Q&As about microphone windscreens

Q: Why do microphones have foam windscreens?

The foam or fur cover of a microphone is called a windscreen. A windscreen protects the microphone diaphragm from gusts of air. Without a windscreen, wind or breathing can cause loud pops in the audio signal. Windscreens break up gusts of air before they interact with the microphone diaphragm.

Q: When to use a windscreen?

1. Outdoor Recording

Whether it be for a concert, a film shoot, or an interview, recording outside presents unpredictable circumstances. Weather can change at short notice and it's important to have the proper tools to overcome the obstacles that the outdoors may present. A windscreen is an essential part of this toolkit.

Often, the soundtrack of an outdoor video contains the distracting sound of wind. This noise is a low- to-mid-frequency sound that sometimes makes it difficult to hear the words being spoken.

Without destroying the sound quality of the recording is nearly impossible. It's best to prevent the noise from the beginning, through the use of a windscreen. A windscreen will redirect the wind away from the microphone diaphragm, while allowing sound waves to pass.

2. Recording Indoors Near HVAC Systems

Even indoors, wind can be an issue. Heating and air conditioning systems can create air currents. Fans can also cause indoor wind.

If you are recording indoors, be sure not to place the microphone near any source of forced air. However, if you are installing a system that will be used throughout the day without supervision, such as a conference room or public address system, you will have no control. Users may choose to use a fan in the room, not knowing the issues it might create. You can use a windscreen as an insurance plan for unexpected drafts that might occur indoors.

3. Recording with a Moving Microphone

Wind moving past a stationary microphone is no different from a microphone moving through stationary air. If the microphone will be moved while in use, use a windscreen.

If you are using a boom pole for a film shoot, you might need to move the microphone to capture a moving source or multiple sources. You may be recording a scene in a vehicle or from a vehicle. In any case, windscreens can help protect the microphone from the air resistance created while in motion.

4. Recording a Vocalist

Most speak too far away from the microphone, but some speak far too close to the microphone. A recording of a person speaking too closely to the mic will likely contain loud "p-pops". Prevent these pops by using a windscreen.

Any time someone speaks a plosive sound, such as “b”, “d”, “g”, “k”, “p”, or “t”, a sudden release of air is created. The best way to address popping in a microphone is through the use of a pop filter. A pop filter is a mesh or wire screen placed between the microphone and the person speaking. Pop filters diffuse the air created by plosive sounds that would normally directly hit the microphone diaphragm.

Although pop filters are the best method, it’s not always possible to use them. Windscreens can be used in these situations, although they are less effective.

5. Protecting a Microphone

Although the primary function of windscreens is to prevent wind noise, they are also somewhat effective in protecting microphones. Aside from the fact that excessive wind can cause damage to a microphone’s membrane, other risks exist.

There are grills where you’ll find a foam liner inside. This acts as a windscreen to prevent noise from bursts of air and as a screen to protect the capsule from saliva and dirt. When the microphone inevitably becomes dirty from years of use, simply replacing the windscreen will restore the microphone to a like-new state.

Q: What types of windscreens exist?

All windscreens aim to prevent the low frequency vibrations caused by gusts of air. However, despite the fact that they share the same goal, all windscreens are not created equally.

1. Foam Windscreens

Most windscreens are made of open-cell foam.

Many microphones include a specially-made windscreen in the box. You can also purchase a universal foam windscreen to fit various sizes of microphones. Foam windscreens fit snugly around a microphone and provide basic protection from wind.

The cells of the foam create a labyrinth effect for the wind, diverting it in various directions and preventing the wind from directly interacting with the microphone.

Foam windscreens generally offer up to about 8dB of wind noise attenuation, or reduction. Although this is significant, you will see that other types of windscreens are much more effective. Despite the fact that foam windscreens remove a significant amount of wind noise, they do not cause significant high-frequency loss.

Additionally, as opposed to other types of windscreens, foam windscreens are fairly neutral aesthetically, so they are more acceptable as microphones on video.

2. Synthetic Fur Windguards or Windjammers

Windguards, or windjammers, are a more effective type of windscreen. These consist of two layers: an inner layer of thin foam and an outer layer of synthetic fur.

They are available in various sizes to slip on over a variety of microphones. Windjammers offer superior wind protection, compared to foam windscreens.

The strands of fur act as baffling to redirect wind. This method creates less friction than stiff foam, which means less noise is created in the process.

Windjammers are most often designed to fit specific microphones, but you can find models that will fit a variety of shotgun mics.

Fur windguards offer between 25dB-40dB of wind noise attenuation. Layering a windjammer over a windscreen can offer up to 50dB of attenuation. They are drastically more effective than foam windscreens, alone. However, it's important to consider the quality. Low-quality fur windscreens can cause high-frequency attenuation. High-quality windjammers effectively reduce wind noise, while creating virtually no adverse effects on sound quality.

Aesthetically, these may not be the best option for on-video microphones.

3. Baskets or Blimps

Baskets, or blimps, are the best option for max noise protection. These also consist of two layers: an inner layer of thin foam and an outer layer of plastic or metal mesh.

Baskets are available in a variety of sizes. Many options allow multiple microphones to be housed inside. In addition to wind protection, baskets offer shock absorption by suspending the microphone, or microphones.

This added protection a blimp-style windscreen offers from wind and vibration comes at a price, but may be worth it if you are working professionally.

This method of suspension creates a large chamber of dead air which lends itself to maximum attenuation up to 50dB with minimal high-frequency loss.

Q: Which windscreen shall I choose?

There are a few things to consider when buying a windscreen. It comes down to the specific gear you'll be using with the windscreen and the purpose of using it. This section will walk you through the most important factors.

1. Microphone Type and Size

Windscreens are available in a vast range of sizes and styles. It's important to choose one that fits snuggly on your microphone to seal any leakage points and prevent air from disturbing the diaphragm.

Most handheld microphones can be protected using universal foam windscreens. Just make sure that any ports on the grill are fully covered by the screen when choosing one. You can likely find a universal option for use on both large and small diaphragm condenser microphones and lavalier (or clip-on) microphones, as well.

Special windscreens are made that cover the long barrel of a shotgun microphone. Be sure to choose one that is large enough without allowing too much wiggle room. If the windscreen shifts, it will create noise.

2. Noise Attenuation

Attenuation, or noise reduction, is the most important factor. If you are using a shotgun microphone, you will likely be several feet away from the sound source, and thus will need more gain. Additionally, directional microphones are especially susceptible to wind noise. For these reasons, opt for a fur windjammer or a basket when using a shotgun mic. These will offer significantly more protection and ensure that a whole film shoot isn't ruined by poor audio.

3. Acoustic Transparency

There is a trade-off between noise attenuation and high frequency loss. Generally speaking, acoustic transparency will decrease with the addition of more layers. The highest quality options do a great job of blocking the wind without adversely affecting audio quality. In most situations, you can boost the high frequencies in post to restore any loss that occurred during the recording.

Q: Why do I need to replace the microphone windscreen every few years?

The windscreen ages over time, begins to dust, and pieces can get inside the microphone and cause a malfunction. Exposure to UV radiation shortens the life.

Q: How do I need to clean the windscreen and how often?

It can be washed in warm soapy water, rinsed in clean water, shaken to remove water droplets, and left to air dry overnight. A clean foam windscreen does a good job at keeping the grill of the mic free from human contaminates.

Q: Which windscreen shall I choose for my AKG microphone?

Product name	Part number	Where used
W30	2765H00300	CK31, CK32 and CK33
W32	6000H06240	CK61 ULS
W42	2091Z00010	C12 VR
W44	2344Z01010	C520, HSC171, HSC271
W68	2168Z30010	C568 B
W80	2328Z01010	CK80
W81 (10 Pack)	6500H00460	LC81 MD MicroLite microphones
W82 (10 Pack)	6500H00420	LC82 MD MicroLite microphones
W90	2496Z00010	CK91, CK92, CK93, CK94 and C451 B
W214	3185Z30010	C214, C314, C414
W407	2366Z06010	C417
W444	2656Z10010	C555 L
W4000	2802Z02010	C4000, C4500 BC, Perception P120, P220, P420 and P820
W40 M	3165H00290	CK41 and CK43