Product Information

DNAzure® 2.0 Visible Blue DNA Gel Stain Kit

Kit Contents

Component	41045-T 4 gels	41045 20 gels
Component A, 100X	41045-TA 2 mL	41045A 10 mL
Component B, 100X	41045-TB 2 mL	41045B 10 mL
Component C, 10X	41045-TC 20 mL	41045C 100 mL
6X DNA Loading Buffer (Orange)	99859 1.5 mL	99859 1.5 mL

Storage and Handling

Store at 4°C. Protect components from light. Product is stable for at least 12 months from date of receipt when stored as recommended.

No safety information is available for DNAzure® 2.0 Component A, but it is potentially harmful because it contains a DNA-binding dye. Exercise universal laboratory safety precautions when handling the stain, and dispose of the stain as hazardous chemical waste according to your local regulations.

Product Description

The DNAzure® 2.0 Visible Blue DNA Gel Stain Kit is a new and improved formulation of our DNAzure® Blue Nucleic Acid Gel Stain. DNAzure® 2.0 has enhanced sensitivity compared to the older version.

DNAzure® 2.0 is an ultrasensitive reagent for visible staining of double-stranded DNA in agarose gels or polyacrylamide gels. DNAzure® utilizes a DNA-binding dye that turns from colorless to deep blue upon exposure to bright light. DNAzure® has sensitivity comparable to the most sensitive fluorescent stains, and can detect less than 1 ng of DNA per band. After light exposure, the bands are visible to the naked eye without the need for a UV transilluminator or LED light box for imaging. In addition, stained gels are stable for weeks after color development.

After color development, the stain also has near-infrared (near-IR) fluorescence at ~700 nm that can be imaged using the LICORbio® Odyssey® or similar near-IR imaging systems. The sensitivity of detection is similar for visible color and near-IR imaging.

The visible staining of DNAzure® makes it easy to cut out bands for gel purification. DNA can be used in downstream applications such as sequencing and cloning after dye removal using a standard gel extraction kit.

Blue tracking dyes commonly used in gel loading buffers can mask the visible blue DNAzure®-stained bands. This kit is supplied with 6X DNA Loading Buffer (Orange) for preparing your DNA samples for electrophoresis. The orange tracking dye migrates at ~50 bp in a 1% agarose gel, and does not interfere with DNAzure® signal.

Biotium offers the Glo-Plate™ White Photoactivation Device (Cat. No. E90008), an affordable light panel that is very effective for developing DNAzure® gels.

Considerations for Staining

- Gels should be stained using a post-staining protocol as described below.
- DNAzure® 2.0 contains a double-stranded DNA dye, and will not stain RNA or single-stranded DNA. We recommend our EMBER™ Ultra DNA or RNA Gel Staining Kits (Cat. No. 41043, 41044) for ultrasensitive detection of ssDNA or RNA in agarose gels. Oxazole Gold (Cat. No. 40094) is recommended for high-sensitivity staining of single-stranded nucleic acids in acrylamide gels.
- Agarose or acrylamide gels in TAE or TBE buffer can be stained with DNAzure® 2.0. Agarose gel percentages between 0.5% and 2% have been tested with good results. We see better staining with thinner agarose gels (0.5 cm) compared to thicker gels (1 cm).
- DNAzure® 2.0 can be used to stain agarose gels run in Biotium's Go-Go™ Fast DNA Gel Running Buffer (Cat. No. 41039). We recommend omitting Component C from the staining solution for use with Go-Go™ Fast gels, otherwise background will be increased.
- Blue tracking dyes (such as bromophenol blue) in gel loading buffer may obscure DNAzure®-stained DNA bands. We recommend using the supplied 6X DNA Loading Buffer (Orange) to prepare your samples. To use, add 1 uL of 6X loading buffer for every 5 uL of DNA sample and mix well. For example, add 2 uL of 6X loading dye to 10 uL of DNA sample. Additional loading dye may be purchased separately (Cat. No. 99859-1).
- Immediately after staining, bands will not be visible. Bright light exposure is required to develop the visible color. The gel should be placed as close to the light as possible. The following are validated light sources:
    - Glo-Plate™ White Photoactivation Device (recommended) (Cat. No. E90008)
    - Glo-Plate™ 2.0 Blue LED Illuminator (Cat. No. E90007)
    - White LED light therapy lamp (10,000 LUX)
    - Blue LED transilluminator
    - Other light sources may be used, but may require longer exposure times. LED lights are recommended to avoid exposing the gel to heat, which can cause background.
- For best results, place the light as close to the gel as possible. The gel can be left in the staining solution and illuminated from above or below if the staining tray is transparent. We recommend removing the gel from the staining solution and placing it directly on the light panel (plastic wrap can be placed underneath to protect the light source).

Staining Protocol

1. Prepare your samples using the provided 6X DNA Loading Buffer (Orange). Add 1 uL loading buffer for every 5 uL of DNA sample. We recommend loading 50-200 ng DNA per lane for ladder. For samples, you can load the same volume you would use for a fluorescent gel stain.
2. Run the gel using your preferred protocol and buffer. Do not add any fluorescent DNA-binding dye (e.g., EtBr) to the agarose, loading buffer, or running buffer.
3. Warm DNAzure® 2.0 Components A, B, and C to room temperature and mix well.
4. Just before use, prepare DNAzure® 2.0 staining solution by combining the components as shown in Table 1 below so the final concentration of each component is 1X. Mix well by shaking or vortexing. Prepare enough staining solution to completely submerge your gel in the staining container you will be using. We recommend using 50 mL of staining solution for a 9 x 11 x 0.5 cm agarose mini-gel.

    Note: We do not recommend storing staining solution for more than one working day after mixing.

Table 1. 1X DNAzure® 2.0 Staining Solution

Component	Volume*
Component A, 100X	0.5 mL
Component B, 100X	0.5 mL
Component C, 10X**	5 mL
dH_2O	44 mL

*Volumes shown are for preparing 50 mL of staining solution and may be scaled proportionally as needed to prepare different volumes of staining solution.

**For staining Go-Go™ Fast gels, do not add Component C, and use 49 mL dH_2O (for 50 mL of staining solution).

5. Place the gel in a staining container such as a polypropylene tray. Add enough 1X DNAzure® 2.0 staining solution to submerge the gel so that it moves freely in the solution when rocked.
6. Gently agitate the gel in the 1X staining solution for 15-30 minutes at room temperature in the dark. Destaining is not required.

    Note: At this time, the DNA bands will not yet be visible.
7. Expose the gel to a bright light source to generate visible blue DNA bands. See Considerations for Staining for recommendations. The required light exposure time will depend on the light color, brightness, and proximity to the gel. When using a bright blue light transilluminator, or a bright white LED light source such as Biotium's Glo-Plate™ White Photoactivation Device, DNA bands usually begin appearing after 5 minutes, with dark blue bands apparent after 15-30 minutes.
8. Photograph the gel against a white background. Bands are stable after color development, and gels can be stored in water for days or weeks, or dried.

Troubleshooting

Problem	Solutions
No visible bands or faint bands	• Place the light closer to the gel, expose the gel to light for a longer time, or try a brighter light source. • Increase DNA loading amount.
High background in gel	• Avoid using light sources that generate heat. • Increase DNA loading amount to reduce light exposure time. • If using Go-Go™ Fast running buffer, do not add Component C when preparing the 1X staining solution.
Distorted bands or white spots in center of bands	• Load less DNA. • Expose to light for a shorter time.

Related Products

Cat. No.	Product
E90008	Glo-Plate™ White Photoactivation Device
E90007	Glo-Plate™ 2.0 Blue LED Illuminator
31080	1 kb DNA Ladder in TE Buffer
31081	100 bp DNA Ladder in TE Buffer
99859-1	6X DNA Loading Buffer (Orange)
31030	DNA Gel Extraction Kit
41028	Agarose LE, Ultra-Pure Molecular Biology Grade
41006	TBE Buffer, 5X
22031	1X TAE (1L) Buffer Powder Packets
22032	1X TBE (1L) Buffer Powder Packets
41039	Go-Go™ Fast DNA Gel Running Buffer, 50X
41043	EMBER™ Ultra DNA Gel Kit
41044	EMBER™ Ultra RNA Gel Kit
41029	GelRed® Agarose LE
41030	GelGreen® Agarose LE
41011	GelRed® Prestain Plus 6X DNA Loading Dye

Please visit our website at www.biotium.com for information on our life science research products, including environmentally friendly EvaGreen® qPCR master mixes, nucleic acid gel stains, DNA and RNA extraction kits, and nucleic acid quantitation kits.