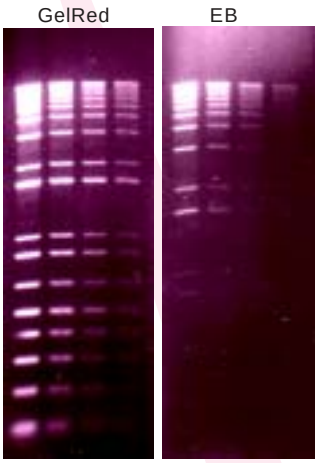
GelRed™

Distributed by Società Italiana Chimici

Biotium
Glowing Products for Science™

Take this opportunity: 5 packages of GELRED at € 600



Q&A

Question: *am I missing a lot of bands by using EB for precast staining?*

Answer: yes. EB has low sensitivity toward lower molecular weight DNA while showing high background in the higher molecular weight DNA region.

Question: *why do I sometimes get irreproducible results with SYBR® Green I or GelStar® for precast staining?*

Answer: both dyes are unstable in the common electrophoresis buffers or in the precast gel matrix. Precast gels from GelRed are stable and thus can be stored for later use.

Figure 1. GelRed™ is significantly more sensitive than ethidium bromide (EB) for detecting low-level DNA, especially in the lower molecular weight area. As with EB, precast gels prepared from GelRed™ are stable for long-term storage, whereas precast gels made from SYBR® Green I or GelStar® degrade rapidly within a day. Shown above are dilutions of 1 Kb Plus DNA Ladder electrophoresed on 1% agarose gels precasted with GelRed or EB in 1x TBE. The total amount of DNA loaded per lane was: 200 ng, 100 ng, 50 ng and 25 ng from left to right. Gels were imaged using 300-nm transillumination and photographed with an EB filter and Polaroid 667 black-and-white print films.

The Most Sensitive and Stable Post Gel Stain

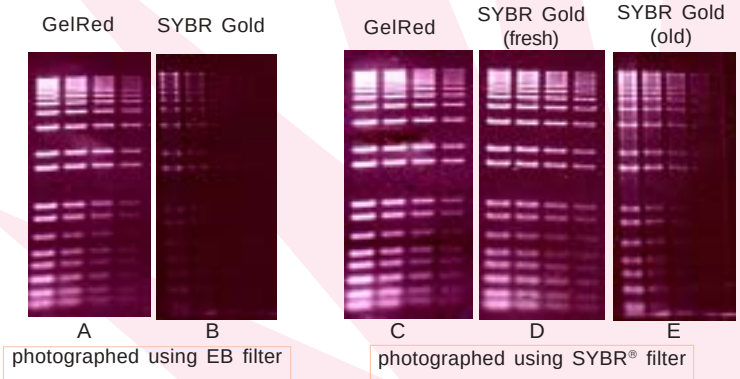


Figure 2. GelRed™ displays consistently superior sensitivity for post gel staining, regardless of the filter used (A vs. C) and storage and handling condition. SYBR® Gold, however, showed comparable performance only when used fresh from the manufacturer and with a SYBR® filter (B vs. D). Following a few freeze-thaw cycles, SYBR® Gold 10,000X solution degraded significantly, resulting in poor staining (E). SYBR® Gold 1X solution also degrades (See Figure 4). Dilutions of 1 kb Plus DNA Ladder were electrophoresed on 1% agarose gels in 1x TBE and post- stained with GelRed™ (#41000 and #41001) and SYBR® Gold, respectively. Gels were imaged using 300-nm transillumination and photographed with the indicated filters and Polaroid black-and-white print films. The total amount of DNA per lane for each serial dilution was: 200 ng, 100 ng, 50 ng and 25 ng from left to right.

FEATURES

- **Superior Sensitivity**
  The most sensitive and robust nucleic acid gel stain.
- **Unsurpassed Thermal Stability, Hydrolytical Stability and Photostability**
  Can be microwaved or subjected to other similar heating procedures for making agarose gels; stable in alkaline or acidic buffers at room temperature; highly photostable.
- **Improved Safety**
  Shown to be much less mutagenic than ethidium bromide by Ames test.
- **Ultimate Flexibility**
  Can be used for either precast or post gel staining; for either agarose gels or polyacrylamide gels; and for either dsDNA or ssDNA or RNA.
- **Simple Staining Procedure**
  Prepare and run precast gels as with EB without having to worry about dye stability; and takes as little as 30 minutes for post staining without the need for destaining.
- **Minimal Effect on DNA Migration Pattern**
  DNA migration pattern in GelRed precast gels similar to that in gels without dyes.
- **No Need for Filter Change**
  Works perfectly well with either a standard EB filter or a SYBR® filter.
- **Perfect Compatibility with a Standard 300 nm UV Transilluminator**
  Maximally excited at around 300 nm UV(See Figure 3 for spectra).

Distributed by SIC
Tel: +39 06 8818936 Fax: +39 06 8815319
Email: info@sichim.com; web: www.sichim.com

GelRed™

Biotium
Glowing Products for Science™

GelRed™ is a superior red fluorescent nucleic acid dye specifically designed for both precast and post gel staining. It has a combination of desirable properties that no other commercial nucleic acid gel stains possess: high sensitivity, extraordinary stability, low toxicity and versatility.

Most of the current commercial gel stains are lacking in one or more aspects. For example, although ethidium bromide (EB), the most widely used nucleic acid gel stain, offers acceptable sensitivity in most of the cases, it is a highly mutagenic chemical and its use requires a destaining step to reduce background fluorescence. SYBR Green I and SYBR® Gold have been promoted as the most sensitive gel stains by the manufacturer. However, SYBR® Green I and particularly SYBR® Gold degrade fairly rapidly under the slightly alkaline condition of the commonly used electrophoresis buffer or in the matrix of precast gels, resulting in unreliable gel staining.

GelRed™ overcomes most of the drawbacks encountered by the current commercial gel stains. Not only does the dye offer superior detection sensitivity, but also exhibits remarkable stability and provides the flexibility of being used as either a precast gel stain (Figure 1) or a post gel stain (Figure 2). The dye has a major excitation peak at around 300 nm and a red emission at around 595 nm (See Figure 3). Thus the dye can be optimally excited with a common 300 nm UV transilluminator while its fluorescence emission is completely compatible with either a standard EB filter or a SYBR® filter (Figure 2). When used as a precast gel stain, GelRed can be microwaved with agarose or be subjected to other heating procedures commonly used in preparing EB precast gels. Unlike EB precast gels, however, GelRed precast gels have virtually no background fluorescence and are highly sensitive in detecting low-molecular-weight DNA fragments. As with EB, precast gels made from GelRed™ can be safely and conveniently stored for later use without compromising the performance of the gels, an utility SYBR dyes do not possess. When used as a post gel stain, GelRed completes the staining in as little as 30 minutes without the need for an extra destaining step. Moreover, since GelRed is hydrolytically stable under either acidic or alkaline condition, its 1X staining solution can be prepared in bulk for later use.

Equally important is the potentially improved safety of GelRed™ over EB. In our initial mutagenicity test of GelRed™ using a commercial mutagenicity test kit, GelRed™ statistically showed either no or very weak mutagenic effect in the frameshift indicator bacterium strain TA98 in the absence or presence of rat liver extracts S9 when compared with the vehicle control (See note 1). However, under the same condition EB showed strong mutagenic effect in the presence of S9, consistent with the known mutagenicity of the dye. Further safety tests will be conducted both by Biotium and by third parties to obtain a more comprehensive safety profile of GelRed™. We will disclose the complete test results as soon as they become available.

We offer GelRed™ as a 10,000X concentrated solution in DMF (cat# 41000) for your flexibility and also for your convenience GelRed™ 3X solution (cat# 41001) that can be directly used for post gel staining. We will also soon offer ready-made GelRed™ precast gels for the ultimate convenience.

Note: *GelRed and its uses are covered by pending US and international patents. **SYBR is trademark of Molecular Probes, Inc. and GelStar is trademark of FMC corporation. 1) The tests were conducted using the mutagenicity test kit Muta-ChromoPlate™ from EBPI, Inc. GelRed at three dosages, 0.25 nmole, 2.5 nmoles and 25 nmoles, along with ethidium bromide at the same respective concentrations were tested in the frameshift indicator bacterium strain TA98.

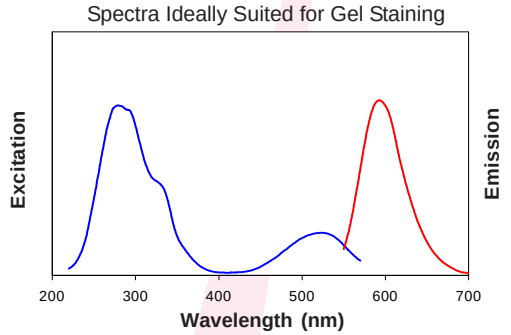


Figure 3. Excitation and emission spectra of GelRed in the presence of DNA in PBS buffer.

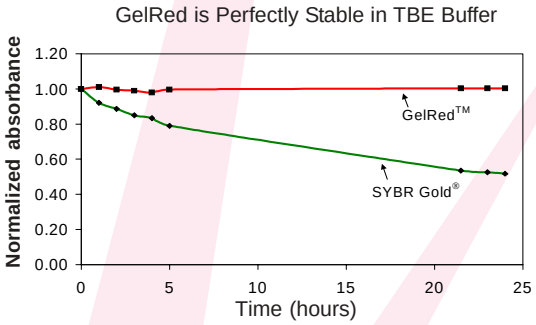


Figure 4. Normalized absorbances of GelRed™ and SYBR® Gold 1X TBE gel-staining solutions at 500 and 488 nm respectively over time at room temperature. The starting absorbance values for GelRed™ and SYBR® Gold were 0.029 and 0.051, respectively.

GelRed™ Price List

Cat.#	Product Name	Unit Size	
41000	GelRed 10,000x in DMF	0.5 mL	150€
41002	GelRed 10,000x in DMSO	0.5 mL	150€
	GelRed	5x0.5mL	600€

Please also see our EvaGreen™, a breakthrough nucleic acid dye ideally suited for quantitative real-time PCR (qPCR). By incorporating a smart "release-on-demand" DNA-binding technology, EvaGreen™ has low PCR inhibition while exhibiting superior sensitivity. Similar to our GelRed™, EvaGreen™ has remarkable stability. For more information, please visit our website.