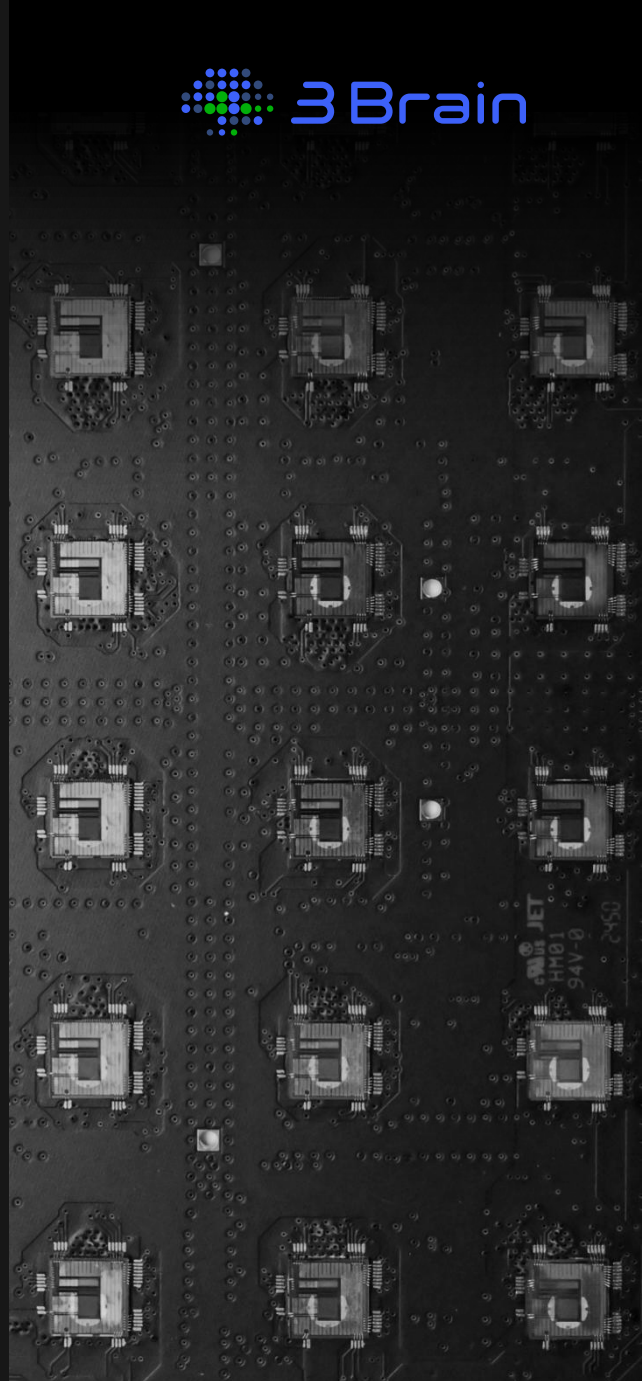


CorePlate™ 1W-3D Handling, Cleaning, Sterilization & Hydrophilization Guide

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CorePlate™ 1W-3D General Handling

CorePlate™ 1W-3D is an integrated low-power active electronic circuit. Proper handling is essential to ensure optimal function and prevention of damage.

CorePlate™ 1W-3D refers to the following:

- CorePlate™ 1W-3D 38/60/90

General Handling:

- As a general rule only the well should be in contact with liquid while the rest of the chip should remain dry.
- Do not touch the contact pads on the front of the chip (see Fig. 1). Always handle CorePlate™ 1W-3D by using plastic gloves.
- Do not touch the Active Area (see Fig. 1) of the microchip integrated in the CorePlate™ 1W-3D with any tools. The 3D electrode pillars are delicate and prone to damage.
- Do not autoclave CorePlate™ 1W-3D. For CorePlate™ 1W-3D sterilization, please refer to the sterilization procedure.
- Maintain the pH of the electrophysiological solutions used for neuronal cultures or brain tissues, possibly at physiological conditions (pH 7-7.5). Strong changes in the pH of the solution might damage the electrodes.

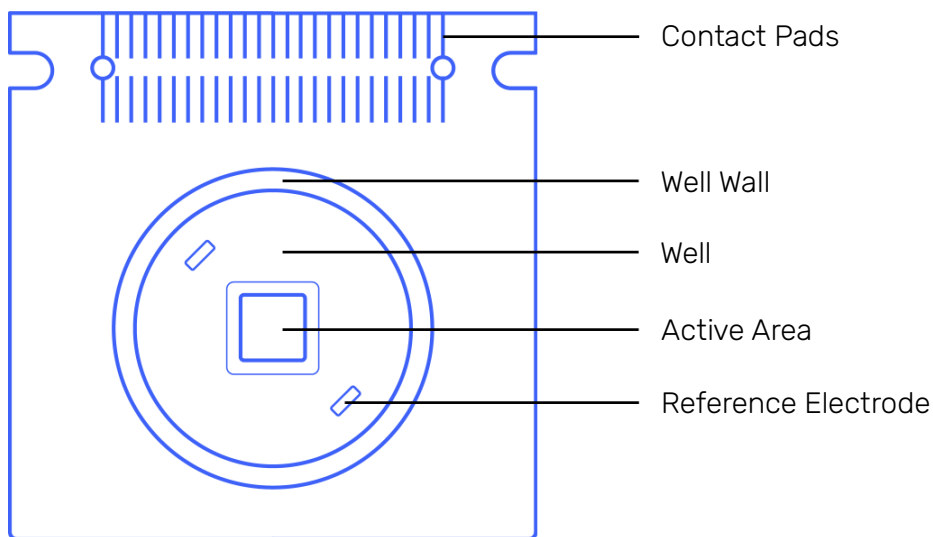


Figure 1: Diagram of CorePlate™ 1W-3D displaying the Contact Pads, Well and Active Area.

Precautions to follow during recording:

- Before inserting CorePlate™ 1W-3D into the BioCAM Duplex, clean the contact pads on the front of CorePlate™ 1W-3D (see Fig. 1) with tissue paper soaked in ethanol 96% and let it dry for a few seconds.
- Prevent liquids from spilling out of CorePlate™ 1W-3D into the BioCAM Duplex.
- In order to ensure a good quality of the recordings please remember that CorePlate™ 1W-3D are light-sensitive devices and their performances might be affected by high-light intensity.

Cleaning procedure for CorePlate™ 1W-3D

CorePlate™ 1W-3D are warranted as single-use chips.

If re-use is necessary, CorePlate™ 1W-3D must be thoroughly cleaned following the proper steps indicated to maintain performance and prevent contamination.

General Cleaning Guidelines:

Prevention of Damage. During each step of this procedure, ensure the pipette tip (or any other object) does not directly touch the Active Area.

Avoid Wetting the Contact Pads. While cleaning CorePlate™ 1W-3D, it is highly recommended not to wet the contact pads on the front of the chip.

Standard Cleaning Procedure:

1. **Rinse Well.** Rinse the well of CorePlate™ 1W-3D thoroughly with Double Deionized Water (ddH₂O).
2. **Detergent Application.** Remove the ddH₂O and fill the well with a detergent such as 5% Extran (Merck), 1% Terg-A-zyme (Alconox) or 1% SDS, and gently pipette for a few seconds.
3. **Soak.** Leave the detergent for a few minutes (typically 3-5 min) and then pipette again to dislodge any remaining residue.
4. **Final Rinse.** Remove the detergent and rinse the well of CorePlate™ 1W-3D thoroughly with ddH₂O, then leave the well filled with ddH₂O for 1-2 minutes and repeat this operation 3-4 times in order to be assured of washing out the detergent completely.

Drying and Storage:

Drying. CorePlate™ 1W-3D can be dried by using a gentle flux of Nitrogen air (do not expose the active area to an intense flux to avoid potential electrode damage) or under a biological hood. Alternatively, let CorePlate™ 1W-3D dry on a bench, making sure to cover the well to avoid dust deposition inside the well.

Cleaning the Exterior. The area out of the well of CorePlate™ 1W-3D can be cleaned with a tissue soaked in ethanol >96%. Ensure that gloves are worn whilst handling the plate.

Storage. Once CorePlate™ 1W-3D is dried it should be stored closed in a box in order to protect them from dust and other contaminants.

Sterilization procedure for CorePlate™ 1W-3D

As indicated in the previous section, CorePlate™ 1W-3D are warranted as single-use chips.

If re-use is necessary, proper sterilization may be required before subsequent use. In this case, we recommend UV-light sterilization as the preferred method, and in the case this is not available, EtOH Sterilization may also be used.

General Sterilization Guidelines:

Prevention of Damage. During each step of this procedure, ensure the pipette tip (or any other object) does not directly touch the Active Area.

UV-light Sterilization:

Expose CorePlate™ 1W-3D to UVC-light for 45 min (dependant on the UV-light intensity and power).

Ensure that the light is well illuminating the well in a homogeneous way, ideally the light should come from directly above to guarantee a strong and consistent UV-illumination of the well.

EtOH Sterilization:

Perform the following steps under a biological hood placing the CorePlate™ 1W-3D in a sterile petri dish:

1. **Clean the chip.** Clean the external area surrounding the well with a tissue soaked in pure EtOH (>90%) and place in a sterile petri dish.
2. **70% EtOH Application.** Fill the Well of CorePlate™ 1W-3D completely with 70% ethanol up to the rim of the Well Wall (Fig. 2).
3. **70% EtOH Soak.** Wait for 30-45 minutes to allow for sterilization.
4. **EtOH Removal.** Remove the ethanol using sterile tips and proper sterile technique.
5. **Rinse.** Fill $\frac{3}{4}$ of the well of CorePlate™ 1W-3D with sterile ddH₂O, wait a few seconds and remove the liquid with a sterile tip. Repeat this step in order to ensure the complete washing out of ethanol.

6. **Dry.** When removing sterile ddH₂O for the last time, be sure to completely dry the well. Carefully aspirate any remaining liquid from the recording area, keeping the pipette tip close to the well/chip border but not touching the chip to avoid damaging the electrodes.

EtOH sterilization may also be done in combination with UV-light sterilization.



Figure 2: Side view diagram of CorePlate™ 1W-3D showing the fill level of the well.

Hydrophilization procedure for CorePlate™ 1W-3D

In the case that CorePlate™ 1W-3D displays hydrophobic properties (e.g. after a long period of disuse), perform the following hydrophilization protocol.

General Hydrophilization Guidelines:

Prevention of Damage. During each step of this procedure, ensure the pipette tip (or any other object) does not directly touch the Active Area.

Avoid Wetting the Contact Pads. While cleaning CorePlate™ 1W-3D, it is highly recommended not to wet the contact pads on the front of the chip.

Standard Hydrophilization Procedure:

1. **Rinse Wells with 70% EtOH.** Rinse the well of CorePlate™ 1W-3D (Fig. 1) thoroughly with 70% EtOH and delicately flush the liquid on the Active Area with a Pasteur pipette.
2. **Rinse Well With ddH₂O.** Remove the 70% EtOH and rinse the well of CorePlate™ 1W-3D thoroughly with ddH₂O. Delicately flush ddH₂O on the Active Area with a Pasteur pipette.

3. **Rinse Well With Phosphate Buffered Saline (PBS).** Remove the ddH₂O and rinse the well of CorePlate™ 1W-3D thoroughly with PBS. Delicately flush PBS on the Active Area with a Pasteur pipette.
4. **Soak Well in PBS & Clean Reference Electrodes.** After rinsing with PBS, fill the well with PBS. Carefully remove any air bubbles trapped in the Reference Electrodes (Fig. 1) and leave to soak for 5 minutes.

If the chip remains hydrophobic, repeat the procedure a couple of times. If necessary, leave the chip soaked in PBS overnight. If the problem persists, please contact our customer success team at cs@3brain.com.