

Product Information

One-Step Lumitein™ Protein Gel Stain, 1X

Catalog Number: 21004-1L, 21004-4L

Unit Size:

21004-1L: 1 liter

21004-4L: 4 liter Cubitainer®

Storage and Handling

Store at 4°C. Product is stable for at least 6 months from date of receipt.

Spectral Properties

Abs: ~280 nm, ~450 nm (broad); Em: 610 nm (see Figure 1)

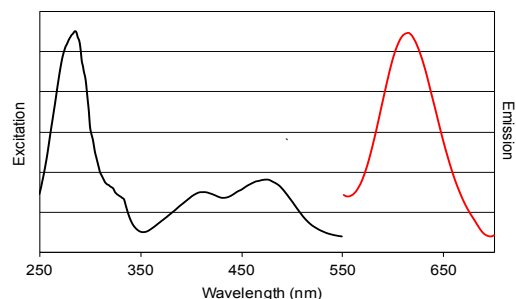


Figure 1. Excitation and emission spectra of One-Step Lumitein™ dye.

Product Description

One-Step Lumitein™ Protein Gel Stain is a ready-to-use luminescent protein gel stain. It is a dramatically improved version of our original Lumitein™ protein gel stain for convenience and safety. One-Step Lumitein™ gel staining requires only a single 5-30 minute staining step without fixation. Destaining is optional. Moreover, One-Step Lumitein™ Protein Gel Stain offers safer handling and ease of disposal, because it is an aqueous-based solution that does not contain hazardous methanol or acetic acid. One-Step Lumitein™ solution (after pH neutralization) passed environmental toxicity testing and is classified as non-hazardous to the environment under CCR Title 22 regulations (see the product protocol for disposal instructions).

One-Step Lumitein™ can detect as little as approximately 1-10 ng of protein per band depending on the staining method used, although staining intensity varies between proteins (Figure 2). Staining is fully compatible with mass spectrometry and Edman-based sequencing.

Biotium also offers One-Step Blue™ Protein Gel Stain (see related products), a rapid, easy-to-use, non-toxic alternative to Coomassie staining for visible blue protein staining and optional near-infrared fluorescence-based gel imaging.

Protocol

The following protocol is optimized for 1 mm thick, 8 cm X 8 cm SDS PAGE mini-gels.

1. **Staining:** After electrophoresis, place the unfixed gel in a clean container containing 25 mL of One-Step Lumitein per mini-gel and incubate with gentle rocking at room temperature. Bands may start to be detectable after 5 minutes depending on the amount of protein present. For the best sensitivity, stain for 60 minutes.

Note: The gel can be left in the staining solution overnight without over-staining.

Note: For larger gels, scale up the volume of staining solution accordingly using the mini-gel size as a reference.

Note: One-Step Lumitein can also be used to stain fixed gels. Fixation with 45% methanol/10% acetic acid for 1 hour before staining, followed by destaining in water can increase sensitivity.

2. **Destaining (optional):** Destaining is not required, but can reduce background and improve sensitivity. Gels can be destained in water for 2 x 5 minutes up to overnight with gentle rocking.
3. **Imaging and Quantitation:** Gels stained with One-Step Lumitein can be imaged with a variety of instruments. See Table 1 for a list of suitable excitation sources and emission filters.

a) **UV Transilluminator:** A UV transilluminator with a 300 nm excitation and an ethidium bromide filter may be used for viewing/imaging fluorescence.

b) **LED-based Gel Viewer:** Blue light LED-based gel boxes designed for safe viewing of DNA/RNA gels can also be used for viewing and imaging Lumitein-stained protein gels. Detection sensitivity may vary depending on device.

c) **Laser-based Gel Scanner:** Lumitein can be imaged on a gel scanner (such as a Typhoon® scanner) with 488 nm or 532 nm laser excitation with a detection window centered around 610 nm emission (such as the SYPRO® Ruby channel). Using 532 nm excitation may give lower background fluorescence compared to 488 nm excitation.

Note: For downstream analysis such as sequencing or mass spectrometry, gel slices can be processed the same way as SYPRO® Ruby stained gels.

4. **Disposal:** One-Step Lumitein is a 100% aqueous solution uniquely formulated using chemicals that qualify as food ingredients that can be disposed down the drain. It does not contain methanol and is classified as non-hazardous to the environment. However, the solution is acidic and must be neutralized before drain disposal. To neutralize, add 653 uL 1N sodium hydroxide per mL One-Step Lumitein and mix well. Alternatively, you can add 26 mg sodium hydroxide pellets per mL One-Step Lumitein and stir to dissolve completely.

Table 1. List of suitable excitation sources and emission filters for Lumitein.

Excitation sources/ filters	300 nm UV, 365 nm UV, 450±15 (filter), 470 nm blue LED, 473 nm laser, 480 nm excitation interference filter (epi-illumination), 485±4.5 nm (monochromator), 488 nm laser, 532 nm laser.
Emission filters	490 nm longpass, 515 nm longpass, 520 nm longpass, 580 nm longpass, 590 nm longpass, 595±4.5 nm (monochromator, Molecular Devices), ethidium bromide filter, 600 nm bandpass, 600±20 nm, 600±35 nm, 610 nm longpass, 610±35 nm, 618 nm bandpass, 620 nm bandpass, 625± 15 nm, 625±T15 nm, Texas Red filter (~630 nm bandpass), 640± 35 nm.

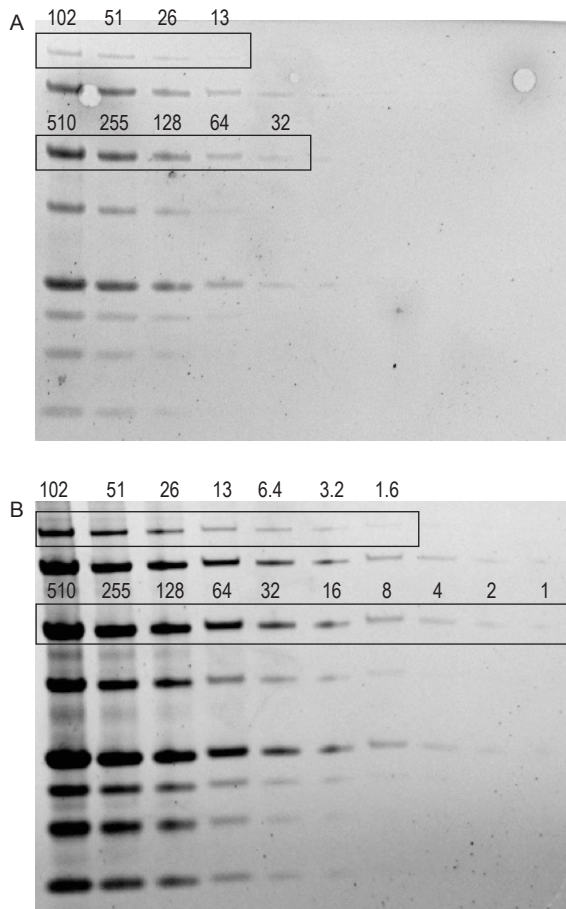


Figure 2. One-Step Lumitein-stained SDS-PAGE gel. Two-fold dilutions of Unstained Precision Plus Protein™ Standard (Bio-Rad) were separated on a 1 mm thick Novex® NuPage® 4-12% Bis-Tris MES mini-gel (Thermo Fisher). The gel was stained with One-Step Lumitein for 30 minutes without fixation, then imaged on a UV transilluminator with an ethidium bromide filter using a UVP GelDoc-It™ imaging system. A) Gel imaged immediately after staining. B) Gel imaged after overnight destain in water. Labels indicate approximate protein amounts (ng) in the boxed bands beneath.

Related Products

Catalog No.	Product
21005	One-Step Lumitein™ UV
21003-1L	One-Step Blue™ Protein Gel Stain
22001	Ponceau S Solution
30071	AccuOrange™ Protein Quantitation Kit
22012	Non-fat dry milk
22011	Fish gelatin powder
22014	BSA, IgG- and protease-free, 30% solution
22002	TWEEN® 20
41003	GelRed™ Nucleic Acid Gel Stain
41005	GelGreen™ Nucleic Acid Gel Stain
41008-500uL	PAGE GelRed™ Nucleic Acid Gel Stain
41007-500uL	PAGE GelGreen™ Nucleic Acid Gel Stain

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