

# Application Note

## 8000 Series Microphone

### Product Handling and Soldering Recommendation

This application note is a recommended procedure on how to solder and handle our 8000 series microphones. These procedures are valid for all our 8000 series models.

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## 1. Operating and Storage Temperatures

The maximum operating temperature range: -17°C to 63°C (1.4°F to 145°F)

The maximum storage temperature range: -40°C to 63°C (-40°F to 145°F)

**Note:** To help keep the product in its original condition, it is recommended to store the product in a humidity controlled environment.

## 2. Handling and Manufacturing Guidelines

Transducers, although robust, have limits to chemical exposure and excessive handling.

Some examples of improper handling may be:

- Physical Dropping (excessive mechanical shock)
- Rough Handling
- Using harmful cleaning solvents
- Electro Static Discharge - ESD

These mishandling processes may cause dents, loss of sensitivity or output, distortion, external leaks, and damaged screens. All this can be prevented if the correct tools, fixtures and ESD protection are used and handling instructions are followed. Here are some recommended instructions to keep in mind:

### a) Mounting of the Microphone

During the mounting of the microphone in the faceplate we recommend not to press the microphone with sharp tweezers from the solder pad side. The sharp point of the tweezers could damage the solder pads and/or the printed circuit board. It is recommended to press the microphone only on the metal case.

### b) Forceful Squeezing

During the handling of the microphone with sharp tweezers it is possible to dent the side of the can if too much force is used. This will cause dents on the side of a transducer, which may cause internal damage and loss of sensitivity. Pressure above 25N on the case of the product can destroy the product. Caution should be used when picking up the microphone.

### c) Use of Liquid Chemicals

Please also use caution when cleaning the microphone to prevent any liquid chemicals from entering inside the microphone. For example, chemicals like Isopropanol can be destructive to the internal operation of an electret microphone. For recommended list of chemicals please see Application note "Transducer Handling". If a chemical is not on this list please, contact a Sonion representative before using it.

### d) Buffing

Buffing down an instrument is a very common practice in manufacturing processes. The small particles from the buffing compound may get inside a transducer altering its sensitivity. Please cover up the sound inlet while buffing or cleaning the hearing aid instrument.

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**e) Electrostatic Discharge**

Microphones contain hybrids inside which may be susceptible to electrostatic discharge. The 8000 microphone has been designed to a Class 3 protection level according to the MIL-STD-750D. The use of ESD protection such as wrist straps or ESD matting, however, is still recommended.

**f) Recovery**

If a microphone needs to be removed for recovery, it should not be pulled by soldered leads, nor should it be pushed on the cover. It is recommended only to push on the metal case.

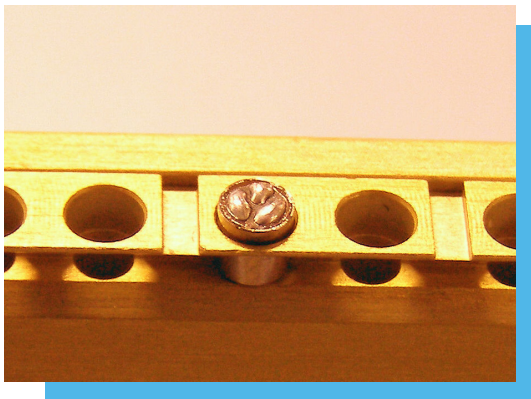
**g) Ultra sonic welding**

When ultrasonic welding of an application with the 8000 microphone is considered, it is recommended to contact Sonion for technical assistance.

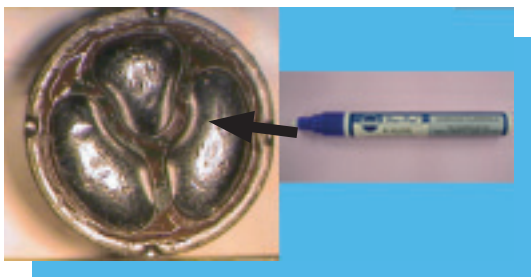
## 3. Soldering Instructions

### Step-by-Step Soldering Instructions

When soldering on the transducer the signal port should not be blocked. This is to prevent pressure increase due to expanding air inside the microphone. Also make sure that the work surface is clean of any possible contaminating agents.



**Note:** When placing a transducer in a fixture excessive mechanical pressure on the microphone must be avoided.



### Step 1. Placement of transducer in fixture

- Place the transducer in a suitable fixture or heat sink, with the terminal pads up.
- Sonion recommends using a heat sink to dissipate the heat from the microphone.
- Make sure that the heat sink is not completely closed at the bottom to allow sufficient ventilation during soldering. This will prevent the build-up of liquid/dust at the bottom of the heat sink.

### Step 2. Apply Flux

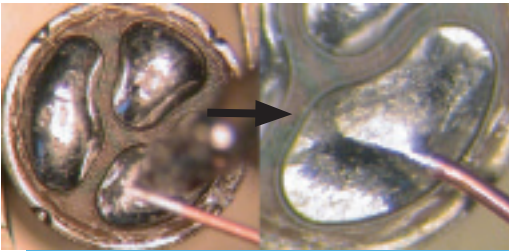
- Use of flux is recommended but not required.
- Apply small amount of flux to solder pad or lead wire avoiding excessive flux residue.

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## Step 3. Positioning of lead wire

- Position tinned tip of lead wire onto the terminal pad.
- Hold the wire in that position.

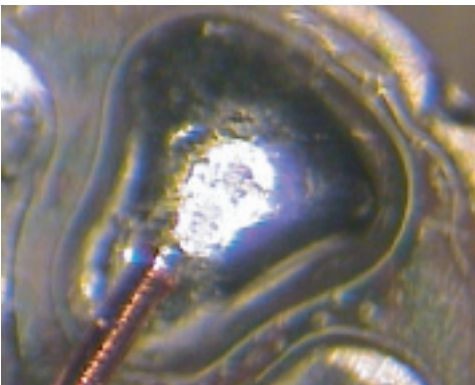


## Step 4. Soldering

- Keep soldering iron tip in contact with lead and terminal pad until solder flows and a good connection is established (the solder flows almost immediately after contacting the pad).
- Remove soldering iron tip and hold lead wire in place until solder solidifies.
- Total time soldering when the iron tip is in contact with the lead and terminal should not exceed 1 second.

### Dwell time = maximum 1 second

Warning: Avoid any excessive mechanical pressure (>100 grams) on the solder pads during soldering.



## Step 5. Inspection

Inspect connection to see that:

- Solder has flowed smoothly over lead and terminal pad.
- Solder has not bridged between adjacent terminal pads or between the terminal pad and the case.

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## 4. Recommended Equipment

This table describes the setup for Lead Free production.

Tools	Recommendations	Additional Comments	Recommended Brands
Soldering iron	Low Power (25 Watts) with temperature control	Soldering temperature range 350°C-370°C (662°F-698°F)	Weller EC2002, Weller WTCP-S, Weller WSD80, Metcal SP-PW1-20
Soldering iron tip	0.2-0.6 mm (0.008-0.023 inch)	N/A	Weller
Solder	Solder Lead Free Sn/Ag/Cu with no clean flux	SAC305 with 1-2% flux (Sn 97.5%/Ag 3%/ Cu 0.5%) Diameter 0.25-0.5 mm	Kester: SAC305-275 flux Multicore: SAC305-crystal400 flux
Flux	Lead free compatible, no-clean flux	Only add flux when needed. Flux can be added to the solderpad (using a flux pen or a syringe with tacky flux) or to the connection wire	Kester: 952-D6 Flux Pen TSF6591-1 Tacky Flux 186-5 Liquid Flux
Dwell time	1 second per solder pad	N/A	N/A