# Product Information

## DNAzure® Blue Nucleic Acid Gel Stain, 100X

**Catalog Number:** 41020

**Packaging Size:** 10 mL

### Storage and Handling

Store DNAzure® Blue Nucleic Acid Gel Stain at 4°C, protected from light. This product is stable for at least six months from date of receipt when stored as recommended.

No safety information is available for DNAzure® gel stain, 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

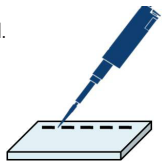
DNAzure® Blue Nucleic Acid Gel Stain is an ultrasensitive reagent for visible staining of dsDNA in agarose gels or polyacrylamide gels. The sensitivity of this stain is comparable to fluorescent DNA gel stains (Figure 1). The limit of detection is 1 ng dsDNA or less. We do not recommend this stain for RNA or ssDNA.

Key to the technology is a DNA-binding dye that turns from colorless to deep blue upon exposure to bright light. After color development, the stain also has broad emission near-infrared fluorescence that can be imaged using the LI-COR® Odyssey® or similar near-IR imaging systems. The sensitivity of detection is similar for visible color and near-IR imaging (Figure 2).

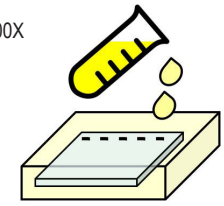
DNAzure® Blue Nucleic Acid Gel Stain is compatible with downstream applications such as sequencing and cloning, and is efficiently removed from DNA by common gel extraction kits that utilize silica-based DNA purification columns.

### Staining Workflow Quick Reference

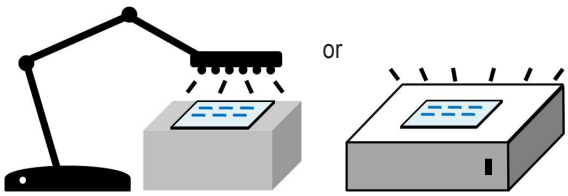
1. Run the gel according to your standard protocol.



2. Make a 1X staining solution by diluting 100X DNAzure® Blue Nucleic Acid Gel Stain. Add the staining solution to your gel and incubate for 20-30 minutes in the dark.



3. Expose the gel to a bright light source for 15-90 minutes to allow development of blue bands. Place the light source as close as possible to the gel.




### Staining Protocol

Gels should be stained using a post-staining protocol. It is not recommended to add DNAzure® Blue Nucleic Acid Gel Stain directly to samples or to molten agarose before gel casting, as the dye will affect DNA migration.

1. Run the gel using your standard protocol. TBE or TAE buffer can be used.

   Note: The presence of blue tracking dyes, such as bromophenol blue, in blue gel loading buffers, may obscure DNAzure®-stained DNA bands. We therefore recommend using loading buffers containing Orange G tracking dye.

2. Place the gel in a staining container such as a polypropylene tray. Using either 1X TBE, 1X TAE, 1X TE, or $dH_2O$, dilute DNAzure® Blue Nucleic Acid Gel Stain to 1X staining solution in sufficient buffer to submerge the gel. For example, mix 500 uL of 100X gel stain with 50 mL 1X TBE buffer.

3. Gently agitate the gel in the 1X staining solution for 20-30 minutes at room temperature in the dark. Optimal staining time may vary depending on the thickness of the gel and the percentage of agarose or acrylamide. The gel can be left in the staining solution overnight. Destaining is not required.

   Note: At this time, the DNA bands will not yet be visible.

4. Expose the gel to a bright light source to generate visible blue DNA bands. The gel can be kept in the staining solution during light exposure. The light source should be placed as close as possible above the gel, or below the gel if the gel tray is transparent. If preferred, the gel may be removed from the staining solution and placed directly on the light source (such as light box), however, this may cause the gel to dry out.

   The required light exposure time will depend on the light color, brightness, and proximity to the gel. When using a bright blue light transilluminator (such as Biotium's GelBright™ LED Gel Illuminator), or a bright white LED light source (such as an LED on-camera video light panel), DNA bands may be visible after 5 minutes, with dark blue bands apparent after 15-30 minutes. Other light sources may be used, such as a white light transilluminator, LED table lamp, or cell phone flashlight, however these will require longer exposure times (30-90 minutes) to produce dark blue bands. LED lights are recommended as these generate less heat and can therefore be placed closer to the gel.

5. Remove the gel from the staining solution and visualize on a white background or on a white light transilluminator.

6. The gel may be imaged using a camera, or a gel documentation system with a white light transilluminator. DNAzure® staining also has near-infrared fluorescence that can be detected in both the 700 nm and 800 nm channels on the LI-COR® Odyssey® or similar near-IR imaging system (Figure 2).

   After color development, the bands are stable for weeks when gels are kept in buffer at room temperature (Figure 2). If desired, gels can be dried for long term storage, using standard methods.

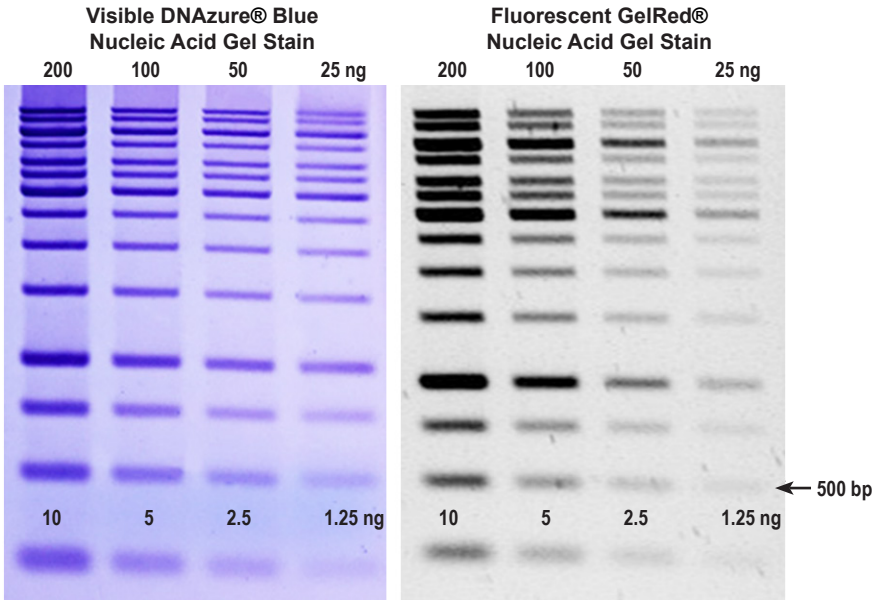



Figure 1. Biotium's 1 kb DNA ladder was loaded on a 1% agarose gel in two-fold dilutions, ranging from 200 ng to 25 ng total ladder per lane. The mass of the 500 bp band in each lane is labeled. The gel on the left was stained with DNAzure® Blue Nucleic Acid Gel Stain for 25 minutes, and then the visible blue DNA bands were developed for 30 minutes using a blue LED transilluminator. The gel was placed on a white light transilluminator and imaged with a cell phone camera. The gel on the right was stained with 3X GelRed® Nucleic Acid Gel Stain for 60 minutes. The gel was imaged with a UVP GelDoc-It® Imaging System using a UV transilluminator and EtBr filter.

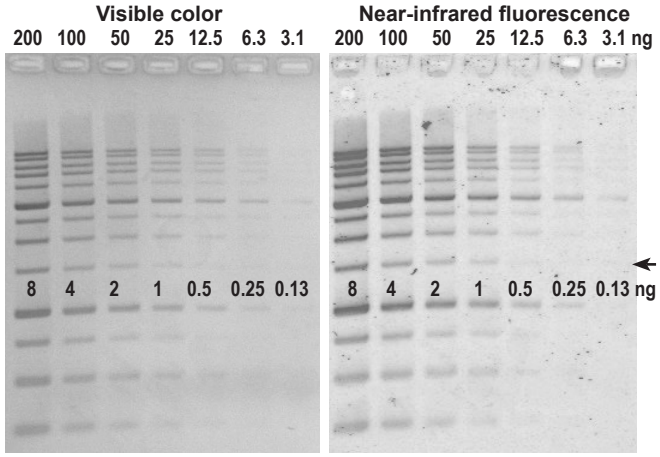



Figure 2. Biotium's Ready-to-Use 1 kb DNA ladder was loaded on a 1% agarose gel in two-fold dilutions, ranging from 200 ng to 3.125 ng total ladder per lane. The mass of the 1500 bp band (marked by arrow) in each lane is labeled. The gel was stained with DNAzure® Blue Nucleic Acid Gel Stain for 30 minutes, and then the visible blue DNA bands were developed for 30 minutes using a white LED lamp. Left: Visible blue bands imaged on a UVP GelDoc-It® Imaging System using a UV transilluminator with a white light converter plate and a Visi-Blue™ filter. Right: Near-infrared fluorescence imaged on a LI-COR® Odyssey® near-infrared imaging system in the 700 nm channel. The gel was imaged face-down with gain set to 8. DNAzure®-stained bands also fluoresce in the Odyssey® 800 nm channel (not shown). This gel was stored in staining buffer on the benchtop for six weeks before these images were acquired.

**Related Products**

| Catalog number | Product |
|---|---|
| 41001 | GelRed® Nucleic Acid Gel Stain, 3X in water |
| 41003 | GelRed® Nucleic Acid Gel Stain, 10,000X in water |
| 41005 | GelGreen® Nucleic Acid Gel Stain, 10,000X in water |
| 41008 | PAGE GelRed® Nucleic Acid Gel Stain, 10,000X in water |
| 31039 | 1 kb DNA Ladder in TE Buffer |
| 31040 | 100 bp DNA Ladder in TE Buffer |
| 41006 | TBE, 5X |
| 31028 | AccuClear® Ultra High Sensitivity dsDNA Quantitation Kit with 7 DNA Standards |
| 31066 | AccuGreen™ High Sensitivity dsDNA Quantitation Kit (for Qubit®) |
| 31041 | Forget-Me-Not™ EvaGreen® qPCR Master Mix |
| 31043 | Forget-Me-Not™ Universal Probe Master Mix |
| 40069 | PMAxx™ dye, for viability PCR |
| E90002 | PMA-Lite™ LED Photolysis Device |
| E90003 | Gel-Bright™ LED Gel Illuminator |