Glowing products for science

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GelRed® Nucleic Acid Gel Stain

Ultra sensitive and environmentally safe replacement for EtBr DNA/RNA gel stain.



Product attributes

Storage Conditions	Store at room temperature, Protect from light
Assay type/options	DNA/RNA gel staining

Product Description

GelRed® is an ultra sensitive, extremely stable and environmentally safe fluorescent nucleic acid dye designed to replace the highly toxic ethidium bromide (EtBr) for staining dsDNA, ssDNA or RNA in agarose gels or polyacrylamide gels.

- Safer than EtBr: non-mutagenic and non-hazardous for disposal
- Much more sensitive than EtBr and SYBR® Safe
- Stable at room temperature and microwavable
- Simple precast or post-electrophoresis gel staining, no destaining
- Replaces EtBr with no change to equipment or optical settings
- Compatible with downstream gel purification, restriction digest, sequencing, and cloning

GelRed®: A Superior Alternative to EtBr

GelRed® is much more sensitive than EtBr, and can be used to stain dsDNA, ssDNA or RNA in agarose gels via either precast or post gel staining without destaining. GelRed® can also be used to stain polyacrylamide gels via post gel staining. GelRed® is also compatible with downstream DNA manipulations such as restriction digest, sequencing, and cloning. GelRed® and EtBr have virtually the same spectra, so you can directly replace EtBr with GelRed® without changing your existing imaging system. For detailed protocols for use, please download the GelRed® Product Information Sheet. Also see our GelRed® and GelGreen® Frequently Asked Questions (FAQs).

Non-Mutagenic & Safer for the Environment

A series of safety tests have confirmed that GelRed® is noncytotoxic, nonmutagenic and nonhazardous at concentrations well above the working concentrations used in gel staining. As a result, working strength GelRed® can be safely disposed of down the drain or in regular trash, providing convenience and reducing cost in waste disposal. For more information, download the GelRed®/GelGreen® Safety Report or our Gel Stains Comparison White Paper.

Need a Safe & Sensitive Gel Imager?

Biotium's Gel-Bright™ Laser-Diode Gel Illuminator offers exceptional performance for imaging GelRed® or GelGreen® stained agarose gels without hazardous UV light. Each purchase of the Gel-Bright™ also comes with a free sample of GelRed® Agarose LE (Cat. No. 41029-5G) and GelGreen® Agarose LE (Cat. No. 41030-5G).

Your Top GelRed® and GelGreen® Questions Answered

Choose the Right Stain for Your Application

For agarose gels, we recommend using Original GelRed® Nucleic Acid Gel Stain or GelGreen® Nucleic Acid Gel Stain. GelRed® 3X in water is ready-to-use for post-electrophoresis gel staining, and is supplied in a 4L Cubitainer®. Higher concentrations of Original GelRed® are available as 10,000X in water or DMSO. GelRed® in water is a newer, safer formulation and our recommended format. We continue to offer GelRed® in DMSO for established users who do not wish to alter their protocols. We also offer GelRed® Agarose and GelRed® Prestain Plus 6X Loading Dye. GelGreen® Nucleic Acid Gel Stain is a safer replacement for SYBR® gel stains and is compatible with visible light excitation. Our Go-Go™ Fast DNA Gel Running Buffer allows running gels 3X faster than with TAE or TBE buffer.

Learn about DNAzure® 2.0 Visible Blue DNA Gel Stain Kit for visualizing DNA bands with the naked eye with no need for a UV light source. DNAzure® 2.0 delivers excellent sensitivity, detecting as little as ~1 ng of double-stranded DNA in both agarose and polyacrylamide gels.

Product / Method	Procedure	Advantages	Disadvantages	Recommended for
DNA staining with EMBER™ Ultra DNA Gel Kit	Agarose is supplied pre-coated with EMBER™ Ultra Dye, just dissolve, heat, and pour.	• Safer and more convenient, no need to handle concentrated dye • Superior sensitivity, detect as little as ≤1 ng DNA • No need for post-electrophoresis staining • Optimal for blue LED gel imagers	• Not suitable for PAGE, DGGE, EMSA, or PFGE gels • Dye may cause band migration issues when loading larger amounts of DNA (more than ~200 ng/band), or for some restriction digests	• Routine agarose gels
RNA staining with EMBER™ Ultra RNA Gel Kit	Agarose is supplied pre-coated with EMBER™ Ultra Dye, just dissolve, heat, and pour.	• Safer and more convenient stain for RNA, no need to handle concentrated dye • Superior sensitivity, detect as little as ≤5 ng RNA • No need for post-electrophoresis staining • Included loading dye contains formamide for denaturing • Optimal for blue LED gel imagers	• Will stain DNA as well as RNA • Dye may cause band migration issues when loading larger amounts of RNA (more than ~200 ng/band)	• Routine RNA gel electrophoresis • Evaluate total RNA integrity and DNA contamination
DNA prestaining with GelRed® Prestain Plus 6X DNA Loading Dye	GelRed® loading buffer is added directly to the DNA sample before loading	• Fast & simple: one-step sample loading & DNA staining • Less concentrated dye for safer handling • Can re-run a gel to use empty lanes	• Not recommended for PAGE, DGGE, EMSA, or PFGE gels • Dye may cause band migration issues when loading larger amounts of DNA (more than ~100 ng/band), or for some restriction digests	• Routine agarose gels • Recommended loading 50-200 ng ladder or 2-5 uL PCR product (~100 ng/band or less)
Precast staining with GelRed® 10,000X in water or GelGreen® 10,000X in water	GelRed® or GelGreen® is mixed with molten agarose before gel casting	Familiar protocol, rapid results		
Precast staining with GelRed® Agarose LE or GelGreen® Agarose LE	Agarose is supplied pre-coated with GelRed® or GelGreen®, just dissolve, heat, and pour	Safer & more convenient, no need to handle concentrated dye		
Post-electrophoresis staining with GelRed® 10,000X in water or GelGreen® 10,000X in water - or - GelRed® 3X in water	No fluorescent dye is added to the gel, it is stained in 3X GelRed® or 3X GelGreen® solution after electrophoresis	• Most accurate sizing/sharpest bands • Staining solution can be re-used • Enhance sensitivity by adding NaCl	Extra staining step (up to 30 minutes) after electrophoresis (some customers report good results after only 5 minutes if dye is not reused)	• Highly accurate band sizing • Gels with more than ~100 ng DNA per band • Analyzing restriction digests
Post-electrophoresis staining with DNAzure® 2.0 Visible Blue DNA Gel Stain Kit	No fluorescent dye is added to the gel, it is stained in DNazure® 2.0 solution and then exposed to a bright light source to generate visible blue DNA bands. We recommend the Glo-Plate™ White Photoactivation Device as a light source for developing DNAzure® 2.0-stained gels	• Allows visualization of DNA bands by the naked eye, no need for a UV light source • Detect as little as ~1 ng DNA • Stained bands are stable in gel for weeks • Also emits near-IR fluorescence (~700 nm) for detection on near-IR imaging systems	Extra staining step (up to 30 minutes) followed by a light exposure step (up to 30 minutes) to generate visible blue DNA bands	• Routine DNA agarose gels • Visualizing gels without the UV light or expensive imaging systems • Recommended loading 50-200 ng DNA per lane
Post-electrophoresis staining of PAGE gels using PAGE GelRed® 10,000X or 1X in water	No fluorescent dye is added to the gel, it is stained in 1X PAGE GelRed® solution after electrophoresis	• Formulated for efficient penetration and staining of polyacrylamide gels • Like the classic GelRed®, it is safe and environmentally friendly	Extra staining step of approx. 30 minutes after electrophoresis	Staining of nucleic acids in PAGE gels

For more information, view our DNA Gel Stains Technology Page.

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References

Download a list of selected References for GelRed® and GelGreen®.

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