



THE RIGHT LIGHT

## GREEN STAIN – DNA Loading Dye

Fluorescent stain for  
nucleic acid detection in gel

# GLD

[www.cyanagen.com](http://www.cyanagen.com)

# About us

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Cyanagen is a biotech company located in Bologna, dedicated to research, development and production of reagents for molecular diagnostic since 2003 and one of the leading companies in the field of reagents for Western blotting and Elisa.

The main product lines are focused on chemiluminescence and fluorescent dyes for biological analysis, genomics, proteomics and chemical sensors.

They are based on Cyanagen internationally patented technologies and achieve outstanding performance in terms of sensitivity and stability.

The products are extremely versatile and perfectly suited to the latest analytical instrumentation. These products are also available as OEM.

Cyanagen s.r.l. has a certified Quality System

## CERTIFICATION



# Product manual

# Green Stain - DNA Loading Dye

DNA Loading Dye containing  
fluorescent stain for nucleic acid  
detection in gels

**GREEN STAIN – DNA LOADING DYE IS INTENDED FOR RESEARCH  
USE ONLY AND SHALL NOT BE USED IN ANY CLINICAL  
PROCEDURES OR FOR DIAGNOSTIC PURPOSES.**

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# 1. Introduction

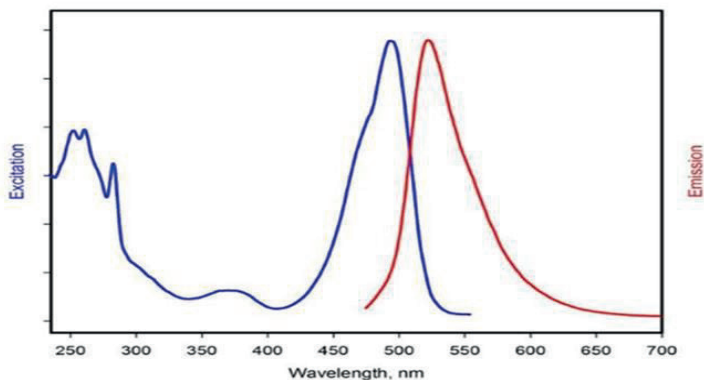
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Nucleic acid gel staining has been performed with ethidium bromide for decades. Even though ethidium bromide is very economic and easy to use, its mutagenicity and hazardous waste disposal fueled the development of DNA gel staining alternatives. Cyanagen has developed Green Stain to solve these issues. Green Stain has a high binding affinity for nucleic acids providing bright green light-emitting DNA-dye complexes. Bright green fluorescent bands and very low background fluorescence are its major features. In addition, Green Stain has a very low toxicity combined with an extraordinary sensitivity. Green Stain preferentially binds double-strand DNA, it also allows also single-strand DNA and RNA detection, although with lower sensitivity. Green Stain-DNA Loading Dye is provided as two solutions: one vial containing Green Stain dye and the other one containing a pre-mixed loading buffer with tracking dyes for agarose gels. This formulation contains EDTA that inhibits metal dependent nucleases, and two electrophoresis tracking dyes (bromophenol blue and xylene cyanol FF) for visual tracking of DNA migration during electrophoresis.

Green Stain-DNA Loading Dye is easy to use: it only needs to be added to the samples before pipetting into the gel wells. It is not required to add any stain to the gel or running buffer.

The nucleic acid-bound Green Stain is efficiently excited at **~254 nm** and **~488 nm**. Detection can be performed with the same instruments used for ethidium bromide and SYBR® Green gel staining such as standard UV transilluminator (254 nm) as well as with CCD-camera imaging system or laser-based scanner selecting the SYBR® Green filter.

Note: In 1% agarose gels bromophenol blue migrates at about 4000 bp and xylene cyanol FF migrates at about 300 bp



Excitation/emission spectra of Green Stain bound to dsDNA

### Features:

- Very low toxicity;
- Ready to use kit;
- Optimal signal to background ratio;
- Simple substitution of your stain reagent with Green Stain.

### Storage

- Store at - 20°C;
- After mixing vials A and B, store at 4°C for 6 months;

Follow universal safety precautions

## 2. Components and other materials required

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### Kit components

- Vial A: Green Stain - Dye, Cod. NAGS116,DY
- Vial B: Green Stain - Loading buffer, Cod. NAGS116,LB

### Other materials required

- TBE (89 mM Tris base, 89 mM boric acid, 1 mM EDTA, pH 8) or TAE (40 mM Trisacetate, 1 mM EDTA, pH 8) buffer
- Agarose

### 3. Staining protocols

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Wear clean powder free gloves during all gel handling.

Prepare Green Stain - DNA Loading Dye by pipetting 975  $\mu\text{L}$  of Green Stain - Loading buffer (vial B) in vial A. Mix well by vortexing. The prepared Green Stain - DNA Loading Dye is stable for 6 months at 4°C.

Green Stain - DNA Loading Dye can be used in sample pre-staining protocol:

- Dissolve the agarose in the buffer using microwave or heating appliance.
- Pour the gel and let it cool down.
- Add 2  $\mu\text{L}$  of Green Stain-DNA Loading Dye to 2-10  $\mu\text{L}$  of your DNA sample and molecular marker.
- Load the samples in the gel.
- Perform electrophoresis in TBE or TAE buffers according to standard procedures.
- After the separation is complete, visualize the gel

Gel visualization can be done with a standard transilluminator (254 nm), or with a laser- or LED-based imaging system selecting the SYBR® Green filter. In case your imager does not have laser or LED in the 450-490 nm region, be sure to use blue conversion screen and/or plate and/or filters (normally used for viewing SYBR® Green, SYBR Safe, GFP, and/or Flamingo™ fluorescent gel stains).

**NOTE: if you are not satisfied with your results and you have some problems as poor efficiency, distorted migration etc., please refer to troubleshooting.**



## 4. Troubleshooting

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### Poor staining efficiency

Possible Cause	Precautions/Remedies
SDS contamination	Avoid the presence of SDS in the staining solution, in the loading dye or in the running buffer. Do not wash staining container with detergent solutions.
pH of the buffer solution	pH of the buffer solution must range from 7.5 to 8.3.
Imaging system	Use only transilluminator with 254 nm UV-Lamp or Led/Laser based imaging instruments at 450-490 nm or imagers with blue conversion screen and/or plate and/or filters

### Discrepant or distorted DNA migration

Possible Cause	Precautions/Remedies
Density of agarose gel	Reduce the percentage of agarose in the gel
High voltage	Reduce voltage to avoid localized heating of the gel resulting in aberrant migration of bands or even heat-caused damage to the dyes
Exhausted running buffer	Change the running buffer with a freshly prepared buffer. Since TAE has a lower buffer capacity, use TBE buffer

## 5. Ordering information

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<b>Product Description:</b>	<b>Quantity:</b>	<b>Sufficient For:</b>	<b>Order-No:</b>
Green Stain - DNA Loading Dye	1 x 1 mL	50 minigels	NAGS116,CLK01
	5 x 1 mL	250 minigels	NAGS116,CLK05

For further information visit [www.cyanagen.com](http://www.cyanagen.com)

For orders: call **+39 051.534063**

mail to [sales@cyanagen.com](mailto:sales@cyanagen.com)

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