# 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 4ºC. 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)

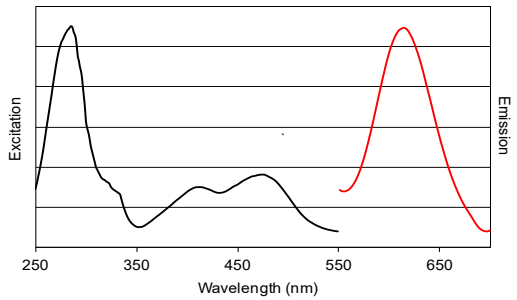


Figure 1. Excitation and emission spectra of One-Step Lumitein™ dye.

**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 long-pass, 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 band-pass, 620 nm bandpass, 625± 15 nm, 625±T15 nm, Texas Red filter (~630 nm bandpass), 640± 35 nm. |

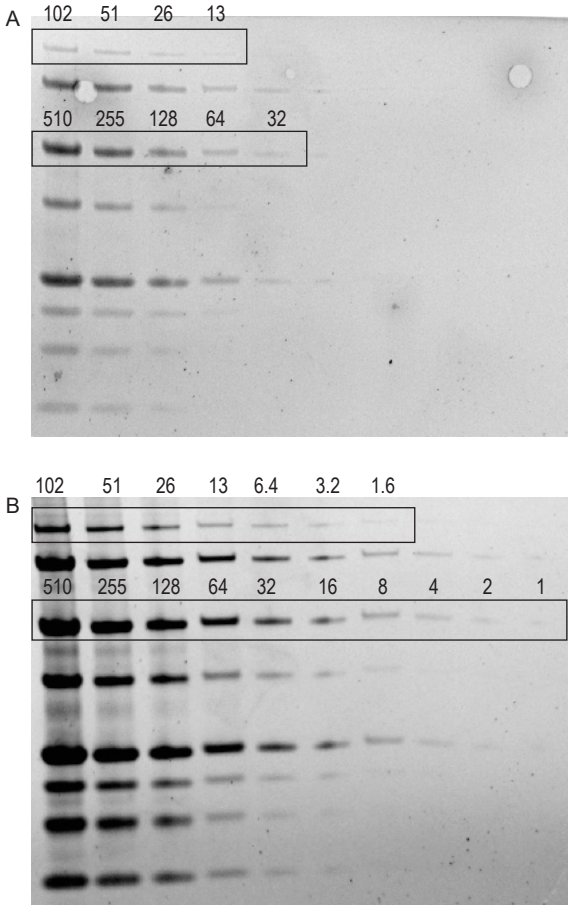


Figure 2. One-Step Lumitein-stained SDS-PAGE gel. Two-fold dilutions of Unstained Precision Plus Protein™ Standard (Bio-Rad) were separated on a 1 mm thick Novex® NuPage® 4-12% Bis-Tris MES mini-gel (Thermo Fisher). The gel was stained with One-Step Lumitein for 30 minutes without fixation, then imaged 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 Lumitien™ 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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