

ClearBand TAE 50x Electrophoresis Buffer Troubleshooting Guide

500 mL, 1000 mL, 5 x 500 mL, 5 x 1000 mL

Cat No: TAE500, TAE1000, TAE5005, TAE10005

Use this guide for common dilution and electrophoresis problems encountered with ClearBand TAE 50x Electrophoresis Buffer. The concentrate must be diluted to 1x before use; the 1x composition is 40 mM Tris, 20 mM acetic acid, and 1 mM EDTA.

Before You Start - Quick Checks

1. Dilute the 50x concentrate accurately to 1x before use.
2. Use 1x TAE for both gel preparation and the electrophoresis tank.
3. Because the stock is highly concentrated, small dilution errors can substantially change working-buffer strength.
4. The datasheet recommends fresh 1x buffer for each electrophoresis application.
5. TAE is indicated for high-resolution agarose electrophoresis and high-molecular-weight double-stranded DNA.
6. Store the 50x concentrate at room temperature.

Problem	Most likely cause	Recommended action
DNA migration is unusually slow or abnormal	The 50x stock may have been under-diluted, producing an overly concentrated working buffer.	Recalculate and prepare a fresh 1x dilution from the 50x stock. Use 1x TAE in both the gel and the tank.
DNA migration is unexpectedly fast or bands are poorly resolved	The 50x stock may have been over-diluted, producing a working buffer below 1x.	Prepare a new 1x working solution using accurate volumetric measurements.
Run-to-run reproducibility is poor	Working-buffer dilution may vary between preparations or used buffer may have been reused.	Prepare fresh 1x TAE for each run using the same dilution procedure.
Gel and tank buffers do not match	One preparation may have been made at the wrong concentration.	Use the same correctly prepared 1x TAE in the gel and tank. Replace any solution of uncertain concentration.
High-molecular-weight DNA is poorly resolved	The working buffer may be incorrectly prepared or reused.	Use fresh 1x TAE and verify the dilution. The datasheet identifies TAE for high-resolution agarose gels and high-molecular-weight double-stranded DNA.
Unexpected heating or strong current behavior	The 50x concentrate may have been insufficiently diluted, increasing ionic strength.	Stop the run and verify that the stock was diluted to 1x. Prepare fresh working buffer if there is any uncertainty.
Buffer performance declines after reuse	The datasheet recommends fresh 1x buffer for each electrophoresis application.	Discard used buffer and prepare a new 1x working solution.
Incorrect 1x composition is suspected	A dilution error may have changed the intended final composition.	Reprepare 1x TAE. The intended 1x composition is 40 mM Tris, 20 mM acetic acid, and 1 mM EDTA.
Contamination or precipitate is visible	The stock or working solution may have been contaminated during handling.	Use clean labware and prepare fresh 1x buffer from uncontaminated stock.
Results differ after changing buffer system	TAE has different composition and electrophoretic behavior from other running buffers.	Treat the change as a new condition and evaluate sample migration using fresh 1x TAE.

Still having trouble? Because this is a 50x concentrate, first recheck the dilution calculation. Prepare fresh 1x TAE with accurate volumetric measurement and use that same working solution for both the gel and the electrophoresis tank.