# **BÍONEER** GreenStar™ Nucleic Acid Staining Solution I

(V2/2020-10-13)

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## 1. Description

GreenStar™ Nucleic Acid Staining Solution I is a nucleic acid staining method in TAE/TBE agarose gel. It is safer than traditional ethidium bromide (EtBr) method. GreenStar™ Nucleic Acid Staining Solution I has a fluorescence excitation at 496 nm and emission at 522 nm. For DNA detection, this staining solution should be used with either UV or blue light transilluminator.

#### 2. Contents

Components	Cat. No.	
	C-9036	C-9036SM
GreenStar™ Nucleic Acid Staining Solution I, 200X concentrated	50 m <b>l</b>	1 ml x 3 ea
Manual	1 ea	1 ea

# 3. Materials to be supplied by user

Components	Cat. No.	
50X TAE	C-9004	
5X TBE	C-9002	
Agarose	C-9100	

## 4. Storage Condition

It is recommended to aliquot the product in amber tubes/bottles then store it at -20°C to maintain optimum quality. When using the product, limit exposure to light and store it at 4°C (4°C: Stable for 12 months, -20°C: Stable for 24 months).

## 5. Experimental Procedure

## 5-1. Post-staining protocol

- Perform electrophoresis using either agarose or non-denaturing polyacrylamide gel.
- Dilute concentrated GreenStar™ Nucleic Acid Staining Solution I by 20 - 200 folds in TAE/TBE buffer.
  - **Note:** It is advised to use a plastic container, rather than glass one which could be stained by the staining solution.
- After running nucleic acid on an agarose gel, transfer it to diluted staining solution. Incubate it in a dark room for 10 - 40 minutes. Destaining is not required.

- 4) Bands can be detected with an UV or blue light transilluminator.
- 5) (Optional) Store the diluted staining solution in a dark container for re-use. It can be used up to 2-3 times.

## 5-2. Pre-casting gel protocol

- Dissolve agarose or non-denaturing polyacrylamide in TAE/TBE buffer.
- Add 1/200-fold amount of concentrated GreenStar™ Nucleic Acid Staining Solution I to gel solution, preferably when it is lukewarm. Allow it to stand until the gel becomes hard.
- Bands can be detected with an UV or blue light transilluminator.
   Note: Post-staining is recommended for an exact mobility of nucleic acid or for large amount of nucleic acid amount.

## 6. Experimental Data

Comparison of 100 bp Plus DNA Ladder (Cat. No. D-1035, Bioneer) gel analysis using *GreenStar™* Nucleic Acid Staining Solution I.

#### A: Post-staining

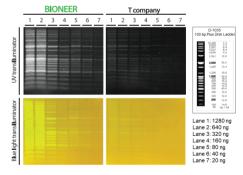


Fig. 1. Post-staining gel analysis of two-fold serial diluted 100 bp Plus DNA Ladder (Cat. No. D-1035, Bioneer) using 5X *GreenStar™* Nucleic Acid Staining Solution I and T company's product.

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#### B: Pre-casting gel

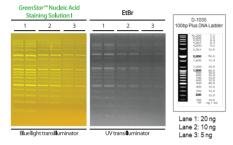


Fig. 2. Pre-casting gel analysis of two-fold serial diluted 100 bp Plus DNA Ladder (Cat. No. D-1035, Bioneer) using 1X *GreenStar™* Nucleic Acid Staining Solution I or 0.5 μq/ml EtBr.

## 7. Troubleshooting

## 7-1. Low fluorescence of stained DNA

- Reduce thickness of the gel. We recommend using a gel which thickness is less than 0.5 cm.
- Increase staining time. This depends on percentage of agarose.
   Increase the staining time as percentage of agarose increases.
- Increase the concentration of diluted GreenStar™ Nucleic Acid Staining Solution I.
- Fluorescence is reduced when staining solution is exposed to heat
  and light. Diluted staining solution can be re-used within 24 hours
  when stored away from light and at room temperature. If diluted
  staining solution needs to be stored for a long period of time, store it
  away from light and at temperature between 2 and 6°C. If staining
  temperature is low, staining time may need to be increased.
- Repeated use may reduce staining ability. Make fresh staining solution then use it.
- Use pre-casted gel, made with GreenStar™ Nucleic Acid Staining Solution I, within 24 hours.
- GreenStar™ dye may have precipitated out of solution. Heat GreenStar™ Nucleic Acid Staining Solution I to 45 - 50°C for five minutes and vortex to redissolve.

## 7-2. Stained loading lane

High concentration of staining solution may induce dragging effect
of the band. This is due to high sensitivity of *GreenStar™* Nucleic Acid
Staining Solution I. Reduce the staining time or dilute the staining
solution.

## 7-3. Different nucleic acid mobility on the gel

- We recommend loading 1 20 ng of sample when 5 mm comb is used for pre-casting gel. When a band is not straight, we recommend loading more than 10 µl of sample.
- We recommend using TAE buffer when DNA size is large.

## 8. Related Products

Cat. No.	Product
A-6020	DUALED Blue/White Transilluminator
A-7020	<i>Agaro-Power™</i> System
C-9029	6X Agarose Gel Loading Buffer 2 ml
C-9100	Agarose 100 g
C-9100-1	Agarose 500 g
D-1010	10 bp DNA Ladder 100 μl (522 ng/μl)
D-1020	25/100 bp Mixed DNA Ladder 500 µl (150 ng/µl)
D-1030	100 bp DNA Ladder 500 µl (100 ng/µl)
D <b>-</b> 1035	100 bp Plus DNA Ladder 500 µl (80 ng/µl)
D-1040	1 kb DNA Ladder 500 µl (100 ng/µl)

### 9. Notice

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