Fast Blast™ DNA Stain (500x)

100 ml

Instruction Manual

Catalog #166-0420EDU

Store at room temperature. Stable for 1 year from purchase.

BIO-RAD

Table of Contents

Section 1
Introduction

Fast Blast DNA stain is a convenient, safe, and nontoxic alternative to ethidium bromide for the detection of DNA in agarose gels following electrophoresis. Fast Blast contains a cationic compound that is in the thiazin family of dyes. The positively charged dye molecules are attracted to and bind to the negatively charged phosphate groups on DNA molecules. The proprietary dye formula stains DNA deep blue in agarose gels and provides vivid, consistent results. Fast Blast DNA stain is provided as a 500x concentrate that must be diluted prior to use. The stain can be used as a quick stain when diluted to 100x or as an overnight stain when diluted to 1x, making it ideal for classroom use. Fast Blast can also be added to an agarose gel and electrophoresis buffer to stain DNA while the gel is running (visit **explorer.bio-rad.com** for more detailed information).

Agarose gels stained with Fast Blast DNA stain can be air-dried on our unique gel support film for agarose (catalog #170-2984EDU). Once dried, stained gels can

be taped into a laboratory notebook as a permanent record of the experiment.

Fast Blast DNA stain is a versatile stain that can also be used as a nuclear stain for cheek cells or simply electrophoresed on agarose gels to teach students about basic principles of electrophoresis (visit **explorer.bio-rad.com** for more detailed information).

Section 2
Features of Fast Blast DNA Stain

Safety

Fast Blast DNA stain is nontoxic and noncarcinogenic, and the waste generated is not considered hazardous. Although the stain is nontoxic, latex or vinyl gloves should be worn while handling the stain or stained gels to keep hands from becoming stained blue. Lab coats or other protective clothing should be worn to avoid staining clothes. Dispose of the staining solutions according to protocols at your facility.

Use either 10% bleach solution or a 70% alcohol solution to remove Fast Blast from most surfaces. Verify that these solutions do not harm the surface prior to use.

Cost Effectiveness

Fast Blast DNA stain provides an inexpensive method of documenting the results of DNA electrophoresis experiments. Gels stained with Fast Blast can simply be dried on gel support film for agarose and taped into a laboratory notebook, eliminating the need to purchase expensive gel documentation equipment. At the

100x strength, Fast Blast can be reused for quick staining at least 7 times. The 500x concentrate also makes up to 50 L of 1x solution for overnight staining, making it a more cost-effective product than many other comparable stains on the market.

Timing

Because Fast Blast is a nonfluorescent visible stain, the staining protocol takes longer than traditional fluorescent DNA stains such as ethidium bromide that give rapid results. Fast Blast can be used as a quick stain to visualize DNA within 15 min, or can be diluted for overnight staining.

Sensitivity

The sensitivity of Fast Blast DNA stain is more than sufficient for most teaching lab applications. Fast Blast allows the visualization of as little as 50 ng of DNA resolved in an agarose gel when used as either a quick stain or an overnight stain.

Section 3
Directions for Using Fast Blast DNA Stain

Below are two protocols for using Fast Blast DNA stain in the classroom. Use protocol 1 for quick staining of gels to visualize DNA bands within 15 min, and protocol 2 for overnight staining. Visit **explorer.bio-rad.com** for additional protocols for using this stain as a nuclear stain for cheek cells or as an in-gel stain during electrophoresis.

Protocol 1: Quick Staining of Agarose Gels in 100x Fast Blast DNA Stain

This protocol allows quick visualization of DNA bands in agarose gels within 15 min. For quick staining, Fast Blast DNA stain (500x) should be diluted to a 100x concentration. We recommend using 120 ml of 100x Fast Blast to stain two 7 x 7 cm or 7 x 10 cm agarose gels in individual staining trays provided in Bio-Rad's education kits. If alternative staining trays are used, add a sufficient volume of staining solution to completely submerge the gels.

Following electrophoresis, agarose gels must be removed from their gel trays before being placed in the staining solution. This is easily accomplished by holding the base of the gel tray in one hand and gently pushing out the gel with the thumb of the other hand. Because the gel is fragile, special attention must be given when handling it. We highly recommend using a large spatula or other supportive surface to transfer the gel from one container to another. Destaining requires the use of at least one large-volume container, capable of holding at least 500 ml, at each student workstation. Each student team may utilize separate washing containers for each wash step, or simply use a single container that is emptied after each wash and refilled for the next wash.

1. Prepare 100x Fast Blast DNA stain

Dilute 100 ml of 500x Fast Blast DNA stain with 400 ml of deionized water in an appropriately sized flask and mix. Cover the flask and store at room temperature until ready to use.

2. Stain gel (2–3 min)

Pour 100x stain into a gel staining tray. Remove the gel from the gel tray and carefully slide it into the staining tray containing the stain. If necessary, add more 100x stain to completely submerge the gel. Stain the gel for 2–3 min, but not for

more than 3 min. Using a funnel, pour the 100x stain into a storage bottle and save it for future use. The stain can be reused at least 7 times.

3. Rinse gel (10 sec)

Transfer the gel into a large container containing 500–700 ml of clean, warm (40–55°C) tap water. Gently shake the gel in the water for ~10 sec to rinse.

4. Wash gel (5 min)

Transfer the gel into a large container with 500–700 ml of clean, warm tap water. Gently rock or shake the gel on a rocking platform (catalog #166-0609EDU) for 5 min. If no rocking platform is available, move the gel gently in the water once every minute.

5. Wash gel (5 min)

Perform a second wash as in step 4.

6. Analyze results

Examine the stained gel for expected DNA bands. The bands may appear fuzzy immediately after the second wash, but will begin to develop into sharper bands within 5–15 min after the second wash. This is due to Fast Blast dye molecules migrating into the gel and binding more tightly to the DNA molecules.

To obtain maximum contrast, additional washes in warm water may be necessary. Destain to the desired level, but do not wash the gel in water overnight. If you cannot complete the destaining in the allocated time, you may transfer the gel to 1x Fast Blast stain for overnight staining. See Protocol 2.

7. Dry gel

Place the gel onto the hydrophilic side of a sheet of gel support film. Let the gel dry in a well-ventilated area, but avoid exposure of the stained gel to direct light. The stained gel will fade if left exposed to direct light for an extended period of time. (The DNA bands will reappear if the gel is stored in the dark for 2–3 weeks after fading.)

Protocol 2: Overnight Staining of Agarose Gels in 1x Fast Blast DNA Stain

For overnight staining, Fast Blast DNA stain (500x) should be diluted to a 1x concentration. We recommend using 120 ml of 1x Fast Blast to stain two 7 x 7 cm or 7 x 10 cm agarose gels in individual staining trays provided in Bio-Rad's education kits. If alternative staining trays are used, add a sufficient volume of staining solution to completely submerge the gels.

Following DNA electrophoresis, agarose gels must be removed from their gel trays before being placed in the staining solution. This is easily accomplished by holding the base of the gel tray in one hand and gently pushing out the gel with the thumb of the other hand. Because the gel is fragile, special attention must be given when handling it.

1. Prepare 1x Fast Blast DNA stain

Add 1 ml of 500x Fast Blast to 499 ml of deionized water in an appropriately sized flask and mix. If you already have a 100x Fast Blast solution, add 5 ml of 100x Fast Blast to 495 ml of deionized water and mix. Cover the flask and store at room temperature.

2. Stain gel (overnight)

Pour 1x stain into a gel staining tray. Remove the gel from the gel tray and carefully slide it into the staining tray containing the stain. If necessary, add more 1x staining solution to completely submerge the gel. Place the staining tray on a rocking platform and agitate overnight. If no rocking platform is available, agitate the gel staining tray a few times during the staining period. You should begin to see DNA bands after 2 hr, but at least 8 hr of staining is recommended for complete visibility of stained bands.

3. Analyze results

No destaining is required after staining with 1x Fast Blast. The gels can be analyzed immediately after staining.

4. Dry gel

Place the gel onto the hydrophilic side of a sheet of gel support film. Let the gel dry in a well-ventilated area, but avoid exposure of the stained gel to direct light. The stained gel will fade if left exposed to direct light for an extended period of time. (The DNA bands will reappear if the gel is stored in the dark for 2–3 weeks after fading.)

Section 4
Ordering Information

Catalog #	Description
161-3100EDU	Molecular Biology Agarose, 25 g
166-0401EDU	DNA Sample Loading Buffer, 5x, 1 ml
170-2984EDU	Gel Support Film, for drying agarose gels, 50 sheets
161-0733EDU	TBE Buffer, 10x, 1 L
161-0743EDU	TAE Buffer, 50x, 1 L
170-4467EDU	Mini-Sub® Cell GT Cell, with 7 x 10 cm tray and gel caster, 8-well and 15-well combs
165-5050EDU	PowerPac™ Basic Power Supply
166-0609EDU	UltraRocker™ Rocking Platform
170-8356EDU	EZ Load™ Precision Molecular Mass Ruler
161-3057EDU	ReadyAgarose™ Gel, 1%, TAE, 2 x 8-well
166-0007EDU	DNA Fingerprinting Kit, supports 8 workstations or 32 students
166-2100EDU	PV92 PCR/Informatics Kit, supports 8 workstations or 32 students
166-0001EDU	Analysis of Precut Lambda DNA Kit, supports 8 workstations or 32 students
166-0002EDU	Restriction Digestion and Analysis of Lambda DNA Kit, supports 8 workstations or 32 students

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