

Common Microphone Types and Characteristics



Microphones are generally broken down into three types: Condenser, Dynamic and Ribbon. Each one of these categories has a different way of translating analog sound into recorded sound. This means that each microphone will have a unique sound.

Dynamic Microphones are probably the most recognizable. These are the most common among live performers as they are very durable and can take a lot of abuse.

Choose a **Dynamic Microphone** if you want:

- Versatility
- To Save Money
- Durability
- To use it for live vocals and recording
- To work with relatively loud sound sources

Pros: Robust and durable, can be relatively inexpensive, insensitive to changes in humidity, needs no external or internal power to operate, can be made fairly small.

Cons: Lower output levels require higher levels of preamplification. Resonant peak in the upper mid frequency response, typically weak high frequency.

Condenser Microphones are a staple of the Recording industry. They are Accurate and more durable than a ribbon.

Rather than a vibrating wire coil, condenser microphones have a thin diaphragm and solid back plate which make up an electronic component known as a capacitor. As the diaphragm vibrates, the distance from the back plate to the diaphragm varies accordingly. This is known as fluctuating capacitance. It's the fluctuation that produces an electrical current, resulting in the signal output.

Condenser Microphones are widely made for recording and can often have high-pass filters built in and directional Polar Pattern choices (Omni, Cardioid, Figure 8, Hyper-Cardioid).

Choose a **Condenser Microphone** if You:

Common Microphone Types and Characteristics

- Need **versatility** because you work in a variety of venues
- Want accurate sound reproduction and clarity
- Like sound that is natural, clean and clear, with transparency and detail
- Need exceptionally sensitive pickup

Pros: Excellent High Frequency and upper harmonic response, can have excellent low end response.

Cons: Moderate to very expensive, requires external power (Phantom Power), Can be bulky. 2 Identical Mics may sound different. Can be affected by humidity and temperature.

Ribbon microphones get their name because of the thin ribbon of metal foil that sits between two magnets. The Vibration of this ribbon from sound waves is what creates the audio signal. The very delicate foil creates a very accurate and authentic sound, it can pick up very delicate frequencies and will create the most accurate recordings. However because of the delicate nature, they are very pricy and often in need of repair. Many high end studios will carry ribbon mics, but smaller or home studios probably won't.

Ribbon Mics were the first microphone created. they were modeled after telephones. Ribbon Microphones were most popular in Broadcast Media and Recording in the 30's through the 60's and are still very Prevalent today.

Choose a **Ribbon Microphone** if you want:

- To pick up a wide range of frequencies
- Get rich representation of the original sound
- Smooth and Detailed Sound

Pros: Relatively Flat frequency response, extended high frequency response as compared to dynamics, needs no additional Power to operate.

Cons: Ribbon Mics are **Very Fragile, Expensive and take a lot of care when handling and operating.**

Explore more info about Mics:

<https://mynewmicrophone.com/differences-between-dynamic-condenser-ribbon-microphones/>

Explore Stereo mic techniques:

<https://www.sweetwater.com/insync/stereo-mic-techniques/>
<https://www.masteringbox.com/stereo-microphone-techniques/>
<http://www.rote.com/blog/all/stereotechniques>