

Audio *in* Media



F I F T H

E D I T I O N

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6

Analog Recording

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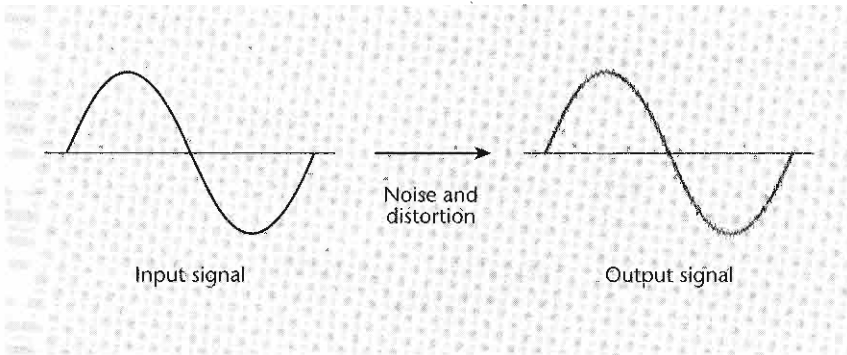
The wonderful thing about audio is that, in the final analysis, it's all a matter of taste. "Ears" are uniquely individual, which leaves ample room for varied opinion. Nowhere has this been more apparent than in the debate over analog versus digital sound.

In audiotape recording, electrical signals are transduced into magnetic signals at the recording stage and encoded onto tape. At the playback stage, these taped magnetic signals are reconverted into electrical signals. This process is accomplished in two different ways: using the analog method or the digital method.

On one hand, advocates of analog recording claim that it produces a warmer sound and that it is a more forgiving production format—technical problems are not as apparent as they are with digital. On the other hand, proponents of digital recording praise its virtually noise-free, crystal clear sound and its technology, which greatly increases production flexibility.

So far, predictions of analog's demise have been premature. Analog recording remains robust; equipment and tape sales are holding their own and are expected to continue for the foreseeable future.

Implicit in the analog versus digital debate is that one format is not so much superior to the other, but simply different. Each has positive and negative attributes. Clearly, the world of audio is headed toward the digital domain but, for a while at least, coexistence of both formats ensures expansive sonic prospects.



ANALOG AUDIOTAPE RECORDING

In *analog recording*, the waveform of the signal being processed resembles the waveform of the original sound; they are analogous. Or to put it another way, the frequency and amplitude of an electrical signal changes continuously in direct relationship to the original acoustic sound waves; it is always "on." If these continuous changes were examined, they would reveal an infinite number of variations, each instant different from any adjacent instant. During processing, noise—electrical, electronic, or tape—may be added to the signal. Hence the processed signal is analogous to the original sound plus any additional noise (see Figure 6-1). Although the digital tape recording process is entirely different (see Chapter 7), the tape and tape recorders used in analog and digital recording have a number of features in common.

Physical Characteristics of Audiotape

We tend to take tape for granted, perhaps because it is so familiar and easy to obtain. Consider, however, that tape stores the record of your creative output. Therefore, to avoid using inferior, defective, or inappropriate tape, you should be aware of the properties and composition of your storage medium.

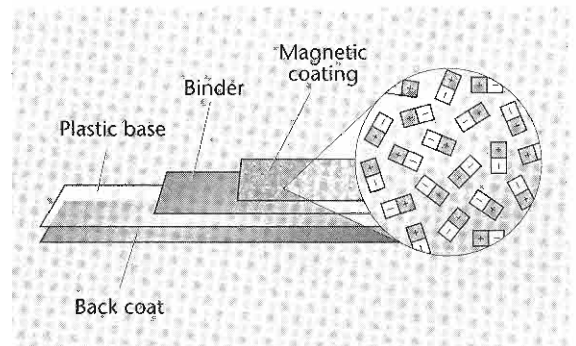
Composition

Audiotape is a thin plastic ribbon consisting of (1) hard, needlelike magnetic particles composed

of iron (ferric) oxide, chromium dioxide, cobalt-doped iron oxide, or pure metal particles; (2) a plastic base material that supports the oxide; (3) a binder of synthetic varnish that holds the magnetic particles and adheres them to the base; and (4) a back coating to reduce slippage and buildup of magnetic charges (see 6-2).

The plastic material used for a tape's backing is strong, supple, and resistant to temperature extremes as well as humidity. Its one significant drawback is that it stretches when placed under too much tension or when used too often. Once a tape is stretched, so is the recording.

To reduce the possibility of stretching, use only the highest-quality tape, make sure that tape recorders have the proper tension when spooling, and use new tape for each project.



6-2 The four layers that make up audiotape and the random distribution of magnetic domains on the microscopic magnetic particles

