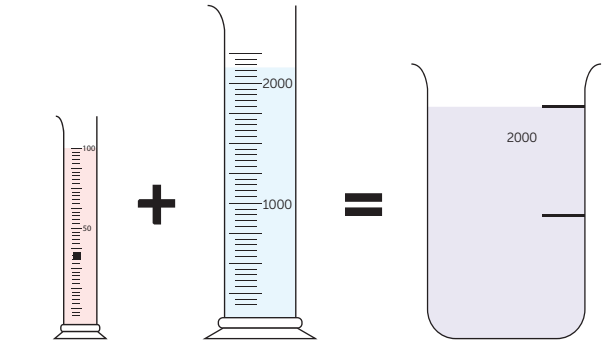
The MiniOne® Electrophoresis System: Getting Started Guide

Prepare Running Buffer

Dilute 1 part TBE Concentrate with 19 parts deionized or distilled water

Gather materials for diluting running buffer, including deionized or distilled water, Tris-Borate EDTA Buffer (TBE) Concentrate, a graduated cylinder and a container for mixing and storing the running buffer.

1. **To make 2000 mL of 1X running buffer (TBE),** mix 100 mL TBE Concentrate and 1900 mL deinonized or distilled water



TBE running buffer is stable stored at room temperature.

2. **To make various volumes of TBE running buffer use this formula:**

$$C_1 \times V_1 = C_2 \times V_2$$

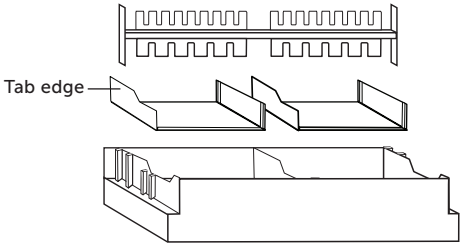
Where:
C_1 = Original TBE Concentrate
V_1 = Volume of the Original TBE Concentrate needed
C_2 = Final concentration
V_2 = Total final volume desired

Once you have calculated the volume of TBE Concentrate needed, SUBTRACT that amount from the total volume of TBE running buffer desired to find the volume of water needed.

We recommend diluting buffer in batches for accuracy.

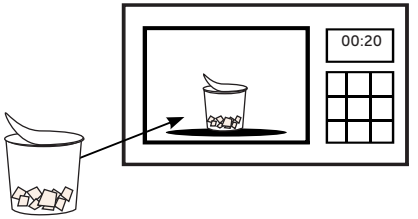
How to Cast a Gel

1. Place the MiniOne® Gel Casting Stand on a level surface and place gel trays in the two cavities. For proper tray orientation place the tab edge of the tray on the left side. Insert the comb into the slots at the top of the casting stand with the 6- or 9-well side facing down.

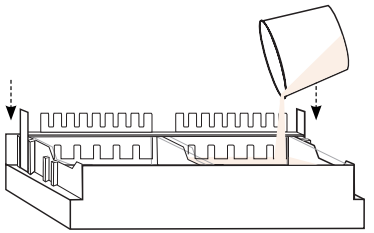


2. Partially peel back the film of a GreenGel™ cup and microwave for 20 seconds. Allow to cool for 15 seconds. **DO NOT microwave more than 5 gel cups at a time.**

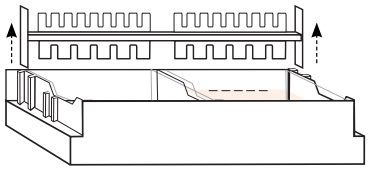
⚠ **Safety requirement:** Adult supervision required if students are handling gel cups!

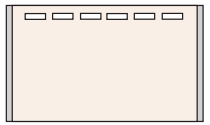


3. **One gel cup is for making one agarose gel!** Slowly pour the hot agarose solution into a gel tray. Make sure there are no air bubbles in the agarose solution. Let the agarose gel solidify for 10 minutes or until opaque**.**
DO NOT disturb the gel until time is up.
OR
If you are making your own gels, use approximately 11 mL of your molten agarose per gel tray.



4. Carefully remove comb when gel is ready. Remove gel tray with solidified gel from casting stand and wipe off any excess agarose from the bottom of the tray.

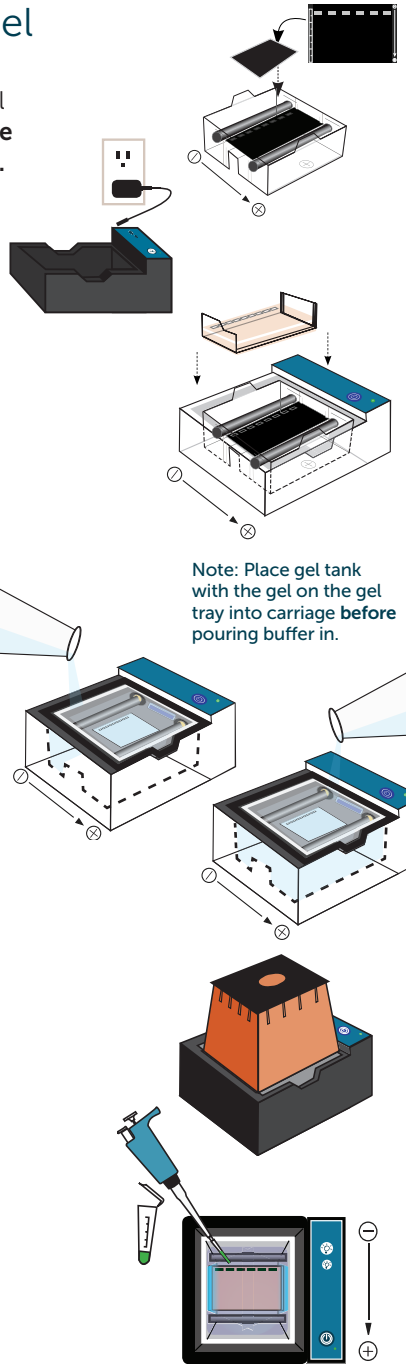




The MiniOne® Electrophoresis System: Getting Started Guide (cont'd)

How to Load a Gel

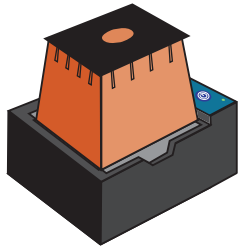
1. Ensure the black viewing platform is in the gel tank. **Make sure the wells are aligned with the marks on the platform on the negative end.**
2. Plug the power supply into the wall and carefully insert the other end into the back of the MiniOne® Carriage.
3. Place the gel tank into the carriage so the carbon electrodes are touching the gold rivets and the tank sits level with the carriage.
4. Place the gel tray with the gel into the gel tank. The gel tank should not have any buffer in it when putting the gel tray with gel into it.
5. Turn the low intensity blue LED on by pressing the button on the carriage.
6. Measure 135 mL of TBE running buffer and pour into **one side** of the gel tank. Watch the air push out between the gel tray and viewing platform. Once air has been removed from under the gel tray, pour remaining buffer into the **other side** of the gel tank.
7. Place photo hood on the carriage.
8. Press the power button which should now be a solid green light. If green light is **solid,** turn off the unit and proceed to loading gels. If the green light is **blinking,** see the Troubleshooting Guide in the MiniOne® Electrophoresis Instruction Manual.
9. Ensure the low intensity blue light is on. Load appropriate volume samples for your activity into each well. MiniLabs are designed to use 10 µL per well. Remember to change pipette tips for each sample. **Record the ID/ name of each sample corresponding to the correct well for ease of data analysis later.**



Note: Place gel tank with the gel on the gel tray into carriage **before** pouring buffer in.

Run, Visualize, and Capture Gel Image

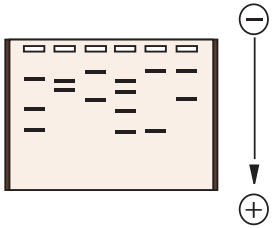
1. Once the gel is loaded, do not move it. Make sure the power supply is plugged in and place the photo hood on the carriage. Turn on the unit by pressing the button. The green LED next to the button will turn on.



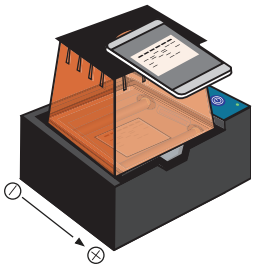
The green power LED will not turn on if:

- **The tank is not properly placed inside the carriage.**
- **There is no buffer in the tank.**
- **The buffer is too diluted.**
- **The photo hood is not on the carriage.**
- **There is too little running buffer.**
- **The power supply is not plugged in. Check by turning on the blue LEDs.**
- **If the green power LED is blinking, see the Troubleshooting Guide in the MiniOne® Electrophoresis Instruction Manual.**

2. Have students periodically check the migration of the bands (~every five minutes).



3. Allow the gel to run **20 minutes** or until DNA separation is sufficient. Keep in mind small DNA samples run faster so it's important to periodically check where your bands are. After your run is complete, turn off the power by pressing the button. Use the low intensity for viewing during the run. Light will weaken the fluorescent DNA signal.
4. Document your results.



Wipe off the condensation from the inside of the hood with a soft cloth if necessary, then place the hood back on the carriage. **Turn on** the high intensity light. Place your cell phone or camera directly on the photo hood to take a picture of the DNA. **DO NOT** zoom in as this will result in blurry pictures. (The photo hood is already at the optimal focal length for a smart device.