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## Electret Microphone Environmental Factors

Sierra Peaks Tibbetts' electret microphones are extremely durable and have been deployed successfully in a wide range of indoor and outdoor environments. All electret microphones, however, are susceptible to environmental factors such as heat and moisture and need to be handled with care to obtain the best possible audio collection. The following notes are offered as a guide to successful microphone installation. Please feel free to call our engineering department with any questions or concerns regarding your specific application.

### Heat:

All electret microphones are susceptible to damage when exposed to elevated temperatures. Recommended operating temperature range for all of our mics is -15C – 63C. For storage, the range is -40C – 63C. The upper limit of those ranges is conservative. Our mics have been used in automotive applications for many years without any reports of failure due to heat exposure. However, to the extent possible – within the constraints imposed by the particular installation – it is recommended that mics be mounted in the coolest possible location: away from heat sources, insulated from contact with metallic elements exposed to direct sunlight, etc.

### Moisture:

Electret microphone performance can be adversely affected by exposure to very high levels of moisture. In outdoor applications the microphones should be positioned inside a secondary housing to protect them from direct exposure to rain or other water sources. To further protect microphones from moisture intrusion we have used a water resistant acoustic vent material made by Gore (P/N: GAW325). The material comes in a form factor similar to a circular self-adhesive bandage and is designed to reduce exposure to moisture while allowing efficient acoustic transfer. We've used this material in housings meant to be deployed outdoors. In practice, be sure to position the acoustic vent to minimize direct exposure to driving rain or water spray.

### Shock:

In general, our microphones are quite robust and resistant to vibration or shock. The most physically vulnerable feature of any cabled microphone is the cable-to-microphone juncture. We protect this juncture with a semi-elastic potting compound that insulates the solder connections and provides strain relief. When fixturing the mic in a host or weather resistant housing, ensure that the mic is secured in a manner that prevents flexing or straining the cable/microphone juncture.

### Mounting and Fixturing considerations:

Always ensure that the microphone audio inlet is not blocked in any way and has a direct air path to the targeted area.

In applications where the microphone may be exposed to a vibration source – automotive, inside a host with a fan or other motor, etc. – we advise physically isolating the mic from the vibration source using acoustic foam/silicone or similar material to minimize vibrational noise.

DO NOT use cyanoacrylate (Super Glue) adhesives anywhere near the microphone elements. Certain outgassing by-products released during the cure cycle can damage the microphone's diaphragm and degrade performance.



**For additional information:**

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