

# Ambient Grains

## User's Guide

Version 4.0

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# INTRODUCTION

Ambient Grains is a software tool that automatically generates ambient music from music files, by using a new and innovative method of granular synthesis.

Set the graphs and the property controls. Click the Play button and within minutes you will create your own ambient music.

The software splits the original music into tiny pieces and mixes them together to create a new ambient soundtrack. The small pieces are called grains, hence "Ambient Grains".

Ambient Grains produces a musical pattern, by setting motifs, variations and progression. You can also create smooth sound-loops.

# PREPARATIONS

Although Installing Ambient Grains is a straightforward procedure, it is recommended that you take a moment to review the system requirements.

## System requirements

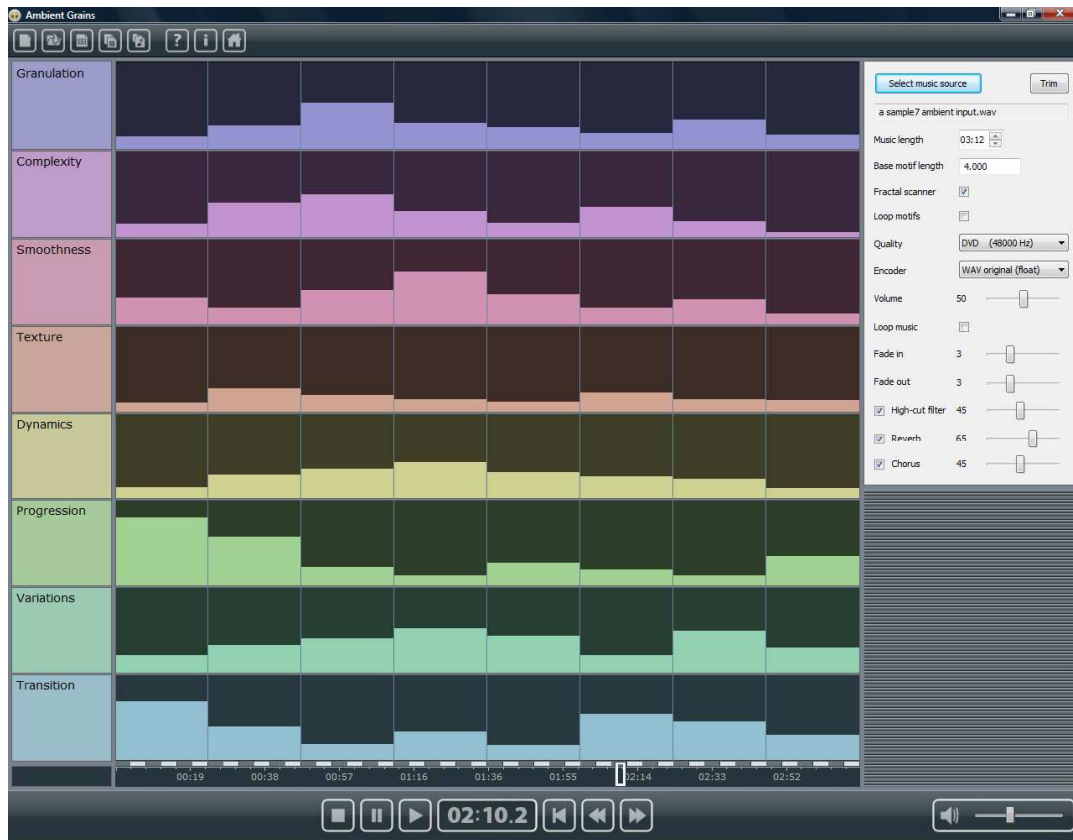
The following is the **minimal** required configuration:

- Pentium 4, 1.0 GHz processor or higher
- Microsoft Windows XP or Vista
- 1 GB RAM (more memory for large soundtracks)
- 10 MB hard-disk space.  
Extra space for the generated sound files
- Screen resolution: at least 1024 X 768, True Color

## Installing Ambient Grains

1. Make sure you have the right (administrative) privileges, required for installation on your computer.
2. Close all currently running applications.
3. Some computers might require the disabling of virus protection software.
4. Double-click the setup file.
5. Follow the onscreen instructions.

# THE AMBIENT GRAINS INTERFACE



There are several panes in the main window of Ambient Grains

- **Graph Names**  
Lists the available property graphs
- **Graphs**  
The value of each property graph, in each section
- **Properties**  
Different controls of global properties
- **Toolbar**  
Command buttons for different tasks
- **Playback Panel**  
Playback control buttons and time display
- **Timeline**  
Display the timeline, segments, and the play position

## GETTING STARTED

The steps to create ambient music with Ambient Grains are simple:

1. Select a music source file.
2. Set the graph levels for the property graphs.
3. Press the Play button.

## Different types of sound

Music source files can have many flavors, like classical, electronic, choral and many more musical genres.

If the music source file contains singing voices, the generated sound will have a different texture than using an instrumental music piece.

Try to select music source files that are ambient in nature, without drums and other percussion sounds, unless you want to create a special sound effect.

## Quality and speed

The quality of the sound is determined by the different settings of the program. These settings also directly influence the time it takes to generate the music. Start with the Test Quality setting, then use the High Quality setting for the final music generation.

The length of the input soundtrack and the length of the output soundtrack are not necessarily the same. However, using short music source files may result in relatively monotonous progressions.

## Sections, Motifs and Segments

The music is divided into sections. You can add or merge sections to control the general structure of the music.

Ambient Grains creates a musical motif for each section.

Each section contains several segments which are a progression and variations of the section motif.

Each section is linked to a source range. You can use the default source ranges for a section or set specific source ranges for individual sections.

## Music Source Files

The first step is to prepare your music source file to be converted into ambient music. Ambient Grains support the following formats:

- WAV/AIFF/MP3/MP2/MP1/OGG
- Mono or stereo
- 8 bits, 16 bits or floating point (32 bits)
- All sample rates are supported

You can use music from CDs as your music source. Extract the soundtrack from the CD into a sound file on your hard disk. To do this, use an external CD extraction program. There are many such software utilities that you can find on the Internet.

You can use a complete musical piece as the music source, or you can shorten (trim) your music source file.

## Output Sound Files

You can write the generated music to a sound file in one of several file formats. The sample rate is determined by the sample rate you choose in the global properties pane.

- WAV uncompressed 32-bit floating-point.
- WAV uncompressed 16-bit.
- MP3 ACM Encoder – MP3 Encoding will use the installed ACM Windows drivers in your PC. Select the required bit-rate from the list.
- WAV Compressed ACM encoder – Output sound file is in WAV format (a WAV header), compressed with an ACM encoder.

## System Resources

The granulation process takes place in memory. The Windows operating system may need to manage virtual memory on disk in order to support very large memory allocations. Try to avoid this by not using too large a music source file.

The physical memory of your computer (RAM memory, not hard disk space) should be able to contain the size of the original music source file and the size of the output sound file.

# PANES AND PROPERTIES

This Chapter describes the different areas of the main window of Ambient Grains.

## Sections

### Resizing a section

Put your mouse over a section border (vertical line). The mouse cursor changes to horizontal arrows cursor, to signify that you can drag the section border.

Click and drag the mouse to the new section border position.

### Context Popup Menu

Click on a cell with the right mouse button. A context menu appears. Select a command from the command list.

The following list describes the context menu commands:

#### Split Section

The Split command splits the current section into two equal-size sections. The Split command adds a new section to the matrix.

#### Merge Section

The Merge command merges the current section with the next section. The Merge command deletes the next section from the matrix.

#### Set Section Range

Select a specific source range for the current section. Please read Appendix A: Music source ranges.

#### Flat Graph

The Flat-graph command sets all cells in a row graph to the value of the current cell.

#### Flat Matrix

The Flat-matrix command sets all cells in the matrix to the value of the current cell.

#### Random Graph

The Random-graph command sets random values for all cells in the current row graph.

#### Random Matrix

The Random-matrix command sets random values for all cells in the matrix.

## Graphs

The main window of Ambient Grains contains a large matrix, divided into cells. Each row has a different color for easy identification.

Each cell in the matrix contains a value of a row graph and a column section.

## Setting the Cell's value

Click with the mouse on a cell to set the cell's value, or drag the mouse up or down, to change the cell's value.

## Property Graphs

### Granulation

The Granulation sets the grain size and grain density of the granulation process. Low Granulation values creates large grains, and high Granulation values creates smaller grains.

#### Technical note:

Depending on the Granulation value, the sizes of the generated grains are between 0.25 – 2.0 seconds. The density of the generated grains is between 50 – 500 grains per second.

### Complexity

The Grain Size is doubled when the Complexity value is set to 100%. In addition, high Complexity values create internal layers in the sound.

### Smoothness

The grain density is tripled when the Smoothness value is set to 100%, to create a smoother granulation.

### Texture

Ambient Grains can create a richer sound texture by slightly shifting the pitch of the grains. High Texture values create a larger pitch shift.

### Dynamics

Higher Dynamics values create more “notes” in the motif, scanning the music source faster.

### Progression

The Progression value determines how much the music source range overlaps between segments.

Progression value of 0% creates music loops.

### Variations

The Variations level determines how much each “note” in the motif is randomly shifted to create motif variations.

## Transition

The last motif segment in each section can create a transition between the current section motif and the next section motif.

## Properties

### Select music source

To select the music source file, press the “Music source” button. Enter the file name or select an existing file.

Tip: You can try to apply the same graphs and properties with different music source files, without changing anything else in your project.

### Trim

This option enables you to specify a range in the music source to be used in the granulation process. Please read Appendix A: Music source ranges.

### Length

Set the length (minutes and seconds) of the generated music.

### Base motif length

Set the length of the motifs. All motif (and motif segments) has the same length.

The number in the motif-length box is seconds.

### Fractal scanner

Ambient Grains can scan the music source using one of two methods: fractal-scanning or linear-scanning.

Fractal means “ordered randomness”. For each section, Ambient Grains scans the music source randomly, but makes a smooth scanning, to avoid abrupt changes.

In Linear scanning mode, the "notes" in the section motif are selected sequentially.

### Loop motifs

Each motif segment can start and end with the same "note", creating a better background soundtrack for loops. However, the sound will be more monotonous, since the first and last “notes” in each segment are the same. Use higher Dynamics values when using the loop-motifs property, to increase the number of “notes” in the section motif.

### Quality

Select the sample rate for the generated music sound.

If you change the sample rate, the music source file will be reloaded into memory.

## **Encoder**

Select the sound format of the generated output sound file.

## **Volume**

Set the general output volume level.

## **Loop music**

You can use Ambient Grains to create smooth ambient music loops. The loop is smoothed at the edge points of the soundtrack.

## **Fade-in**

Use the fade-in slider to fade-in at the beginning of the generated music.

The number next to the slider is seconds.

## **Fade-out**

Use the fade-out slider to fade-out at the end of the generated music.

The number next to the slider is seconds.

## **High-cut filter**

Filter high frequencies from the music sound. The granulation process tends to enhance high frequencies, so use the high-cut filter to reduce them.

This effect can be set in real-time while playing the music.

## **Reverb**

The reverb effect adds reverberation to the generated music. Most music sources already contain reverberation, so use this effect carefully.

This effect can be set in real-time while playing the music.

## **Chorus**

The chorus effect enriches the generated sound.

This effect can be set in real-time while playing the music.

## **Toolbar**

### **New Project**

Create a new project and reset all values to the default values.

### **Open Project**

Open an existing project.

### **Save Project**

Save the current project.

### **Save Project Copy**

Save a copy of the current project. This command is useful to create several 'takes' before deciding on the final project.

### **Write Music File**

Write the last generated music to an external sound file.

## **Playback Panel**

### **Play**

After setting the different parameters in Ambient Grains, press the Play button to begin generating the ambient music sound file. The process can take some time, depending on the selected settings.

### **Pause**

Pause the playback of the generated music.

### **Stop**

Stop the playback of the generated music.

### **Rewind**

Move the Start Play Position and the Current Play Position to the beginning of the timeline.

### **Previous Section**

Move the Start Play Position and the Current Play Position to the beginning of the previous section.

### **Next Section**

Move the Start Play Position and the Current Play Position to the beginning of the next section.

### **Playback volume**

Set the volume of the real-time playback. This is not the same as the Volume property, which sets the level of the generated output sound.

## Timeline

There are two horizontal areas in the timeline pane: The timeline numbers and the segment indicators.

Click or drag the mouse over the timeline to set the Start Play Position.

### **Start Playback Position**

This marker sets the Start Playback Position.

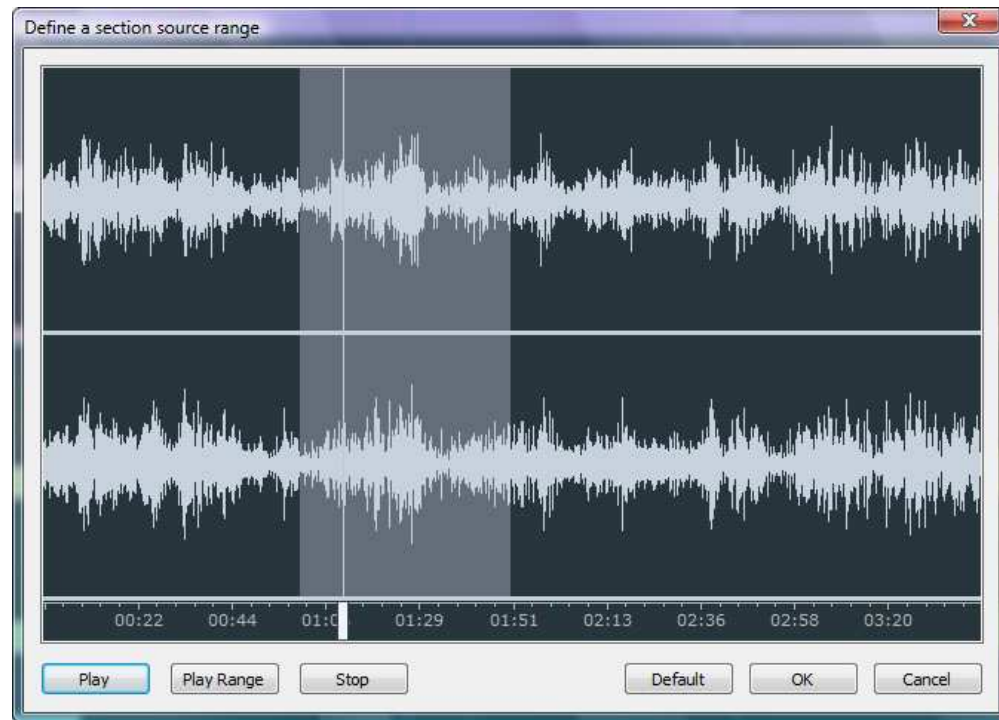
### **Current Playback Position**

This marker displays the Current Play Position during playback.

### **Motif Segment ranges**

The relative length of each segment is drawn on the timeline pane. Use the segment indicators to easily position the section borders (vertical lines).

## APPENDIX A: MUSIC SOURCE RANGES



You can select a source range:

- To trim the music source file, using only part of it.
- To select a range in the music source file for a specific section

To select a source range in the music source:

- Click the left mouse over the waveform
- Drag the mouse to the right
- Release the mouse to set the range

To adjust a source range:

- Move the mouse arrow to the left edge or to the right edge
- The mouse arrow changes to indicate an edge position
- Drag the edge to adjust its position over the waveform

To set the Start Play Position”

- Move the mouse to a specific point over the timeline area
- Click the mouse left button to set the Start Play Position marker

## **Play**

Press the play button to start playing the music source from the current play position.

## **Play range**

Play the range of the music source repeatedly in a loop.

## **Stop**

Stop playing the music source

## **Default**

Set the default source range.

When you trim the music source, the default trim area starts at 10% of the music source, and ends at 90% of the music source.

When you select a section source range, the default range is proportional to the section size. Ambient Grains automatically divides the trim area of the music source into proportional parts, relative to the sizes of the sections.

## **OK**

Accept the changes that you have made and close the window.

## **Cancel**

Delete the changes that you have made and close the window.

## **Section source ranges**

You can define a specific source range for some or all sections.

Click with the right mouse button on a section and select “Set Section Source” from the popup menu.

Select a region in the music source for the section source range.

Section source ranges can overlap. You can use this option to create interesting transitions between sections.

## **Trim: Skip Unwanted Edges**

Most music source files start and end with areas that are not suitable for granulation. Such areas can be the beginning (with fade-in), the end (with fade-out).

Use the Trim option to define the start and ending points to be used in the music source.

## **Trim: Building Multi-layer Music**

You can use Ambient Grain as the building tool for creating multi-layer ambient music.

Create several soundtracks from the same music source. Each soundtrack uses a different region in the music source. Use the Trim option to select the region.

Then, mix the separate soundtracks with your favorite sound mixer.

### **Trim: Using Several Music Source Files**

You can use different music source files in the same project. Use an external sound editor to create the music source file, by combining segments from several sound files, one after the other.

For each section in your Ambient Grains project, select a source range from the music source. Each section should have a unique source range from only one source file.

## Appendix B: Accurate Motif Length

A Motif is the base musical theme in each section.

Precise calculation of the motif's length enables you to prepare a background music soundtrack and add foreground instruments and percussions, using another music software.

First select the best tempo to use in your music piece. Then calculate the motif length, like this:

T (tempo) = BPM (Beats Per Minute).

BEATS = number of beats per bar, assuming a simple time signature (not compound).

BARS = number of bars per motif.

Motif Length =  $60 / T * BEATS * BARS$

Example:

T = 120

BEATS = 4

BARS = 2

Motif Length =  $60 / 120 * 4 * 2 = 4.000$  seconds.

You can set precise values like 3.572 for accurate tempo matching.