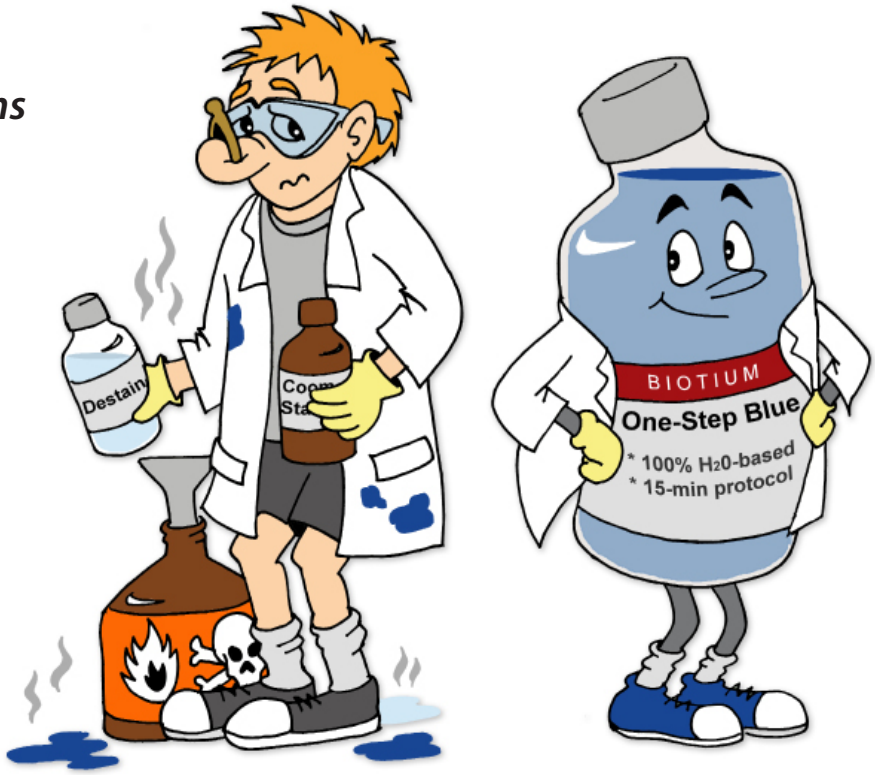
New! *One-Step* Protein Gel Stains

Fast, one-step protein stains
Non-toxic, easy disposal
No stinky acetic acid
No toxic methanol
No gel shrinkage
No microwaving
No destaining



One-Step Blue™

- Replaces tedious Coomassie staining for visible blue imaging of bands
- Optional near-infrared fluorescence detection with NIR imaging systems (such as Odyssey®)

One-Step Lumitein™

- Replaces time-consuming and expensive SYPRO® Ruby gel stain for fluorescence-based imaging
- Detect with a laser-based fluorescence scanner (such as Typhoon®) or a UV gel box

One-Step Lumitein™ UV

- Replaces Oriole® fluorescent gel stain. Does not cause gel shrinkage
- Best dye for detection with a UV gel box

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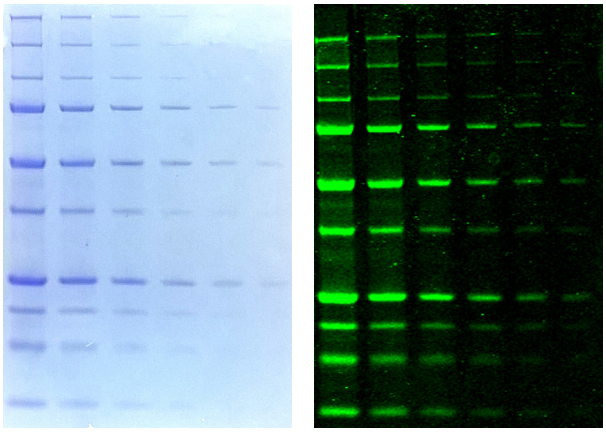
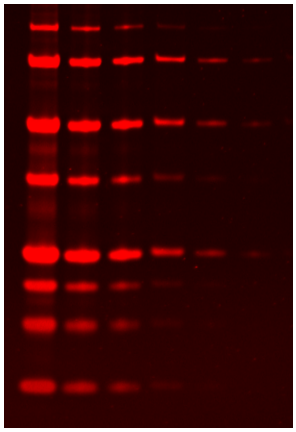
One-Step Blue™



One-Step Blue™, with optional NIR fluorescence detection (Odyssey® 700 or 800 channels).

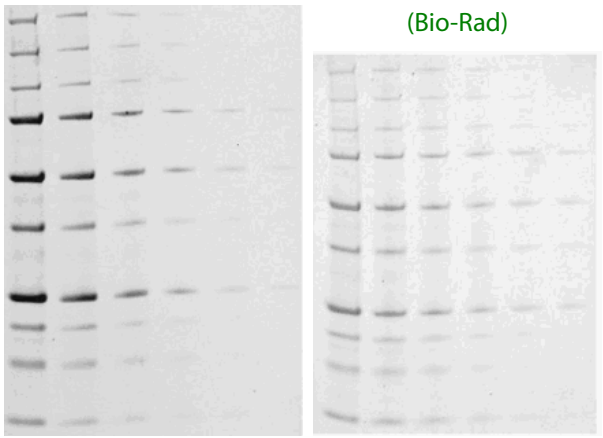
One-Step Lumitein™



One-Step Lumitein™, for UV gel box or Typhoon® detection.

One-Step Lumitein™ UV

Oriole®
(Bio-Rad)



One-Step Lumitein™ UV, for UV gel box detection. Note: The gels were the same size, but staining with Oriole® shrunk the gel.

Ordering Information

Cat.#	Product Name
21003	One-Step Blue™ Protein Gel Stain (1L)
21004	One-Step Lumitein™ Protein Gel Stain (1L or 4L)
21005	One-Step Lumitein™ UV Protein Gel Stain (1L or 4L)

Related Products

Cat.#	Product Name
22001	Ponceau S solution
30071	AccuOrange Protein Quantitation Kit
E90001	AccuLite 470 Mini Fluorometer
92315	Mix-n-Stain Alkaline Phosphatase Antibody Labeling Kit
41001	GelRed Nucleic Acid Gel Stain, 3X in water
92300	Mix-n-Stain HRP Antibody Labeling Kit
30015	DAB Substrate Kit
41014	PAGE GelRed Nucleic Acid Gel Stain, 1X in water
41005	GelGreen Nucleic Acid Gel Stain, 10,000X in water
41013	PAGE GelGreen Nucleic Acid Gel Stain, 1X in water

Please visit our website at www.biotium.com for information on our life science research products, including fluorescent CF™dye antibodies and other conjugates, near-infrared CF™ dye conjugates for western blotting, EvaGreen™ dye and master mixes for qPCR, apoptosis reagents, and other fluorescent probes, and kits for cell biology research.

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Revised: April 11, 2016

Product Information

One-Step Blue™ Protein Gel Stain, 1X

Catalog Number: 21003-1L

Unit Size:
21003-1L: 1 liter

Storage and Handling
Store at 4°C. Product is stable for at least 6 months from date of receipt when stored as recommended.

Spectral Properties
Abs: ~610 nm; Em: ~680 nm (broad)

Product Description

One-Step Blue™ is a ready-to-use protein gel staining solution. It produces fast (5-60 min) protein staining in a single step without fixation or washing. Proteins can be detected by visible blue staining, or by near-infrared fluorescence. In addition to rapid results and simple staining, One-Step Blue™ offers safer handling and disposal compared to Coomassie staining because it is entirely aqueous-based, without hazardous methanol or acetic acid. One-Step Blue™ 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 Blue™ has comparable sensitivity as the widely used Coomassie Blue, with a lower limit of detection around 10-20 ng depending on the detection method used (Figure 1). Note that staining intensity varies between proteins. The staining is fully compatible with mass spectrometry and Edman-based sequencing.

Biotium also offers One-Step Lumitein™, a rapid, easy-to-use, non-toxic red fluorescent protein gel stain for detection using a UV transilluminator or laser gel scanner, and One-Step Lumitein™ UV, a non-toxic red protein gel stain optimized for use with UV transilluminators (see related products).

Protocol

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

1. Staining: Mix One-Step Blue just before use by inverting the bottle several times. Place your unfixed gel in a clean container containing 25 mL of One-Step Blue per mini-gel. Bands may start to appear in a few minutes, depending on the amount of protein present. For best sensitivity, incubate the gel for 60 minutes with gentle rocking.

   Note: Blue particulates may be seen in the solution before or after adding your gel. This is normal and will not negatively affect staining.

   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 Blue 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 be done to reduce background (Figure 2). Gels can be destained in water for one hour to overnight with rocking.
3. Imaging and Quantitation: The gel can be photographed in visible light, or imaged using a standard densitometry-based imager. One-Step Blue dye also emits near infrared fluorescence, allowing staining to be detected with a near-IR fluorescence gel scanner, such as the LI-COR® Odyssey® imaging system, in either the 700 nm or 800 nm channel (Figure 1).

   Note: After staining, gels can be dried in cellophane according to standard protocols for Coomassie-stained gels.

   Note: For downstream analysis such as sequencing or mass spectrometry, gel slices can be processed the same way as Coomassie-stained gels.
4. Disposal: One-Step Blue 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 743 uL 1N sodium hydroxide per mL One-Step Blue and mix well. Alternatively, you can add 30 mg sodium hydroxide pellets per mL One-Step Blue and stir to dissolve completely.

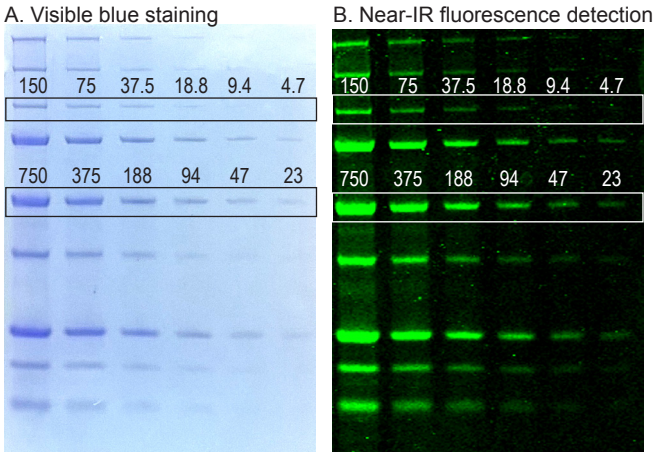

Figure 1. One-Step Blue-stained SDS-PAGE gel. Two-fold dilutions of Unstained Precision Plus Protein™ Standard (Bio-Rad) were separated on a 1 mm thick Novex® NuPage® 4-12% Bis-Tris MES mini-gel (Thermo Fisher). The gel was stained with One-Step Blue for 60 minutes. A) Visible blue staining. B) Near-infrared fluorescence in the 800 channel of a LI-COR® Odyssey®. Labels indicate approximate amount of protein (ng) in the boxed bands beneath.

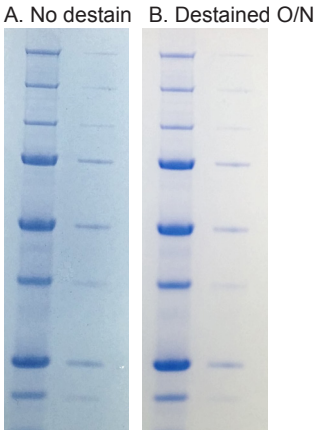

Figure 2. One-Step Blue-stained SDS-PAGE gel (A) immediately after staining, or (B) after destaining in water overnight.

Catalog No.	Product
21004-1L	One-Step Lumitein™ Protein Gel Stain
21005-1L	One-Step Lumitein™ UV 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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Revised: March 27, 2017

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)

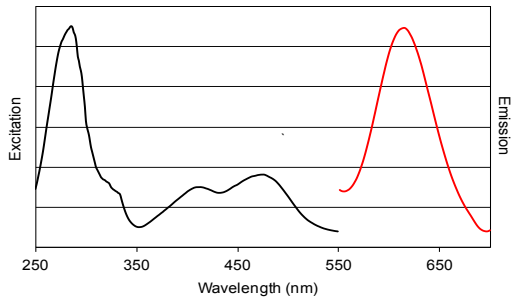

Figure 1. Excitation and emission spectra of One-Step Lumitein™ dye.

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.

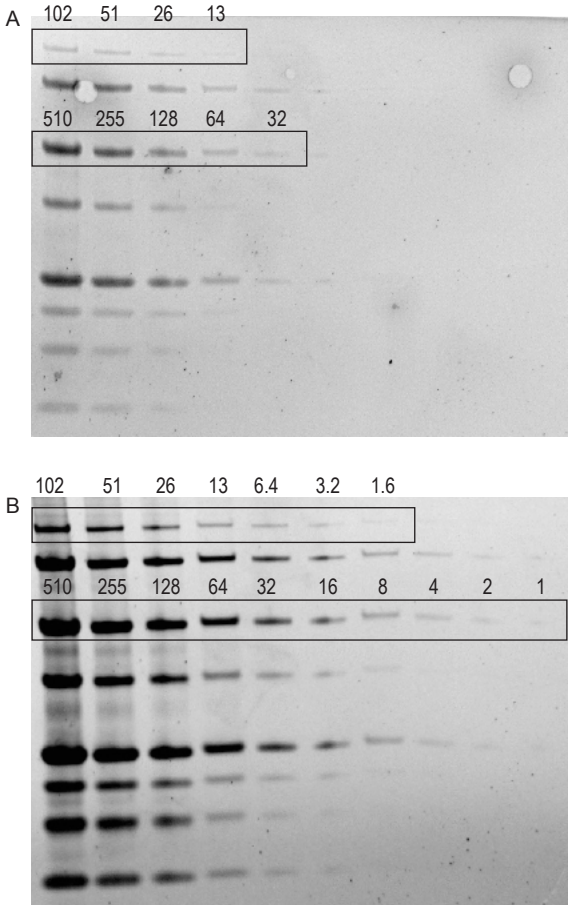

Figure 2. One-Step Lumitein-stained SDS-PAGE gel. Two-fold dilutions of Unstained Precision Plus Protein™ Standard (Bio-Rad) were separated on a 1 mm thick Novex® NuPage® 4-12% Bis-Tris MES mini-gel (Thermo Fisher). The gel was stained with One-Step Lumitein for 30 minutes without fixation, then imaged 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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Revised: March 27, 2017

Product Information

One-Step Lumitein™ UV Protein Gel Stain, 1X

Catalog Number: 21005-1L, 21005-4L

Unit Size:
21005-1L: 1 liter
21005-4L: 4 liter Cubitainer®

Storage and Handling
Store at 4ºC. Product is stable for at least 6 months from date of receipt.

Spectral Properties
Abs max: 288 nm; Em max: 603 nm (see Figure 1)

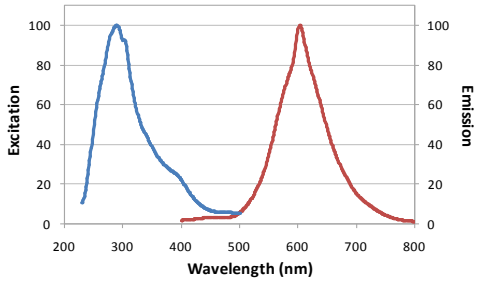

Figure 1. Excitation and emission spectra of One-Step Lumitein™ UV dye.

Product Description

One-Step Lumitein™ UV Protein Gel Stain is a ready-to-use luminescent protein gel stain designed for imaging using a UV transilluminator. One-Step Lumitein™ UV gel staining requires only a single 5-30 minute staining step without fixation. Destaining is optional. Moreover, One-Step Lumitein™ UV 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™ UV 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™ UV can detect as little as 1-10 ng of protein per band depending on the staining method used, although staining intensity varies between proteins (Figure 2). The results obtained with One-Step Lumitein™ UV are comparable to those with Oriole™ Fluorescent Gel Stain; however, One-Step Lumitein™ UV has a more convenient protocol, does not contain hazardous solvents, and does not cause gel shrinkage. Staining is fully compatible with mass spectrometry and Edman-based sequencing.

Biotium also offers One-Step Lumitein™ Protein Gel Stain (catalog number 21004), which can be imaged using a UV transilluminator, visible light gel imager, or laser-based gel scanner (such as a Typhoon® scanner). One-Step Lumitein™ UV gives a better signal on a UV box than One Step Lumitein™, but is not compatible with a blue light illuminator or laser-based scanner.

Also see our One-Step Blue™ Protein Gel Stain (catalog number 21003), a rapid, easy-to-use, non-toxic alternative to Coomassie staining for visible blue protein staining and optional near-infrared fluorescence-based gel imaging (see related products).

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 UV 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 30-60 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 UV 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 UV can be imaged with a UV transilluminator and an ethidium bromide filter.

   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 UV is a 100% aqueous-based solution that is 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 630 uL 1N sodium hydroxide per mL One-Step Lumitein UV and mix well. Alternatively, you can add 25 mg sodium hydroxide pellets per mL One-Step Lumitein UV and stir to dissolve completely.

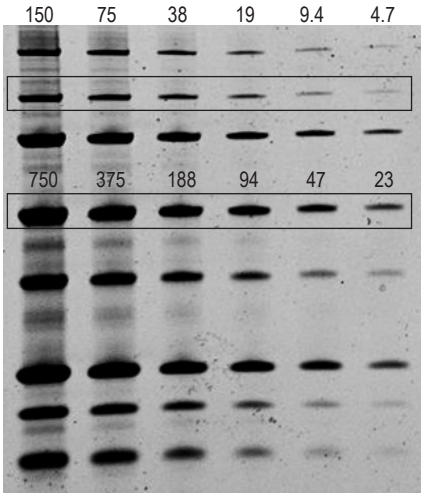

Figure 2. One-Step Lumitein UV-stained SDS-PAGE gel. Two-fold dilutions of Unstained Precision Plus Protein™ Standard (Bio-Rad) were separated on a 1 mm thick Novex® NuPage® 4-12% Bis-Tris MES mini-gel (Thermo Fisher). The gel was stained with One-Step Lumitein UV for 60 minutes without fixation, then imaged on a UV transilluminator with an ethidium bromide filter using a UVP GelDoc-It™ imaging system. The gel was imaged immediately, without destaining. Labels indicate approximate protein amounts (ng) in the boxed bands beneath.

Related Products

Catalog No.	Product
21003-1L	One-Step Blue™ Protein Gel Stain
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22001	Ponceau S Solution
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