

Polyphone document: How to prepare a sample

An instrument built in a soundfont is made of samples, coming for example from the recordings of a real instrument. This tutorial describes how to add and prepare a sample in a soundfont.

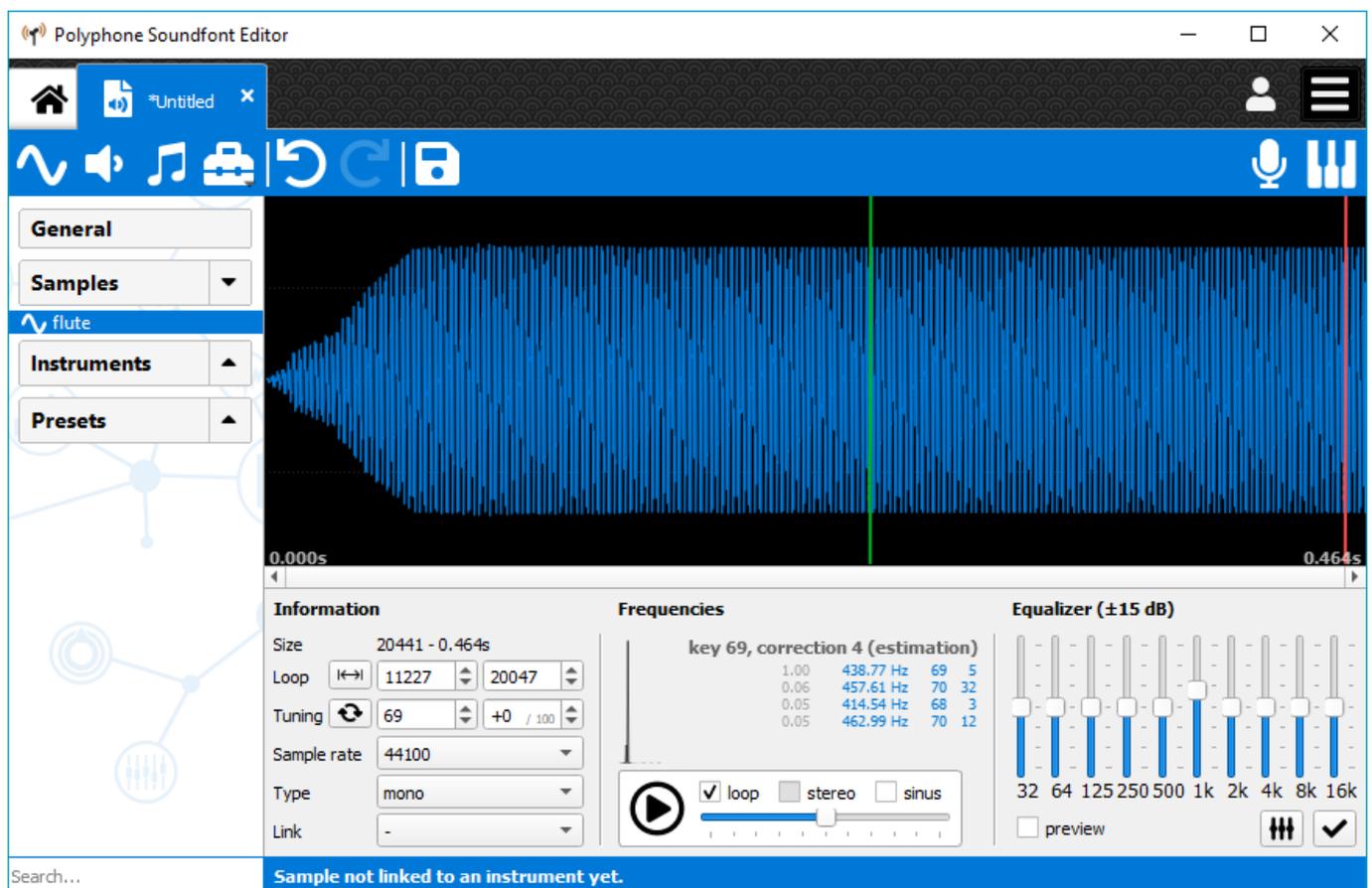
An instrument built in a soundfont is made of samples, coming for example from the recordings of a real instrument. This tutorial describes how to add and prepare a sample in a soundfont.

Import

You must first have samples on your computer. A lot of free samples can be found on internet, being either recorded from real instruments (from a flute, guitar, cello, ...) or created with different kinds of audio synthesis.

For this tutorial this flute sample is provided: [flute.wav](#).

Once you have it, create a new soundfont with Polyphone (File ? New) and import the sample (File ? Import samples).



The screenshot shows the Polyphone Soundfont Editor interface. The main window displays a waveform of a sample, with a green vertical line indicating the current playback position at 0.000s and a red vertical line at the end of the sample at 0.464s. The interface includes a sidebar with navigation options (General, Samples, Instruments, Presets) and a top toolbar with various icons. The bottom panel contains several control sections:

- Information:** Size (20441 - 0.464s), Loop (11227 to 20047), Tuning (69 / +0 / 100), Sample rate (44100), Type (mono), and Link (-).
- Frequencies:** key 69, correction 4 (estimation). A table shows frequency components:

1.00	438.77 Hz	69	5
0.06	457.61 Hz	70	32
0.05	414.54 Hz	68	3
0.05	462.99 Hz	70	12
- Equalizer (±15 dB):** A series of sliders for frequencies 32, 64, 125, 250, 500, 1k, 2k, 4k, 8k, and 16k. A 'preview' checkbox and a checkmark icon are also present.

A status bar at the bottom indicates "Sample not linked to an instrument yet."

Loop

Introduction

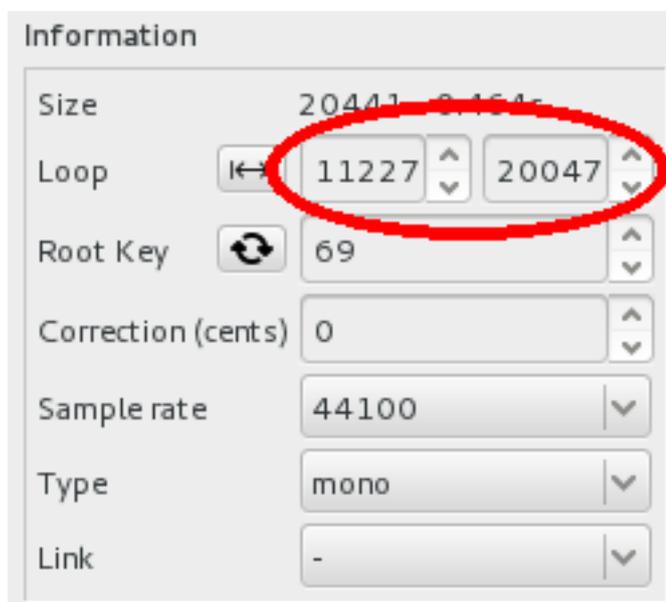
A loop is an area within a sample that can be repeated to extend the duration of the sample.

Let's say a sample lasts only 0.5 second, with a nice loop the sound can be extended up to 10 seconds or more. This is useful only for samples of non-percussive instruments such as flutes, trumpets, organs, violins. To the opposite, drums require no loops. This might also be the case for a piano or a guitar, depending on how these sounds are synthesized.

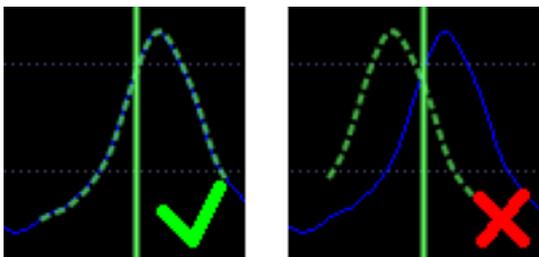
Thus, this section is necessary if and only if you feel the need of extending the original length of a sample. If not, go directly to the next section "Tuning".

Configuring a loop

In the tree, click on the sample you want to loop and focus on the loop parameters.



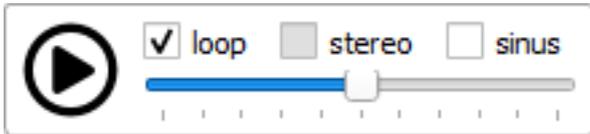
If you are lucky, these values were packaged in the .wav sample and these fields are already filled. If not, or if it's been badly configured (this can happen...), arbitrarily click left and right on the graphic (WAV display area) to define the beginning and the end of the loop. This is generally done on the steady phase of the sound, not within the attack or the release. Then, zoom around the beginning of the loop and try to superimpose the green (or red) and blue curves.



Listening to the result

When the loop is configured, press "play" on the player with the loop enabled to check the

result.



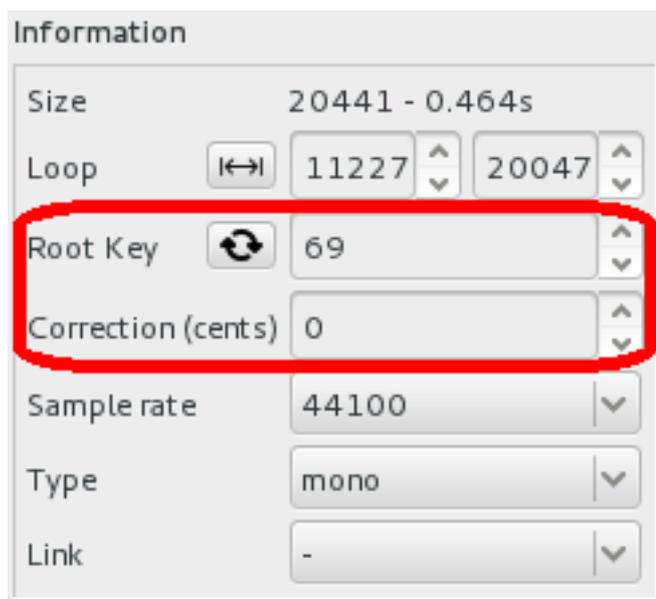
If you don't hear the transition once the end of the loop is read, this means that the loop is good. Otherwise, keep the player on and slightly move the end and / or the beginning of the loop until you find points with a transition as smooth as possible. Try the next records to see the difference between a bad and a good loop:

Your browser does not support the audio element. Your browser does not support the audio element.

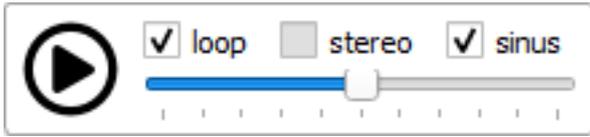
Note: a tool exists to "cheat" if you cannot find a loop easily: the [auto-loop](#) tool. It will automatically create a loop by cutting the sample and superimposing two sections, so that the end of the section will exactly match its beginning. See the related documentation for more information.

Tuning

All samples have to be tuned if you don't want an out-of-tune instrument. By indicating in the soundfont the exact pitch of all imported samples, the soundfont will be able to adapt them to keys. Some samples may already have these information, in which case you shouldn't have to change the values in "Root Key" and "Correction (cents)". But as a precaution it is always good to check.



Enable the loop if the sample has one and press "play" on the player. Then add the calibration sinus and adjust its volume so that you can hear both sounds as clearly as possible.



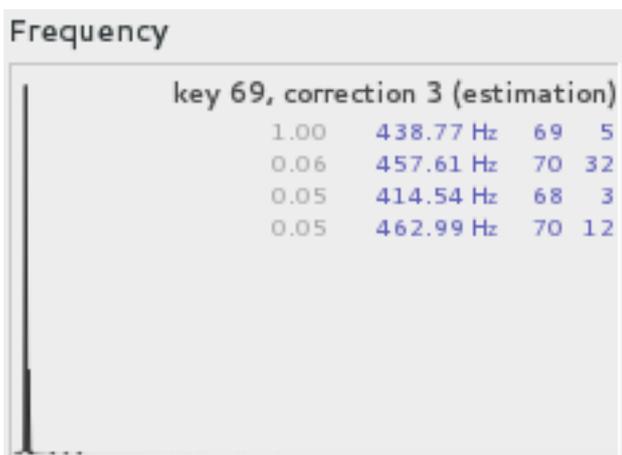
Start the tuning by changing the root key until the two sounds most closely match. Continue by adjusting the correction. For this step, pay attention to any beats that occur and make sure they are as slow as possible. Here are examples containing the sound of a flute and a calibration sinus:

Your browser does not support the audio element. (the root key doesn't match)

Your browser does not support the audio element. (the correction is not correct and you can hear beats)

Your browser does not support the audio element. (both values are good)

Note: the [frequency](#) analysis can be a good indicator to start tuning. But keep in mind that no algorithm is perfect for this task and only your ears will find the right tune.



To go further

Several tools are available in the menu "Tools". You can edit samples by:

- [removing blank](#) at start,
- [equalizing](#) the sound,
- [transposing](#),
- [normalizing](#) the volume,
- [adjusting the balance](#) for stereo samples.

Note on the stereo samples

Stereo samples are made of two mono samples. The link is stored in the information of a

sample.

Information	
Size	346101 - 7.848s
Loop	<input type="button" value="↔"/> 20209 <input type="button" value="↑"/> <input type="button" value="↓"/> 34609 <input type="button" value="↑"/> <input type="button" value="↓"/>
Root Key	<input type="button" value="↻"/> 48 <input type="button" value="↑"/> <input type="button" value="↓"/>
Correction (cents)	-3 <input type="button" value="↑"/> <input type="button" value="↓"/>
Sample rate	44100 <input type="button" value="↓"/>
Type	left <input type="button" value="↓"/>
Link	F_bomb.16 036-CL <input type="button" value="↓"/>

Managing two mono samples may add difficulty to loop them because a loop can sound fine for one side and not for the other. In that case, don't hesitate to cheat by configuring two different loops on the right and left side. The quality of the sound will not be impaired.