

Safe Imager™ Blue-Light Transilluminator

Operating Instructions

Introduction

The Safe Imager™ blue-light transilluminator (Figure 1) is designed for viewing stained gels on the laboratory bench top. Light from the LED source inside the transilluminator passes through a blue filter producing a single-intensity signal at approximately 470 nm (Figure 2), effective for the excitation of SYBR® Safe DNA gel stain, as well as many of our other nucleic acid and protein stains such as SYBR® Gold, SYBR® Green I and II, SYPRO® Ruby, SYPRO® Orange, and Coomassie Fluor™ Orange stains. Sensitivity obtained using this instrument is comparable to that obtained with a standard UV transilluminator.

Unlike UV-transilluminators, the Safe Imager™ blue-light transilluminator does not produce UV light and does not require UV-protective equipment during use. Blue-light transillumination also results in dramatically increased cloning efficiencies compared to UV transillumination (Figure 3).

Safety Information

The Safe Imager™ blue-light transilluminator is an electrical device. Never touch the power cord or outlet with wet hands. Do not use this device in damp areas or while standing on damp floors.

The Safe Imager™ blue-light transilluminator is supplied with an international power cord. This power cord has a universal transformer (compatible with either 110 V or 220 V electrical outlets) and a selection of plug adaptors so that it may be used with any electricity supply. Only the power cord supplied to the Safe Imager™ blue-light transilluminator should be used to power the device. Attach the supplied power cord to the Safe Imager™ blue-light transilluminator at the back of the device. Plug the other end of the power cord into a properly grounded electrical outlet, ensuring the correct plug adaptor is attached. Always disconnect the Safe Imager™ blue-light transilluminator from the electrical outlet before cleaning the device.

The Safe Imager™ blue-light transilluminator does not produce UV-light. However, the intense blue light emitted by the Safe Imager™ may promote macular degeneration upon prolonged exposure, especially in those prone to such problems (e.g. people with fair complexion and blue eyes, nutritional or endocrine defects, or those who are aging). Use the Safe Imager™ amber filter unit or Safe Imager™ viewing glasses provided with this device to protect your eyes. The amber filter unit and viewing glasses are for viewing stained gels using the Safe Imager™ blue-light transilluminator. The amber filter unit is NOT a safety screen for UV emission, and will NOT protect your eyes when viewing gels on UV transilluminators. Although the viewing glasses do block UV light, they are not designed for use as UV safety glasses.



Figure 1. The Safe Imager™ blue-light transilluminator.

Do not leave the Safe Imager™ blue-light transilluminator switched on for extended periods of time. After viewing and documenting the gel or sample, always switch the unit off.

Do not attempt to open the Safe Imager™ blue-light transilluminator.

Operating the Safe Imager™ Blue-Light Transilluminator

1. Ensure that the Safe Imager™ blue-light transilluminator is placed on a level bench and that there is enough air circulation around the unit to prevent overheating. Plug the power cord into the outlet.

2. Before handling your gel or sample, ensure that the personal safety equipment you are using is appropriate for the hazards posed by the chemicals that may be present. Place the gel or sample onto the surface of the Safe Imager™ blue-light transilluminator.

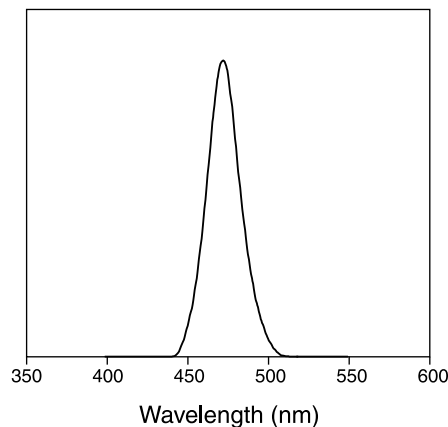


Figure 2. Emission spectrum for the Safe Imager™ blue-light transilluminator.

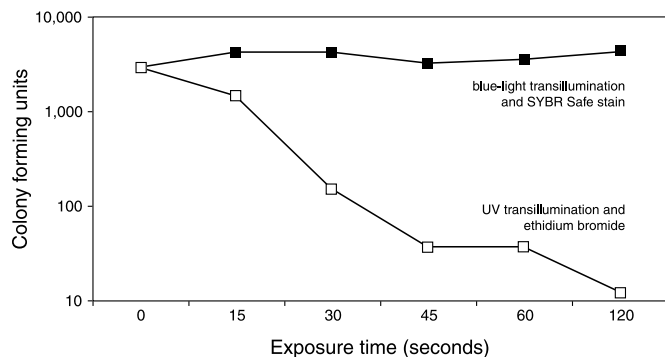


Figure 3. Gels loaded with equal amounts of a PCR product (1.25 kb gene fragment from Ultimate™ ORF 10H #11050) were stained with either SYBR® Safe DNA gel stain (1:10,000 in TBE) or ethidium bromide (0.5 µg/ml in TBE) following electrophoresis. The gel stained with SYBR® Safe stain was visualized on a blue-light box with light emission identical to that produced by the Safe Imager™ blue-light transilluminator. The ethidium bromide-stained gel was visualized using UV transillumination. Bands were excised at defined exposure times. DNA was purified from the gel fragments under identical conditions and used in parallel sub-cloning reactions. Following transformation into OneShot® TOP 10 chemically competent bacteria, three serial dilutions were plated and colonies counted using an Alpha Innotech imaging system. A summary of the results is shown above.

3. Place the amber filter unit on top of the sample or stained gel. If you are using a gel that is larger than the viewing area you may rest the amber filter unit directly on top of the gel, or forgo the amber filter unit and rely solely on the viewing glasses. The viewing glasses are also useful when excising bands from DNA gels, as they allow the bands to be visualized while leaving the gel surface unobstructed. Make sure to use either the Safe Imager™ amber filter unit or Safe Imager™ viewing glasses; they not only help to visualize the SYBR®-stained DNA, but also prevent prolonged exposure of your eyes to the intense blue light.

4. Switch the Safe Imager™ transilluminator ON using the ON/OFF switch located at the front of the instrument. Any SYBR®-stained DNA present (in solution or in gel bands) should be immediately visible after the light is on and the amber filter unit or viewing glasses are in position.

5. To document your results you may use any standard imaging device. Due to the small footprint, the Safe Imager™ blue-light transilluminator may fit inside the cabinet of your current gel documentation system. In many cases, satisfactory results are obtained by placing the amber filter unit on top of the gel and photographing/imaging as normal. The Safe Imager™ blue-light transilluminator does have a very slim design compared to UV transilluminators; the distance between the camera and the gel may have to be adjusted. In addition some CCD documentation systems may include a filter that will work in place of the amber filter unit (contact the manufacturer for filter specifications).

6. After viewing or documenting the results, switch the Safe Imager™ blue-light transilluminator off. The Safe Imager™ blue-light transilluminator can be cleaned with a dry cloth, or with water and mild soap. Ethanol may also be used. Avoid damaging or scratching the glass surface of the Safe Imager™ blue-light transilluminator with abrasive cleaners, sharp instruments, or harsh solvents. Before cleaning the instrument, disconnect it from the electrical outlet.

Instrument Specifications

- **Viewing surface dimensions:** 20 × 20 cm (7.87 × 7.87 in)
- **Overall dimensions:** 28 × 31 × 7 cm (11 × 12.25 × 2.75 in)
- **LED life:** 100,000 hours
- **Included accessories:** amber filter unit and viewing glasses for viewing results

Product List *Current prices may be obtained from our website or from our Customer Service Department.*

Cat #	Product Name	Unit Size
S37102	Safe Imager™ blue-light transilluminator.....	each
S37103	Safe Imager™ viewing glasses.....	each

The Safe Imager™ blue-light transilluminator in combination with SYBR® Safe DNA gel stain offers the complete safety solution for staining and visualizing DNA gels.

Cat #	Product Name	Unit Size
S33100	SYBR® Safe DNA gel stain in 0.5X TBE	1 L
S33101	SYBR® Safe DNA gel stain in 0.5X TBE	4 L
S33102	SYBR® Safe DNA gel stain *10,000X concentrate in DMSO*	400 µL
S33111	SYBR® Safe DNA gel stain in 1X TAE	1 L
S33112	SYBR® Safe DNA gel stain in 1X TAE	4 L

The Safe Imager™ blue-light transilluminator can also be used for the visualization of nucleic acid gels stained with the following fluorescent dyes:

Cat #	Product Name	Unit Size
C33250	Coomassie Fluor™ Orange protein gel stain *ready-to-use solution*	1 L
C33251	Coomassie Fluor™ Orange protein gel stain *ready-to-use solution* *bulk packaging*	5 L
S11494	SYBR® Gold nucleic acid gel stain *10,000X concentrate in DMSO*	500 µL
S12000	SYPRO® Ruby protein gel stain.....	1 L

S12001	SYPRO® Ruby protein gel stain.....	200 mL
S21900	SYPRO® Ruby protein gel stain *bulk packaging*	5 L
S6650	SYPRO® Orange protein gel stain *5000X concentrate in DMSO*	500 µL
S7563	SYBR® Green I nucleic acid gel stain *10,000X concentrate in DMSO*	500 µL
S7564	SYBR® Green II RNA gel stain *10,000X concentrate in DMSO*	500 µL
S7567	SYBR® Green I nucleic acid gel stain *10,000X concentrate in DMSO*	1 mL
S7568	SYBR® Green II RNA gel stain *10,000X concentrate in DMSO*	1 mL
S7580	SYBR® Green Nucleic Acid Gel Stain Starter Kit.....	1 kit

Product List *Products and current prices may be obtained from Invitrogen (www.invitrogen.com).*

Cat #	Product Name	Unit Size
G5218-01	E-Gel® 1.2% with SYBR® Safe	18 gels
G6206-01	E-Gel® 1.2% with SYBR® Safe Starter Kit	1 kit
G5218-02	E-Gel® 2.0% with SYBR® Safe	18 gels
G6206-02	E-Gel® 2.0% with SYBR® Safe Starter Kit	1 kit

Contact Information

Further information on Molecular Probes products, including product bibliographies, is available from your local distributor or directly from Molecular Probes. Customers in Europe, Africa and the Middle East should contact our office in Paisley, United Kingdom. All others should contact our Technical Service Department in Eugene, Oregon.

Please visit our website—probes.invitrogen.com—for the most up-to-date information.

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This device contains Class 1 LED products.

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