Run Agarose DNA Gels in Under 20 Minutes

Bio-Rad's BioEducation R&D team has developed a new electrophoresis buffer formula. Using a reduced concentration of running buffer (0.25x TAE), and higher voltage (200 V), any agarose gel can be run 33% faster. Advantages of this new formula include:

- Excellent gel resolution
- Minimize run time
- Fast separation of DNA in gels of any agarose gel concentration (0.8 to 4.0%)
- Compatibility with all Bio-Rad Biotechnology Explorer program kits

TAE buffer is provided as a 50x concentrate that can be mixed with distilled water to yield the necessary concentrations for making agarose gels and electrophoresis running buffer.

Use 1x TAE to make agarose gels:

Half a liter of 1x TAE is sufficient to pour eight 7 x 10 cm agarose gels. To make 500 ml of 1x TAE from a 50x TAE concentrate, add 10 ml of concentrate to 490 ml of distilled water. Detailed instructions for making agarose gels can be found in individual kit instruction manuals.

- Use 1x TAE to make 1% agarose gels for the forensic DNA fingerprinting, analysis of precut lambda DNA, restriction digestion and analysis of lambda DNA, and PV92 PCR informatics kits
  - With the small DNA electrophoresis pack, dissolve 25 g of agarose in 2,500 ml of 1x TAE buffer, boil, and pour 50 ml per gel to make 50 handcast 1% agarose gels. Gels can be stored submerged in buffer for several weeks at 4°C
  - For added convenience, precast 1% agarose gels made with 1x TAE are available from Bio-Rad (catalog #161-3057EDU)
- Use 1x TAE to make 3% agarose gels for the Crime Scene Investigator™ and GMO Investigator™ kits
  - With the small DNA electrophoresis pack, dissolve 25 g of agarose in 833 ml of 1x TAE buffer, boil, and pour 50 ml per gel to make 16 handcast 3% agarose gels. Gels can be stored submerged in buffer for several weeks at 4°C
  - For added convenience, precast 3% agarose gels made with 1x TAE are available from Bio-Rad; each gel includes two 8-well combs (catalog #161-3017EDU)

Use 0.25x TAE to make electrophoresis running buffer:

A 2.5 L volume of 0.25x TAE buffer is required to run eight 7 x 10 cm agarose gels. To make 2.5 L of 0.25x TAE from a 50x TAE concentrate, add 12.5 ml of concentrate to 2.49 L of distilled water. To make 2.5 L of 0.25x TAE from a 1x TAE solution, add 625 ml of 1x TAE to 1,875 ml of distilled water.

Note: Do not use 0.25x TAE to make agarose gels; doing so can lead to a loss of DNA resolution.

To run gels:

Place the gel in an electrophoresis chamber and cover it with 0.25x TAE; ensure the gel is submerged. Run gels at 200 V for no more than 20 min. Monitor gel loading dye progress to get a relative idea of electrophoresis progress.

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