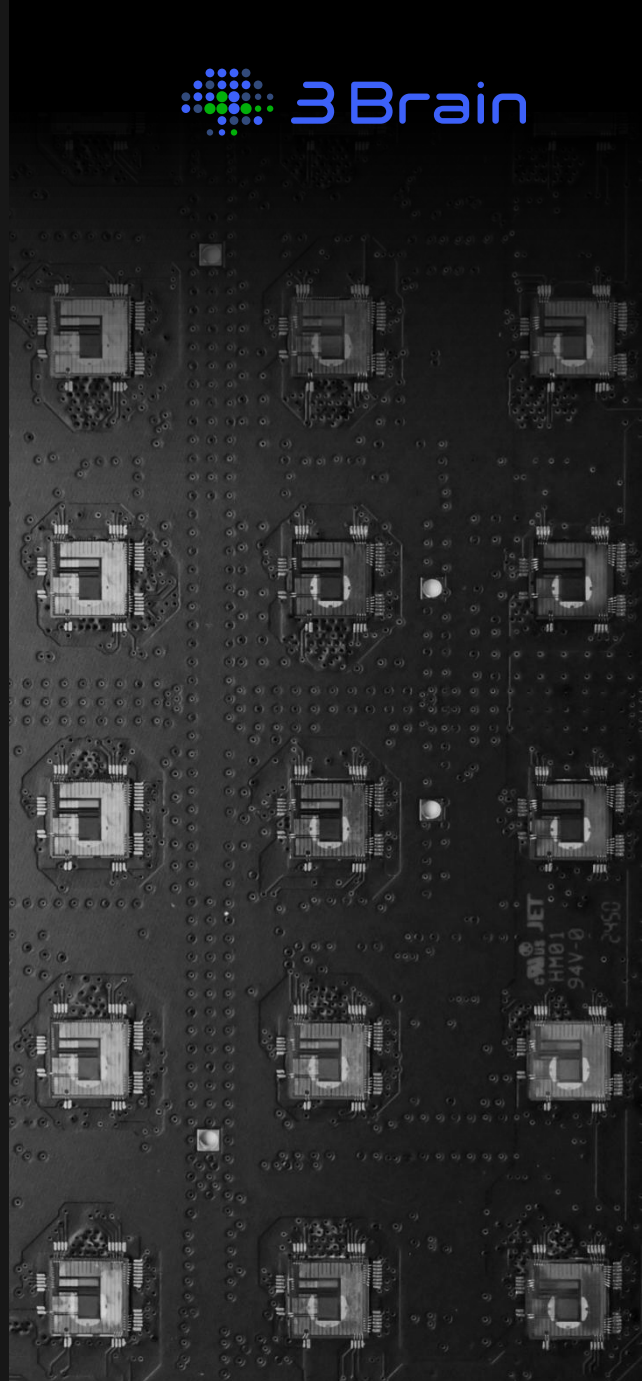


# CorePlate™ 1W-3D Handling, Cleaning, Sterilization & Hydrophilization Guide

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cs@3brain.com



## 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.

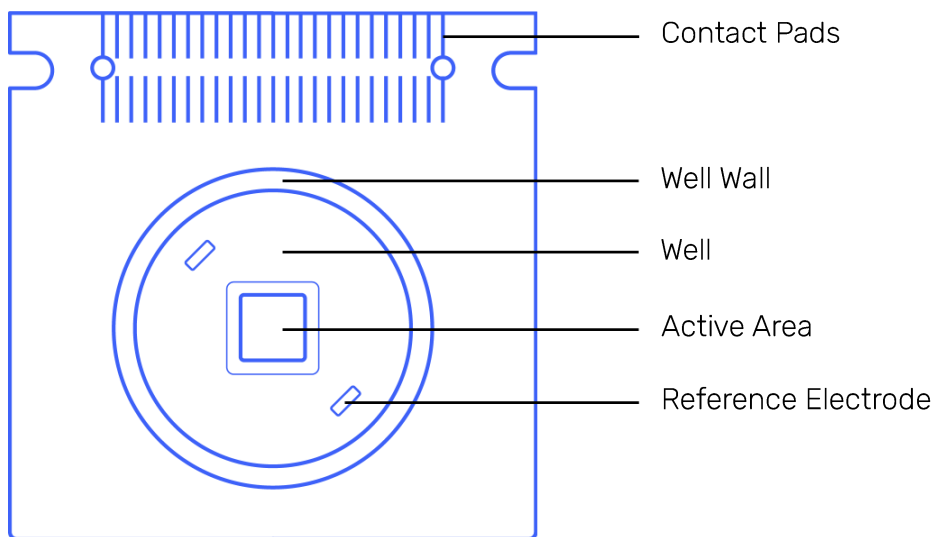


Figure 1: Diagram of CorePlate™ 1W-3D displaying the Contact Pads, Well and Active Area.

**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 a lint-free wipe soaked in isopropanol (IPA)>99.5% 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 (ddH<sub>2</sub>O).
2. **Detergent Application.** Remove the ddH<sub>2</sub>O 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 ddH<sub>2</sub>O, then leave the well filled with ddH<sub>2</sub>O 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 lint-free wipe soaked in isopropanol >99.5%. 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 at a distance of approximately 20-30 cm from a UVC-light source for 45 min (adjust the exposure time accordingly dependant on the distance, intensity and power of the UVC light).

Ensure that the light is 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 lint-free wipe soaked in IPA (>99.5%) 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 ddH<sub>2</sub>O, 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 ddH<sub>2</sub>O 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.

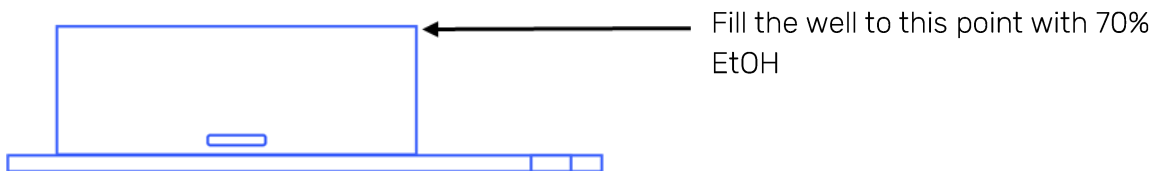


Figure 2: Side view diagram of CorePlate™ 1W-3D showing the fill level of the well.

## 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 ddH<sub>2</sub>O.** Remove the 70% EtOH and rinse the well of CorePlate™ 1W-3D thoroughly with ddH<sub>2</sub>O. Delicately flush ddH<sub>2</sub>O on the Active Area with a Pasteur pipette.

3. **Rinse Well With Phosphate Buffered Saline (PBS).** Remove the ddH<sub>2</sub>O 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](mailto:cs@3brain.com)

## Support

For any further questions, please contact our Customer Success team at [cs@3brain.com](mailto:cs@3brain.com)