Bionic™ Buffer, 10x - B6185

Frequently Asked Questions

1. How do I use Bionic Buffer?

Bionic Buffer is just like any other electrophoresis buffer (TBE and TAE). The buffer is provided as a 10x stock solution that is diluted to 1x before use. Add it to the gel chamber and gel (if desired), and then run at higher voltages.

2. What voltage should I use to run a gel with Bionic Buffer?

Generally, for mini-gels, 150 V will allow at fast run time. Some mini gel systems tolerate the high voltage better than others do, so the exact limits of the system may vary. If there is a large buffer reservoir (500 ml or more), the voltage used can be 200-250 V, but for very small mini-gel systems (100-200 ml reservoir), this is not recommended.

3. Can I use with just standard electrophoresis conditions?

Of course standard 100 V conditions can be used, but this eliminates the advantages of using Bionic Buffer. It is going to take a long time to run at 100 V, so if higher voltages can be tolerated, why not use them?

4. How do I prepare my gels if I want to pour my own?

To prepare gels, the same procedure will be followed as that used when preparing a gel with TBE or TAE. Add agarose to the appropriate percentage, add 1x Bionic Buffer, and prepare gel as normal.

5. Can I use my regular electrophoresis equipment with Bionic Buffer?

Yes of course! Any gel rig and power supply will work. However, some power supplies might have a limit that will not allow electrophoresis at 250 V. One example might be if you are trying to run multiple gels on one power supply at 250 V. Most common power supplies have a 300 mA limit, which might be exceeded if multiple gels are attached at once. This means that the voltage applied to each gel will be less than the set 250 V.

6. Can I use Bionic Buffer with pre-cast TBE gels?

Absolutely! In fact, this is one of the best attributes! Pre-cast gels and Bionic Buffer are totally compatible! In fact, a 1% TBE gel will probably look BETTER run for 10 minutes with 1x Bionic Buffer at 250 V than if it was run with 1x TBE buffer at 100 V for a longer period of time.

7. Can I use Bionic Buffer with acrylamide gels?

Bionic Buffer is not recommended for use with acrylamide gels. Limited success has been seen using Bionic Buffer with acrylamide gels. Depending on the salt concentration of the acrylamide gel, there can be significant heat generation with little to no migration. As an alternative, 2-3% agarose gels can be used with Bionic Buffer to provide the small fragment resolution normally seen with polyacrylamide gels.

8. When you say, the pre-cast gels look "better" using Bionic Buffer, what exactly do you mean?

Testing was done using 1% TBE pre-cast gels. These gels were run using either 1x TBE buffer or 1x Bionic Buffer. The results showed that the DNA loaded on the gel run with 1x Bionic Buffer had sharper and cleaner looking bands compared to the other gel. Based on these results, we feel confident saying you will get better resolution (sharpness of your bands) using Bionic Buffer than using TBE, even with a pre-cast TBE gel.

9. Can I re-use my Bionic Buffer?

Yes, Bionic Buffer can be used multiple times before changing. If substantially escalating gel heating is observed over several runs though, it probably means it is time to change it!

10. I ran my gel at high voltage (200-250 V) and my gel warmed up. Why?

Bionic Buffer, due to its composition, is going to run much COOLER than TBE. However, depending on the voltages used, and the length of run time, significant heating can and will occur. The gel should never be too hot to handle though, and if it becomes so, consider lowering the voltages and increasing the run time. Many factors will influence how much gel heating will occur, such as the size and percentage of the gel, the buffer reservoir and the size and design of the gel rig being used. The optimum voltages and run times will have to be determined individually per lab.

11. I like to run my gels by controlling the current. Can I still do that with Bionic Buffer?

Unfortunately Bionic Buffer does not respond well to this technique. If the current is set at 200-300 mA, a higher voltage will be generated, exceeding the amount any gel is going to tolerate; furthermore, this setting would probably exceed the voltage limitations of the power supply. Re-adjust to use voltages when using Bionic Buffer. Typically, mA readings would register around 100-120 after a brief run at 250 V.

12. I ran my gel, but experienced "smiling" across the gel. Why? Is this normal?

It is not uncommon to see "smiling" across a gel. Depending on the gel rig, buffer volume and gel percentage, uneven heating can occur which is responsible for the "smile" effect. It is most common with high voltages (250 V or more) and extended run times. To minimize these effects, only short run times should be used with 250 V or higher lasting 20 minutes or less.

13. Can I use Bionic Buffer if I am running a gel to purify a fragment for cloning or other downstream applications?

Yes, you can use Bionic Buffer to run out fragments for purification, cloning or other downstream applications.

14. Is Bionic Buffer compatible with Sigma's RedTaq™ or other ready-to-load PCR mixtures?

Yes, of course. Bionic Buffer can be used just as TBE or TAE would be. Any PCR mixes or restriction digests can be loaded.

15. Is there an expiration date associated with Bionic Buffer? If I buy it, how long will it last?

There is an expiration date listed on the label of the product. Current expiration dates reflect a one-year date from production. However, given the composition of the product, there is no reason to believe it will not work after that date. Stability had just been verified for 1 year at the time of production, and that expiration date will be extended as additional stability data is made available.