as well as the grid size of the actual drawing area.



**Hint:** The grid size of the drawing area must have at least the same resolution as the added hatch. It is not possible to add a hatch with a higher resolution as chosen for the actual drawing area. In that case the added hatch would be redrawn incomplete.

## 3.6 Operation on hatches

The following operations may be applied on hatches:

- Select
- Copy
- Cut
- Paste
- Pan



- Change
- Delete
- Group / Ungroup

## Select



Many tools require to select the target objects before executing commands on them. To select an object, choose the selection symbol and then click on the object. If you want to add objects to your selection, additionally press the shift key while clicking on the objects.

If you want to select all objects in the drawing area, choose "select all" at the menu item "Edit" or enter Ctrl + A. The outline of the chosen objects will be indicated by blue vertices.



### Copy

An object is copied as follows: choose the copy symbol or choose "Copy" from the menu "Edit" or enter Ctrl + C.



### Cut

An object is cut as follows: choose the cut symbol or choose "Cut" from the menu "Edit" or enter Ctrl + X.



### Paste

An object is pasted as follows: choose the paste symbol or choose "Paste" from the menu "Edit" or enter Ctrl + V.

An object is pasted at the same location where it was copied or cutted.

### Move

An object is moved by moving it while pressing the left mouse button.



## Edit

To edit an object, it has to be selected first. The position of any vertice may then be modified without influencing the other vertices. To delete the vertice that was drawn last, press the Z-key.

## Delete



To delete an object either choose the delete symbol or choose "delete" from the menu "edit" or press the del-key on the keyboard.

## Group / Ungroup

The command "Group" can be used to unite objects in a way that one can work with if they would be one single object. One may copy, paste, move or delete the group.

To group objects, select the objects and choose the command „Group“ from the menu „Edit“.

To ungroup a group, select it and choose the command „Ungroup“ from the menu „Edit“.

## Undo

To undo the last operation, choose „Undo“ from the menu „Edit“ or press ctrl + Z.



## 4 Preferences

The menu „Extras“ gives access the following operations:

- Filling mode
- Mosaic frequency
- DIN 4023 (this is not part of the standard version of AHatch Pro)
- Languages

### 4.1 Filling mode

Filling of polygons and circles is done by horizontal lines. The narrower the lines and the more dense the grid the darker the hatch appears.

Using “Filling mode” one may control intensity and density of filled objects. This is especially important for data export.

To modify the filling mode, choose the option “Filling mode” from the menu “Extras”, change it according to your needs and confirm with “Ok”.

AHatch indicates object filling in the preview window. However, in the drawing window, the filled elements are always shown completely black.

**Example:** A filling mode of 1 will draw one line each row. A filling mode of 5 will draw 5 lines each row. The hatch appears darker as compared to filling mode 1. A filling mode of 0.5 will draw a line every second row. The hatch appears brighter.



5x5 rectangle with filling mode of 1



5x5 rectangle with filling mode of 2

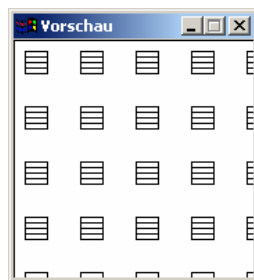


## 4.2 Mosaic frequency

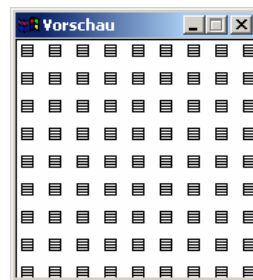
With "Mosaic frequency" from the menu "Extras" one can set the density of the hatch for export into the AutoCad data format (see also Chapter 5).

AHatch indicates the actual mosaic frequency in the preview window.

**Example:** A mosaic frequency of 2 leads to a doubling of objects. The object sizes and the distances between them will be reduced accordingly. A mosaic frequency of 0.5 halves the mosaic frequency. The objects and the distances between them grow.



Mosaic frequency of 1



Mosaic frequency of 2

## 4.3 DIN 4023 Support



**Hint:** The AHatch module for the generation of hatches according to DIN 4023 is not part of the standard version of AHatch Pro. It may be acquired separately through the [www.fell-kernbach.de](http://www.fell-kernbach.de) website.

### Requirements according to the German standard DIN 4023

The German standard DIN 4023 raises the following requirements on the graphical representation of borelogs:

- The signs for the major element of mixed soils have to be distributed uniformly over the entire width of the column



- The signs for the first minor element have to be drawn at the right part of the column
- A second minor element has to be drawn in case of accentuate characteristics at the right part of the column
- For stratum with small thickness the signs for the major element have to be drawn at the left part of the column. The signs for the first minor element have to be drawn at the right part of the column. More elements are not presented.

DIN 4023 raises the following requirements on maps and 2D-profiles:

- The signs for
- the major element of mixed soils have to be distributed uniformly over the entire width of the drawing
- The first minor element has to be distributed uniformly over the entire width of the drawing but in a reduced density as compared to the major element
- A sign for a second minor element may be added in the same way as is done for the first minor element

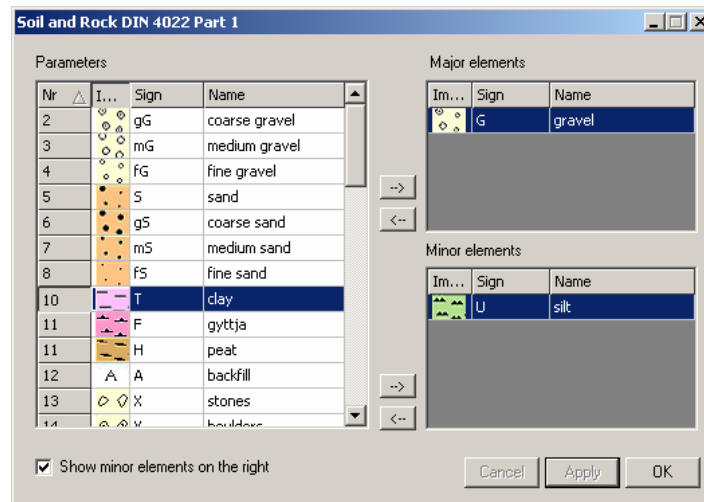
### **Drawing hatches according to DIN 4023**

Hatches are drawn according to DIN 4023 as follows:

Choose the option "DIN" from the menu "Extras". A dialog box will appear allowing you to combine your own hatches according to DIN 4023.

At the left side you find the inventory of all soil and rock parameters. The first column gives the internal numbering, the second column shows the graphical representation, the third column specifies the corresponding grammalogue and the last column indicates the corresponding names.





One may order the inventory by clicking on the title of a column. The data will be ordered ascending or descending. Another click reverses the order.

To select one or more major elements press the upper take-over-button (→). AHatch shows your choice in the upper panel on the right. To deselect a parameter choose it and press the ←-button.

The minor elements are selected analogously and shown on the lower right panel.

According to DIN 4023 minor elements are drawn just at the right part of the hatch. If you like a uniform distribution of the minor elements you have to deactivate the box "Show minor elements on the right" at the lower left corner.

The results of the hatch composition can be visualised by pressing „Apply“. To further modify the hatch, proceed as described above. Confirming with „Ok“, the actual inputs will be overtaken into the drawing window and the window will be closed. Pressing "Cancel" closes the window without overtaking the actual input.

To save and to open individually created hatches proceed as described in chapter 3.



## 5 Export to AutoCad

With AHatch Pro, one can export hatches in an AutoCAD-compatible \*.pat format and import them into AutoCAD itself. One may also append hatches to an existing \*.pat-file. That means you may extend the AutoCad hatch library.

### 5.1 Appending hatches to an existing hatch library

Nearly created hatches are appended to an existing hatch library by the following steps:

- Choose „Export“ from the menu File“
- Select your destination file (either the hatch library *acadiso.pat* from the AutoCad directory SUPPORT or for imperial units the library *acad.pat* in the same directory)
- Activate the option “Append to file”
- Type in a hatch name. You may describe your hatch by separating name and description with a comma.
- Confirm with „Ok“

Your hatch will be appended at the end of the hatch library. Now you can use your hatch directly from the appropriate AutoCAD dialogue. How to create a new hatch

### 5.1 Creating a new hatch library

Deactivate the option “append to file and save your hatch in a new file. The file name will be used as hatch name. In that case for each hatch there has to be a different file.

Additionally you have to install the path for your .pat-file as a “support path” in AutoCAD.



## How to delete a hatch in AutoCad

Would you like to delete a hatch from your hatch pattern library, open the \*.pat file with a text editor. Search for the corresponding hatch pattern name. Each hatch is marked by a \* preceding the hatch name. Delete the \*-row and all the following rows up to the next hatch name (\*-row).

## Error messages in AutoCad

The following error message may be generated by AutoCAD while working with hatches:

**Message:** „The distance between the hatches is too narrow or the line size is too small. „

To be sure not to use wrong scale factors for the hatch. By default AutoCAD allows a maximum of 10.000 elements for hatching.

## Solution

- Increase the environment variable „MaxHatch“ to, for example, 100.000 by typing: (setenv "MaxHatch" "100000"). The command has to be put in parentheses. Further you have to care for capitalization and initial letters must be respected.
- Decrease the mosaic frequency when exporting hatch patterns from AHatch to AutoCAD
- Increase the scale factor in AutoCad

**Message:** „Cannot hatch circumscription / boundary.“

Depending on the size of the hatching object, it may be necessary to modify the scale factor of the hatches in AutoCAD. Most times this error message is generated when hatches with a mosaic frequency of 1 for example were exported into an object with an edge length of 1 or less.



## Solution

- Increase the mosaic frequency when exporting the hatches from AHatch to AutoCAD
- Decrease the scale factor in AutoCAD
- Increase the object size in AutoCAD

## 5.3 Making backups of hatch libraries



Important: Use the functionality of your operating system to make periodically backups of your hatch libraries.

## 5.4 Representation in AutoCad

The resolution of the hatches depends on the line width in AutoCAD. In case the outlines are too thick, you have to decrease the line strength at the property window. If necessary, set it to zero.

Hatches which are constructed by diagonal lines will be draw incorrectly at large distances from the origin (for example maps with UTM-coordinates). This problem is inherent to AutoCAD and also occurs with original AutoCAD hatches (for example star or honeycomb). You can solve this problem if you hatch these objects by using the command "User coordinate system" with option 3 in a local user coordinate system. After drawing the hatches, switch back previous "World coordinate" system.

The presentation of geological profiles according to DIN 4023 normally takes place in columns of a width of 1 cm. To come up to a presentation of the minor elements at the right side of the column it is necessary to choose a scale which is coordinated with a subsequent mosaic frequency.

**Example:** If one drawing unit in AutoCad (model area, one unit corresponds to one millimeter) should correspond to one meter, hatches should be exported from AHatch using a mosaic frequency of 100.



