AUDITION - NOISE REDUCTION  (Adobe CS5.5 HELP)

Apply the Noise Reduction effect

1 In the Waveform Editor, select a range that contains only noise and is at least half a second long.

To select noise in a specific frequency range, use the Marquee Selection tool. (See “Select spectral ranges” on page 39.)

2 Choose Effects > Noise Reduction/Restoration > Capture Noise Print.

3 In the Editor panel, select the range from which you want to remove noise.

4 Choose Effects > Noise Reduction/Restoration > Noise Reduction.

5 Set the desired options.

When recording in noisy environments, record a few seconds of representative background noise that can be used as a noise print later on.

Noise Reduction options

Capture Noise Print

Extracts a noise profile from a selected range, indicating only background noise. Adobe Audition gathers statistical information about the background noise so it can remove it from the remainder of the waveform.

If the selected range is too short, Capture Noise Print is disabled. Reduce the FFT Size or select a longer range of noise. If you can’t find a longer range, copy and paste the currently selected range to create one. (You can later remove the pasted noise by using the Edit > Delete command.)

Save the Current Noise Print

Saves the noise print as an .fft file, which contains information about sample type, FFT (Fast Fourier Transform) size, and three sets of FFT coefficients: one for the lowest amount of noise found, one for the highest amount, and one for the power average.

Load a Noise Print from Disk

Opens any noise print previously saved from Adobe Audition in FFT format. However, you can apply noise prints only to identical sample types. (For example, you can’t apply a 22 kHz mono profile to 44kHz stereo samples.)

Note: Because noise prints are so specific, a print for one type of noise won’t produce good results with other types. If you regularly remove similar noise, however, a saved profile can greatly increase efficiency.
Graph
Depicts frequency along the $x$-axis (horizontal) and the amount of noise reduction along the $y$-axis (vertical).

The blue control curve sets the amount of noise reduction in different frequency ranges. For example, if you need noise reduction only in the higher frequencies, adjust the control curve downward to the right of the graph.

If you click the Reset button to flatten the control curve, the amount of noise reduction is based entirely on the noise print.

*To better focus on the noise floor, click the menu button to the upper right of the graph, and deselect Show Control Curve and Show Tooltip Over Graph.*

Noise Floor
High shows the highest amplitude of detected noise at each frequency; Low shows the lowest amplitude. Threshold shows the amplitude below which noise reduction occurs.

*The three elements of the noise floor can overlap in the graph. To better distinguish them, click the menu button, and select options from the Show Noise Floor menu.*

Scale
Determines how frequencies are arranged along the horizontal $x$-axis:

- For finer control over low frequencies, select Logarithmic. A logarithmic scale more closely resembles how people hear sound.
- For detailed, high-frequency work with evenly spaced intervals in frequency, select Linear.

Channel
Displays the selected channel in the graph. The amount of noise reduction is always the same for all channels.

Select Entire File
Lets you apply a captured noise print to the entire file.

Noise Reduction
Controls the percentage of noise reduction in the output signal. Fine-tune this setting while previewing audio to achieve maximum noise reduction with minimum artifacts. (Excessively high noise reduction levels can sometimes cause audio to sound flanged or out-of-phase.)

Reduce By
Determines the amplitude reduction of detected noise. Values between 6 and 30 dB work well. To reduce bubbly artifacts, enter lower values.

Output Noise Only
Previews only noise so you determine if the effect is removing any desirable audio.
Advanced settings
Click the triangle to display the following options:

- **Spectral Decay Rate**
  Specifies the percentage of frequencies processed when audio falls below the noise floor. Fine-tuning this percentage allows greater noise reduction with fewer artifacts. Values of 40% to 75% work best. Below those values, bubbly-sounding artifacts are often heard; above those values, excessive noise typically remains.

- **Smoothing**
  Takes into account the variance of the noise signal in each frequency band. Bands that vary greatly when analyzed (such as white noise) will be smoothed differently than constant bands (like 60-Hz hum). In general, increasing the smoothing amount (up to 2 or so) reduces burbly background artifacts at the expense of raising the overall background broadband noise level.

- **Precision Factor**
  Controls changes in amplitude. Values of 5-10 work best, and odd numbers are ideal for symmetrical processing. With values of 3 or less, the Fast Fourier transform is performed in giant blocks, and between them drops or spikes in volume can occur. Values beyond 10 cause no noticeable change in quality, but they increase processing time.

- **Transition Width**
  Determines the amplitude range between noise and desirable audio. For example, a width of zero applies a sharp, noise gate to each frequency band. Audio just above the threshold remains; audio just below is truncated to silence. Alternatively, you can specify a range over which the audio fades to silence based upon the input level. For example, if the transition width is 10 dB, and the noise level for the band is -60 dB, audio at -60 dB stays the same, audio at -62 dB is reduced slightly, and audio at -70 dB is removed entirely.

- **FFT Size**
  Determines how many individual frequency bands are analyzed. This option causes the most drastic changes in quality. The noise in each frequency band is treated separately, so with more bands, noise is removed with finer frequency detail. Good settings range from 4096 to 8192.

  Fast Fourier Transform size determines the tradeoff between frequency- and time-accuracy. Higher FFT sizes might cause swooshing or reverberant artifacts, but they very accurately remove noise frequencies. Lower FFT sizes result in better time response (less swooshing before cymbal hits, for example), but they can produce poorer frequency resolution, creating hollow or flanged sounds.

- **Noise Print Snapshots**
  Determines how many snapshots of noise to include in the captured profile. A value of 4000 is optimal for producing accurate data.

  Very small values greatly affect the quality of the various noise reduction levels. With more snapshots, a noise reduction level of 100 will likely cut out more noise, but also cut out more
original signal. However, a low noise reduction level with more snapshots will also cut out more noise, but likely retain the intended signal.

**Adaptive Noise Reduction effect**
The Noise Reduction/Restoration > Adaptive Noise Reduction effect quickly removes variable broadband noise such as background sounds, rumble, and wind. Because this effect operates in real time, you can combine it with other effects in the Effects Rack and apply it in the Multitrack Editor. By contrast, the standard Noise Reduction effect is available only as an offline process in the Waveform Editor. That effect, however, is sometimes more effective at removing constant noise, such as hiss or hum.

For best results, apply Adaptive Noise Reduction to selections that begin with noise followed by desirable audio. The effect identifies noise based on the first few seconds of audio.

**Important:** This effect requires significant processing. If your system performs slowly, lower FFT Size and turn off High Quality Mode.

**Reduce Noise By**
Determines the level of noise reduction. Values between 6 and 30 dB work well. To reduce bubbly background effects, enter lower values.

**Noisiness**
Indicates the percentage of original audio that contains noise.

**Fine Tune Noise Floor**
Manually adjusts the noise floor above or below the automatically calculated floor.

**Signal Threshold**
Manually adjusts the threshold of desirable audio above or below the automatically calculated threshold.

**Spectral Decay Rate**
Determines how quickly noise processing drops by 60 decibels. Fine-tuning this setting allows greater noise reduction with fewer artifacts. Values that are too short create bubbly sounds; values that are too long create a reverb effect.

**Broadband Preservation**
Retains desirable audio in specified frequency bands between found artifacts. A setting of 100 Hz, for example, ensures that no audio is removed 100 Hz above or below found artifacts. Lower settings remove more noise but may introduce audible processing.

**FFT Size**
Determines how many individual frequency bands are analyzed. Choose a high setting to increase frequency resolution; choose a low setting to increase time resolution. High settings work well for artifacts of long duration (like squeaks or power-line hum), while low settings better address transient artifacts (like clicks and pops).

**High Quality Mode**
Performs slower processing but achieves superior results.