



How to maintain good microphone hygiene



How to maintain good microphone hygiene In Audio Application



1 Sanitize your microphone before & after usage



2 Practise **good housekeeping & storage procedures** for your equipment



3 Invest in **replaceable** foams, windshields and paddings for your microphones, headsets & lavaliers



4 **Replace worn or rusted grilles** - Own your own microphone capsule if you use wireless microphones regularly



5 Consider **boom microphone** recording technique whenever the circumstances allow



How to maintain good microphone hygiene

In Audio Application

Due to COVID-19 pandemic we assembled this note on protecting and cleaning Sennheiser/Neumann microphones and accessories. Especially for vocal and speech recordings, microphones are often used at close proximity to the mouth, possibly also by multiple users.

To reduce the risk of spreading diseases through bacteria and viruses, one or more remedies, explained in detail below, may be used:

- ideally, have just one user per microphone (including the accessories)
- after or before use, clean all surfaces, i.e. microphone housings, head baskets and accessories
- leave the microphone unused for some time period. To apply elevated temperature to the microphone, please refer to latter session of the document
- utilize accessories such as windshields and thin plastic film bags to add protection

These can be referred to a short video clip on Youtube channel, which is prepared by **Sennheiser SoundAcademy** for better visual experience.

https://www.youtube.com/watch?v=mSZ_a9A1mio&list=RDCMUCiKPFvWsJBlucrYU8kJMkaQ&index=3

Medical Disclaimer

This note assembles technical advice on which measures may be taken, and which materials should be used or not used, to protect and clean microphones and accessories without harming them.

For medical information on disinfection and disease spread please consult your national and regional medical authorities and follow their advice.



How to maintain good microphone hygiene

Cleaning the microphone housing

For cleaning Sennheiser/Neumann microphone housings from soiling including human exhalations, you may use ethyl alcohol (ethanol) or isopropyl alcohol (isopropanol). Used as a disinfectant, typically a 70% solution is used. Apply with a disposable soft cloth, a soft brush or paper tissue. Make sure that the liquid is applied only to the outside of the microphone and does not enter the inside or the capsule.

Do not use rough materials which might scratch the surface. Do not use any solvents stronger than ethanol or isopropanol, as these might damage the surface.

Never use sprays directly onto the microphone, as these can deposit on the membrane and thus damage the microphone capsule. Please be aware that extensive use may cause cosmetic damage to microphone.

Cleaning removable microphone head baskets

With some microphones, the head basket can be easily removed for cleaning or replace (refer to Sennheiser and Neuman basket list below). Make sure not to touch or damage the capsule!

With the head baskets containing foam windshields, remove the inner foam and clean it separately as described in latter.

Metal head baskets can then be cleaned also on the inside with ethanol or isopropanol. You may also immerse the head basket in clean, hot water (e.g. 70°C/160°F). Do not use the dishwasher. Let the basket dry out completely before re-assembly.

Personalized head baskets

NEUMANN

BCM 104 and BCM 705 were constructed for simple switching between personalized head baskets, so each user can use his own basket. Baskets for BCM are available as spare parts:

Microphone	Description	Color	Part no.
BCM 104/BCM 705	Basket (BCM)	Nickel	576598



For handheld microphones, these head baskets are available as spare parts:

Microphone	Description	Color	Part no.
KMS 104/104 plus	Basket (KMS 104)	Nickel	513904
KMS 104 bk/104 plus bk	Basket (KMS 104 bk)	Black	513903
KMS 105	Basket (KMS 105)	Nickel	079037
KMS 105 bk	Basket (KMS 105 bk)	Black	079038
KK 104	Basket (KK 104)	Nickel	510306
KK 104 bk	Basket (KK 104 bk)	Black	510307
KK 105	Basket (KK 105)	Nickel	094805
KK 105 bk	Basket (KK 105 bk)	Black	094804
KK 105 HD	Basket (KK 105 HD)	Nickel	510335
KK 105 HD bk	Basket (KK 105 HD bk)	Black	510336
KK 204	Basket (KK 204)	Nickel	528689
KK 204 bk	Basket (KK 204 bk)	Black	528690
KK 205	Basket (KK 205)	Nickel	528691
KK 205 bk	Basket (KK 205 bk)	Black	528692

For almost all Neumann microphones, foam windshields are available:

Foam Windshield	Microphone	Color	Part no.
WNS 100	all KM microphones (not KM 120)	Black	007323
WNS 110	all KM microphones (not KM 120)	Black	008535
WS 100	all KM microphones (not KM 120)	Black	006751
WNS 120	KM 120	Black	008427
WS 2	TLM 102	Black	008637
WS 47	TLM 107, U 47 fet	Black	006826
WS 69	SM 69, USM 69	Black	006750
WS 81	KMR 81	Black	007268
WS 82	KMR 82	Black	007264
WS 87	M 147 Tube, TLM 67, TLM 103, TLM 170, U 67, U 87	Black	006753
WS 89	TLM 193, U 89	Black	007197
WSB	KU 100	Black	007372
WSS 100	KK 104 S, KK 105 S, all KMS mics	Black	007352



SENNHEISER

For **wireless handheld** microphone, these head baskets are available as spare parts:



MMD 835-1 bk basket
Black
Art No. 538277



MMD 845-1 bk basket
Black
Art No. 538273



MMD 935-1 bk basket
Black
Art No. 538280



MMD 945-1 bk basket
Black
Art No. 538276



MME 865-1 bk basket
Black
Art No. 541346



MMK 965-1 bk basket
Black
Art No. 535851



MMK 965-1 ni basket
Nickel
Art No. 535863



MD 9235 bk basket
Black
Art No. 563694



MD 9235 ni basket
Nickel
Art No. 563695



MD 9235 ni/bk basket
Nickel/Black
Art No. 563696



MM 435 TOP basket
Black
Art No. 509202



MM 445 TOP basket
Black
Art No. 509203



SKM-XSW basket
Black
Art No. 573613



For **wired handheld** microphone, these head baskets are available as spare parts:



e 825 basket
Black
Art No. 575290



e 835 basket
Black
Art No. 577714



e 845 basket
Black
Art No. 577716



e 935 basket
Black
Art No. 577728



e 945 basket
Black
Art No. 577727



e 865 basket
Black
Art No. 577718



e 965 basket
Black
Art No. 531411



MD 435 basket
Black
Art No. 509204



MD 445 basket
Black
Art No. 509205



These inner foams (POP Protection) are available as spare parts:

Microphone	Description	Part no.
MMD 835-1 BK	Foam (MMD 835-1 bk)	538278
MMD 845-1 BK	Foam (MMD 845-1 bk)	538274
MMD 935-1 BK	Foam (MMD 935-1 bk)	538278
MMD 945-1 BK	Foam (MMD 945-1 bk)	538274
MME 865-1 BK	Foam (MME 865-1 bk)	538278
MMK 965-1 BK	Foam (MMK 965-1 bk)	535852
MMK 965-1 NI	Foam (MMK 965-1 ni)	
MD 9235 BK	Foam (MD 9235 bk)	577784 (5 pcs package)
MD 9235 NI	Foam (MD 9235 ni)	
MD 9235 NI/BK	Foam (MD 9235 ni/bk)	
e 825-S	Foam (e 825)	075500
e 835/e 835-S	Foam (e 835/e 835-S)	075501
e 845/e 845-S	Foam (e 845/e 845-S)	075502
e 965	Foam (e 965)	531416
MD 435	Foam (MD 435)	509206
MD 445	Foam (MD 445)	509207
MM 435	Foam (MM 435)	509208
MM 445	Foam (MM 445)	509209

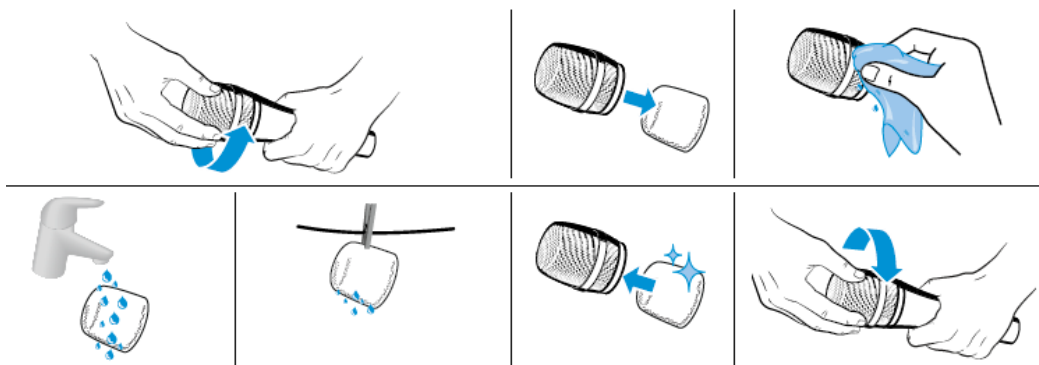


Cleaning the inner assembly/amplifier

The inner assemblies/amplifiers are typically enclosed in the housing and well protected from outside soiling. Cleaning will hardly ever be necessary. Only a soft brush should be used to clean off dust and soiling. Do not use any liquids or solvents, as the insulation and sensitive parts of the circuit may be harmed.

Cleaning the capsule

If this should become necessary, it strictly must be done only by a skilled serviced technician. The membrane is too delicate to be cleaned without the proper expertise.



Cleaning the sound inlet basket of the microphone module

- Unscrew the top sound inlet basket from the microphone module by turning it counterclockwise.
- Remove the foam insert.

You can clean the sound inlet basket in two ways:

- Use a slightly damp cloth to clean the top sound inlet basket from the inside and outside.
- Use a brush and rinse with clean water.
- If necessary, clean the foam insert with a mild detergent or replace the foam insert.
- Dry the top sound inlet basket and foam insert.
- Reinsert the foam insert.
- Screw the sound inlet basket back onto the microphone module.



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Replacing windshields – Lavalier and Headmic



Fur windscreen
Anthracite – Art No. 566229



Windscreen for ME3
Black – Art No. 543654



Windscreen for ME4
Black – Art No. 566229



Windscreen for MKE Essential, HSP Essential & SL Headmic
Charcoal Grey - Art No. 566229
Beige – Art No. 564592



MZW 02
Black - Art No. 578819
Anthracite – Art No. 578806
White – Art No. 578847
Beige – Art No. 564592
Brown – Art No. 578846



MZW 4
Black - Art No. 575295
Beige – Art No. 576127

	Fur windscreen	Windscreen	MZW 02	MZW 4
Lavalier				
ME 2 / ME 2 II	•		•	
ME 4		•		
MKE 2	•		•	
MKE Essential Omni		•		
MKE 1	•		•	
Headmic				
ME 3		•		
HSP Essential Omni		•		
SL Headmic		•		
HS 2	•	•	•	
HSP 2			•	
HSP 4				•



These **Windshield** Caps are available for Headmic as spare parts:



Windshield cap for HSP 4

Black - Art No. 511715
Beige - Art No. 511716



Windshield cap for SL Headmic & MKE 1

MZC 1-2:
Black - Art No. 577739
Beige - Art No. 577737



Windshield cap for HSP 2

Gauze MZC 2-1:
Black RD 14.8x6.5 - Art No. 572231
Beige RD 14.8x6.5 - Art No. 572232
Gauze MZC 2-2:
Black RD 14.8x8.2 - Art No. 572233
Beige RD 14.8x8.2 - Art No. 572234

Headmic	HSP 4 Cap	MZC 1-2	HSP 2 Cap (Gauze MZC 2-1/2-2)
HSP 4	•		
MKE 1		•	
SL Headmic		•	
HSP 2			•



How to maintain good microphone hygiene

Care and Cleaning Instructions on MKE 1

The MKE 1 is a high-quality, sub-miniature clip-on microphone which combines outstanding sound quality and rugged design with extremely small dimensions.

To ensure continuous optimum performance, please observe the following care and cleaning instructions.

General care instructions



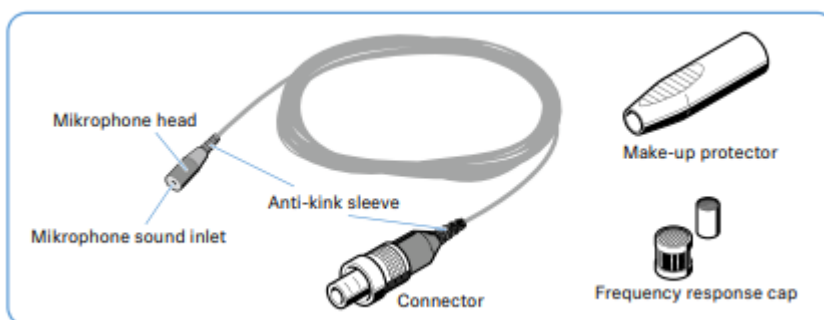
- ▷ Use the MZC 1-1 and MZC 1-2 frequency response caps and the MZC 1-3 make-up protectors to avoid soiling and dysfunctions.



- ▷ Store the MKE 1 in a dry, dust-free environment.



- ▷ Avoid extreme bending and tearing of the cable.
- ▷ Avoid knots in the cable.



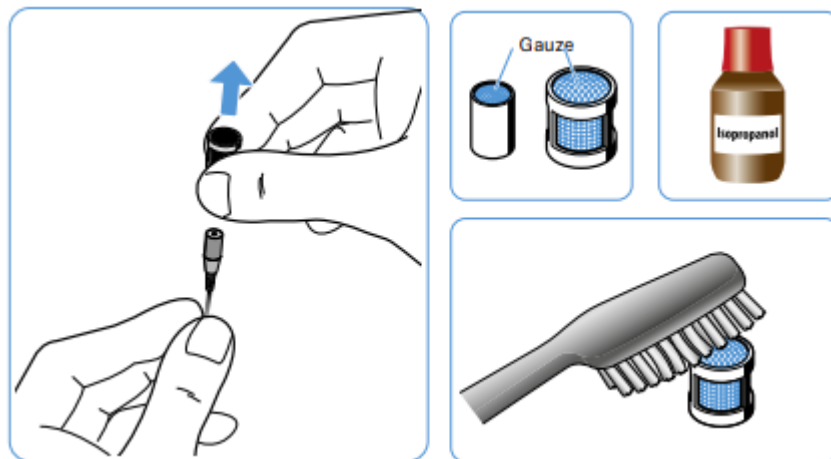


The MZC 1-1 and MZC 1-2 frequency response caps

- To wear the MKE 1 directly on the skin, use the large MZC 1-2 frequency response cap which offers an extended protection against the ingress of sweat.
- Regularly clean or replace the frequency response caps to avoid sound alterations.

Cleaning after use

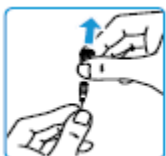
- Remove the frequency response cap from the microphone capsule. Hold the microphone by the cable and **not** by the anti-kink sleeve.
- Use a **fine** bristle brush and isopropanol to remove make-up residues and other buildup from the gauze.



The microphone capsule

The microphone capsule features an overmold which only serves as an anti-kink sleeve. The microphone capsule itself is protected from moisture.

Cleaning after use



- ▷ Remove the frequency response cap from the microphone capsule. Hold the microphone by the cable and **not** by the anti-kink sleeve.



- ▷ Shake the microphone capsule to remove excess moisture.



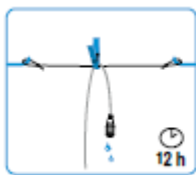
MICROPHONE HYGIENE



- ▷ Bathe the microphone capsule in distilled water to loosen make-up residues and other soiling.



- ▷ Do **not** use a cloth or a bristle brush to clean the microphone sound inlet.



- ▷ Dry the microphone for approx. 12 hours. The microphone sound inlet has to point downwards during drying.

The cable

The anti-kink sleeve on the connector and the microphone is designed to meet the highest requirements in quality. The use of additional adhesive tapes or shrink-on tubes can damage the material and reduce the service life of the cable.

Cleaning after use

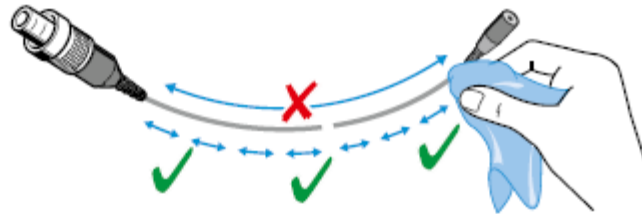


- ▷ Use a cloth or a **fine** bristle brush and isopropanol to remove make-up residues or other soiling.

NOTE: Particular hints for MKE 1 - musical (M) variants



- ▷ Only use distilled water and a slightly damp cloth for cleaning the cable.
- ▷ **When cleaning** be extremely careful, only use **low pressure**, only clean little **sections at a time**. Otherwise beads may occur.



- ▷ **Do not** use isopropanol! It may damage the surface of the cable.



How to maintain good microphone hygiene

Replacing windshields - Handmics



MZW 1
Black – Art No. 004839



MZW 4032-A
Black – Art No. 002978

MZW 4032-C
Blue – Art No. 002980



WSS 100
Black – Art No. 007352

	MZW 1	MZW 4032	WSS 100
Handmics			
e 835		•	
e 845		•	
e 865		•	
e 935		•	
e 945		•	
e 965		•	
MD 42		•	
MD 46		•	
MD 431		•	
KMS 104			•
KMS 105			•
Headmics			
MMD 835	•		
MMD 845	•		
MMK 865	•		
KK 104			•
KK 105			•



How to maintain good microphone hygiene

Replacing windshields - Shotguns and MKH



Windshield for MKE 400
Black - Art No. 528117



MZH 440
Black - Art No. 506259



MZH 600
Grey - Art No. 505454



MZW 41
Black - Art No. 576181



MZW 61
Black - Art No. 003194



MZW 71
Black - Art No. 003195



MZW 80
Black - Art No. 003780



MZW 400
Black - Art No. 502364



MZW 415
Black - Art No. 000895



MZW 600
Black - Art No. 505569



MZW 8000
Black - Art No. 502333



MZW 8060
Black - Art No. 504635



MZW 8070
Black - Art No. 543698

Shotguns and MKH	Winds- hield	MZH 440	MZH 600	MZW 41	MZW 61	MZW 71	MZW 80	MZW 400	MZW 415	MZW 600	MZW 8000	MZW 8060	MZW 8070
MKE 400	•							•					
MKE 440													
MKE 600			•							•			
MKH 20/30/40/50				•									
MKH 60					•								
MKH 70						•							
MKH 416/418								•					
MKH 8020/8030/8040/8050										•			
MKH 8060												•	
MKH 8070													•
MKH 8090										•			
MKH 800							•						



How to maintain good microphone hygiene

Replacing windshields - Shotguns and MKH



MKS 20-1
Black - Art No. 003609



MZW 20-1
Black - Art No. 003606



MZW 60-1
Grey - Art No. 003607



MZW 70-1
Black - Art No. 003608



MZW 80-1
Black - Art No. 504738



MZH 20-1
Grey - Art No. 003610



MZH 60-1
Grey - Art No. 003224



MZH 70-1
Grey - Art No. 003225



MZH 80-1
Grey - Art No. 504737

Shotguns and MKH	MKS 20-1	MZW 20-1	MZW 61	MZW 70-1	MZW 80-1	MZH 20-1	MZH 60-1	MZH 70-1	MZH 80-1
MKE 400									
MKE 440									
MKE 600									
MKH 20/30/40/50	•	•				•			
MKH 60	•	•	•				•		
MKH 70	•			•				•	
MKH 416/418	•		•				•		
MKH 8020/8030/8040/8050	•	•				•			
MKH 8060	•	•				•			
MKH 8070	•				•				•
MKH 8090	•	•				•			
MKH 800									



How to maintain good microphone hygiene

Replacing windshields - Shotgun and MKH



Headsets	Earpads (pair) 538258	Earpads (x100) 538259	Earpads velour (pair) 532724	Earpads (pair) 573600	Padding Set 508544	Earpads (pair) 587971	Earpads (x100) 587972
HMD 26-II	•	•	•				
HMD 27				•			
HMDC 27				•			
HMD 300 PRO					•		
HMD 301 PRO					•		
HMD 46						•	•
HME 26-II	•	•	•				
HME 27				•			
HME 46						•	•



Headsets	Windscreen (small) 532732	Windscreen (large) 540300	Windscreen 543656	Windscreen 515297	Windscreen (x100) 578855	Windscreen (large) 535804
HMD 26-II	•	•				
HMD 27	•	•				
HMDC 27	•	•				
HMD 300 PRO	•					
HMD 301 PRO	•					
HMD 46			•			
HME 26-II						•
HME 27			•			
HME 46				•	•	



How to maintain good microphone hygiene

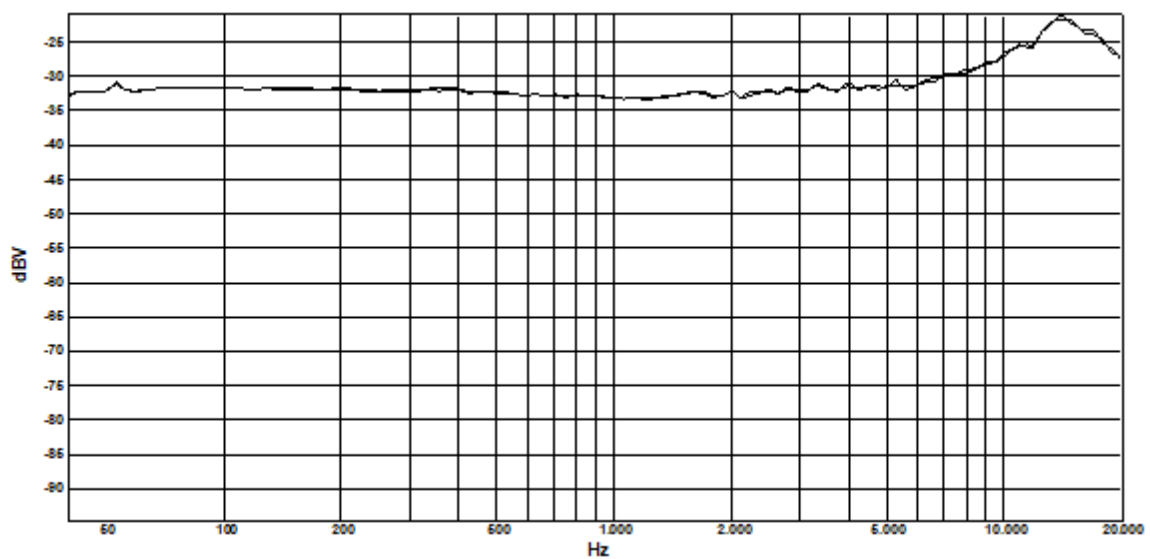
UV irradiation electret microphones - aftermath

The test was done with Ultraviolet-C (UVC) radiation which represented the following values:

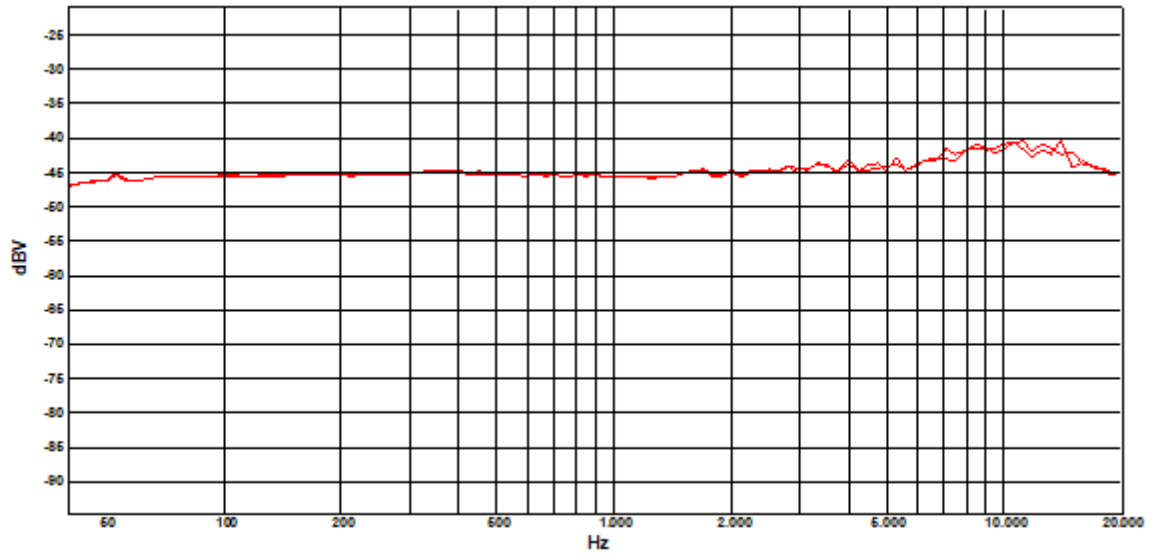
- 3x times per day
- 5 minutes each treatment over a period of approximate 1 year.

The result shows some slide color fading of the housing. Windscreen and foam were not affected.

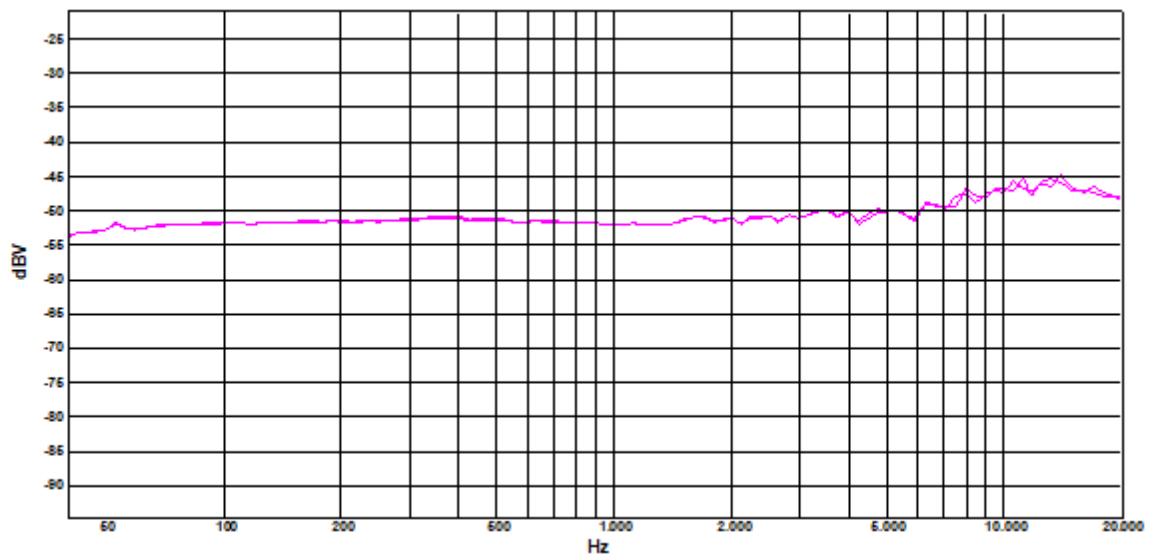
Audio Frequency response of various electret microphones regards to UVC radiation shows no impact.



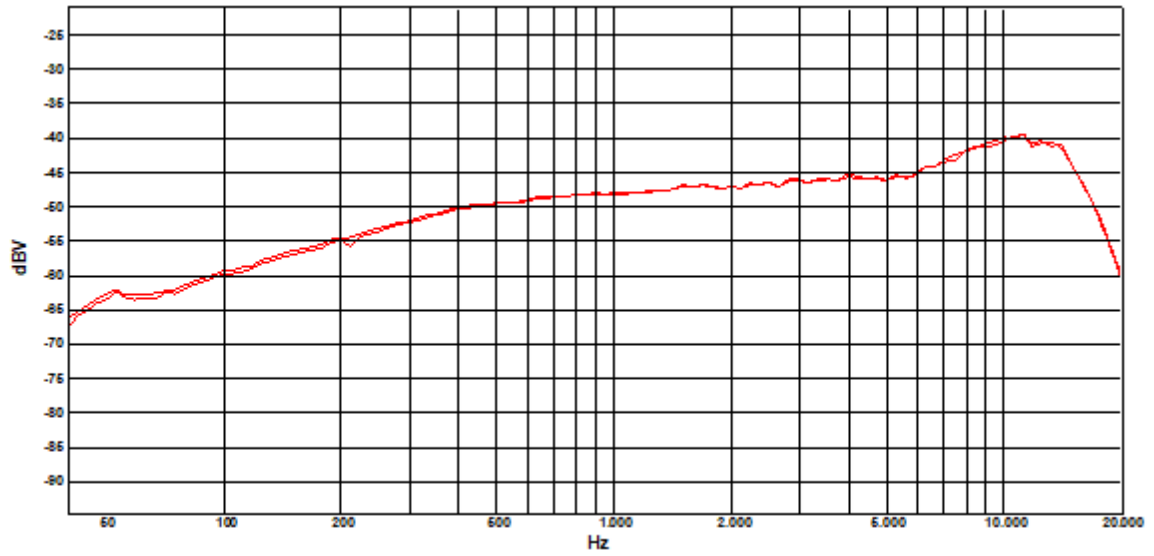
ME 2 before and after UV irradiation



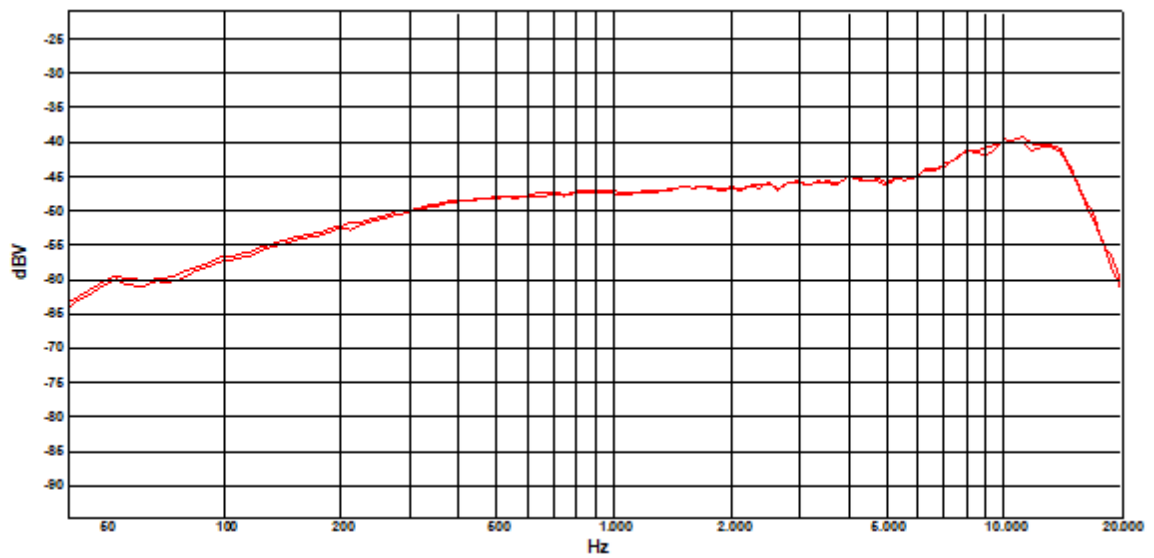
MKE 2 before and after UV irradiation



MKE 2 Essential before and after UV radiation



HSP 4 beige before and after UV irradiation

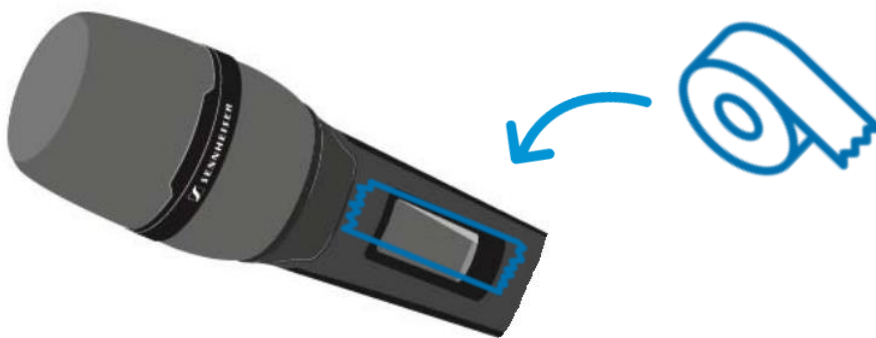


HSP 4 black before and after UV irradiation



Effect of UVC on display screen

Long-term exposure under UVC, which has a wavelength range between 100 and 280 nm, can significantly damage the display screen. Clear cellophane tape (“Scotch tape”) can help to protect the microphone display under UVC exposure. Measure and cut an appropriate size of adhesive cellophane tape, paste on the microphone display before starting of UVC disinfection process.



Cellophane tape protects by blocking UVC go through and reach on the plastic surface. As the result, disinfection does not take place underneath of cellophane tape. After UVC disinfection, keep the cellophane tape on the screen minimum of 5 days. According to WHO*, human coronaviruses can stay 5 days on plastic surface.

References

* https://www.who.int/docs/default-source/coronaviruse/risk-comms-updates/update-20-epi-win-covid-19.pdf?sfvrsn=5e0b2d74_2

Addition material: <https://www.fda.gov/medical-devices/coronavirus-covid-19-and-medical-devices/uv-lights-and-lamps-ultraviolet-c-radiation-disinfection-and-coronavirus>



How to maintain good microphone hygiene

Thermal treatment

Time, and applying heat to Neumann microphone

By taking a microphone out of action for a minimum of 6 hours, before putting it back to use for another user, the infectiousness of human exhalations deposited on the metal surfaces may be significantly reduced. For plastic or cloth accessories, an extended period of 48 hours or more is needed to achieve similar results. To accelerate this procedure, Neumann microphones may be heated up to 60° C/140° F without affecting the properties of the microphone. As not all details are 100% assured facts to this day, please consult your national or regional health authorities regarding the possible transmission via surfaces.

Thermal treatment to Sennheiser microphone

Our windscreens are usually made of polyurethane foam. This material is temperature-resistant and up to 100° C/212° F. However, please note that a hot wash at 90° C/194° F can cause considerable mechanical and chemical stress, which is likely to damage any printed logos on the windshield. Hand-washing the windscreen at lower temperatures using a degreasing detergent should be effective against the fat coating on the virus – and is not likely to damage any printed logo. Please note that we are not virologists: the procedures outlined above are guidelines but might not completely eradicate the virus.

We do not recommend a regular thermal treatment of our microphones, transmitters, or receivers. Usually, these devices are safe in temperatures of up to 55° C/131° F. For short periods of time, the products can also withstand higher temperatures; per internationally recognized guidelines, washing your hands regularly and thoroughly before, during, and after operating the products is safer.



How to maintain good microphone hygiene is rearranged by Technical Application Engineering (TAE) team. We like to thank who contributed all the technical insight to the document.

Special thanks to

- All stakeholders from Sennheiser and Neumann

Special thanks to:

- o Development Team of Sennheiser and Neumann
- o Chemical Lab & Environmental Compliance in Sennheiser

Version 1.6 *April 2021*