SMOBiO®

Small Bio, Smart Tool

Italian version 2017

DNA Ladders and Dyes

DNA Amplification

Illuminator

Protein Markers and Stain

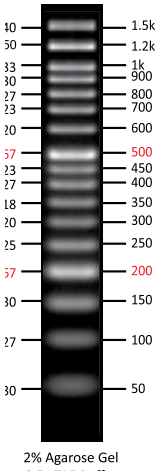
Original Manufacturing

Distributed in Italy by:

Bio-Cell

ExcelBand™ 50 bp DNA Ladder

DM1100 (500 µl)



2% Agarose Gel

Description

The DM1100 ExcelBand™ 50 bp DNA Ladder is a ready-to-use DNA ladder, which is pre-mixed with loading dye for direct gel loading. The DM1100 DNA ladder is composed of 17 individual DNA fragments: 1.5k, 1.2k, 1k, 900, 800, 700, 600, 500, 450, 400, 350, 300, 250, 200, 150, 100 and 50 bp derived from a mixture of PCR products and specifically digested plasmid DNA. This product contains two enhanced bands (500 bp and 200 bp) for easy reference. In addition, the low range Orange G tracking dye mimics the migration of a 50 bp dsDNA during electrophoresis, and allows for real time monitoring.

Source
Phenol extracted PCR products and dsDNA digested with specific restriction enzymes, equilibrated in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

Range
50 ~ 1,500 bp

Concentration
54 µg/ 500 µl

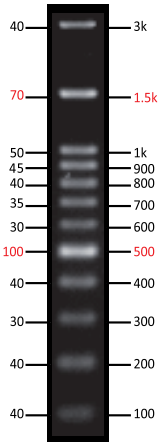
Recommended loading volume
5 µl/ well

Storage

Room temperature	≥ 6 months
4°C	≥ 12 months
-20°C	≥ 36 months

ExcelBand™ 100 bp+3K DNA Ladder

DM2300 (500 µl)



1.5% Agarose Gel
0.5x TAE Buffer

Description

The DM2300 ExcelBand™ 100 bp+3K DNA Ladder is a ready-to-use DNA ladder, which is pre-mixed with loading dye for direct gel loading. The DM2300 DNA ladder is composed of 12 individual DNA fragments: 3k, 1.5k, 1k, 900, 800, 700, 600, 500, 400, 300, 200 and 100 bp derived from a mixture of PCR products and specifically digested plasmid DNA. This product contains two enhanced bands (1.5 kb and 500 bp) for easy reference. In addition, two tracking dyes, Xylene cyanol FF and Orange G which mimic the migration of 4,000 bp and 50 bp dsDNA during electrophoresis are added for real time monitoring.

Source
Phenol extracted PCR products and dsDNA digested with specific restriction enzymes, equilibrated in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

Range
100 ~ 3,000 bp

Concentration
56 µg/ 500 µl

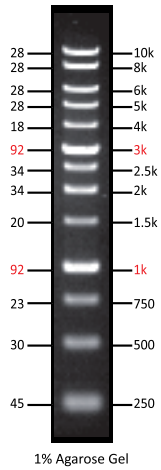
Recommended loading volume
5 µl/ well

Storage

Room temperature	≥ 6 months
4°C	≥ 12 months
-20°C	≥ 36 months

ExcelBand™ 1 KB (0.25-10 kb) DNA Ladder

DM3100 (500 µl)



1% Agarose Gel
0.5x TAE Buffer

Description

The DM3100 ExcelBand™ 1 KB (0.25-10 kb) DNA Ladder is a ready-to-use DNA ladder, which is pre-mixed with loading dye for direct gel loading. The DNA ladder DM3100 is composed of 13 individual DNA fragments: 10k, 8k, 6k, 5k, 4k, 3k, 2.5k, 2k, 1.5k, 1k, 750, 500, and 250 bp derived from a mixture of PCR products and specifically digested plasmid DNA. This product contains two enhanced bands (3 kb and 1 kb) for easy reference. In addition, two tracking dyes, Xylene cyanol FF and Bromophenol blue which mimic the migration of 4,000 bp and 500 bp dsDNA during electrophoresis are added for real time monitoring.

Source
Phenol extracted PCR products and dsDNA digested with specific restriction enzymes, equilibrated in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

Range
250 ~ 10,000 bp

Concentration
50 µg/ 500 µl

Recommended loading volume
5 µl/ well

Storage

Room temperature	≥ 6 months
4°C	≥ 12 months
-20°C	≥ 36 months

FluoroVue™ Nucleic Acid Gel Stain (10,000X)

NS1000 (500 µl) **NS1001** (500 µl × 5)

Description

FluoroVue™ Nucleic Acid Gel Stain (10,000X) is specially designed for in-gel use and is a safer replacement for conventional Ethidium bromide (EtBr), which poses a significant health and safety hazard its users (Fig.3). It is a fluorescent stain which offers high sensitivity detection of double-stranded or single-stranded DNA and RNA in a convenient manner. FluoroVue™ Nucleic Acid Gel Stain offers high sensitivity (Table 1 and Fig.1) that is several times greater than EtBr.

FluoroVue™ Nucleic Acid Gel Stain is compatible with both conventional UV gel-illumination systems as well as harmless long wavelength blue light illumination systems, like B-BOX™. When bound to nucleic acids, FluoroVue™ Nucleic Acid Gel Stain has a fluorescent excitation maximum of ~250 and ~482 nm, and an emission maximum of ~509 nm (Fig. 2). Therefore, it can replace EtBr without the need of changing existing lab imaging systems.

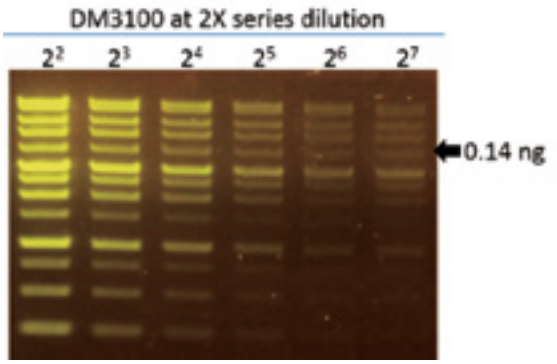


Fig. 1. The FluoroVue™ Nucleic Acid Gel Stain shows a green-yellow fluorescence under blue light excitation. The sensitivity of NS1000 is about 0.14 ng (arrow) for a 4 kb fragment

Contents

Proprietary dye in a 10,000X concentration.

Storage

Protected from light

4°C ≥ 24 months

Staining methods[1]	Required dye[2]	Sensitivity[3]	Convenience
In- gel staining	4 µl	0.14 ng	Very good
Staining during electrophoresis	30 µl	0.56 ng	Very good
Post stain	10 µl	0.56 ng	Good

Table 1. Different staining methods for using the FluoroVue™ Nucleic Acid Gel Stain

1 For detailed protocols of different staining methods: please see the product information. We recommend using an in-gel staining method for optimal effect.

2 With a mini horizontal gel electrophoresis system: Combine 40 ml of agarose gel with 300 ml running buffer. The regular post staining buffer volume is 100 ml.

3 Sensitivity is evaluated according to the 4 kb band of DM3100.

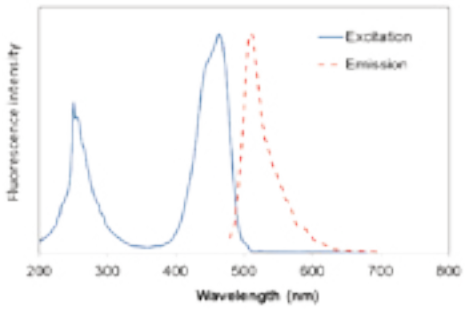


Fig. 2. The emission and exitation spectrum of FluoroVue™ Nucleic Acid Gel Stain

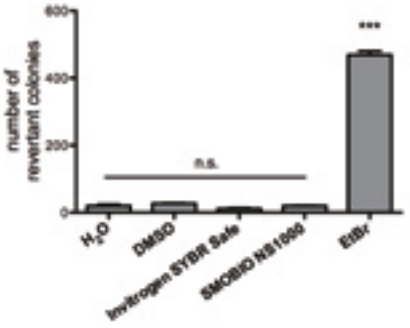


Fig. 3. FluoroVue™ Nucleic Acid Gel Stain shows no mutagenic activity in the Ames test.

ExcelTaq™ 5X Fluorescent PCR Master Mix

TP1260 (200 Rxn)

Description

The ExcelTaq™ 5X Fluorescent PCR Master Mix is a ready-to-use mixture for amplifying targeted DNA fragments. It is designed to serve as ready-to-use master mix for virtually all PCR applications. The ExcelTaq™ 5X Fluorescent PCR Master Mix is supplied as a 5X concentrated ready-to-use mixture containing all the essential ingredients for PCR with the exception of template and primers. In addition, the mixture contains a tracking dye (Bromophenol blue), and a safer fluorescent DNA staining dye, which enables the user to track the electrophoresis process in real time as well as eliminating the need for staining process. The resultant PCR reaction mixture is sufficiently dense enough to be loaded directly into 1X TAE or 1X TBE buff er for electrophoresis.

Features

- 5'→3' DNA polymerase activity
- No detectable 3'→5' exonuclease (proofreading) activity
- Generates PCR products with 3'-dA overhangs
- High throughput PCR
- High Yield PCR
- High reproducibility, less pipetting errors
- Load directly into electrophoresis
- NA bands can be visualized directly under UV or 470 nm blue light illumination

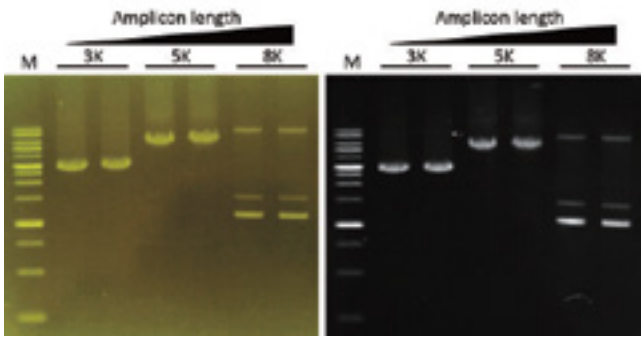
Contents

ExcelTaq™ 5X Fluorescent PCR Master Mix: 2 x 1 ml.

Storage

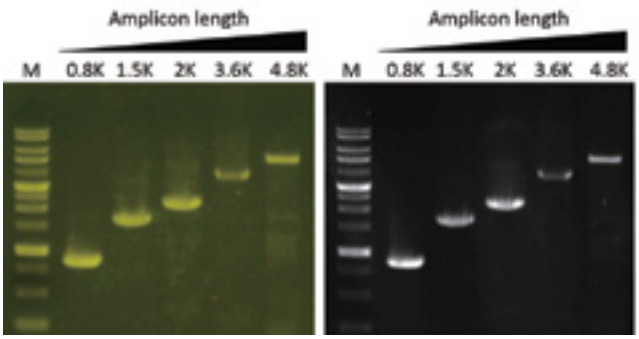
Protected from light

4°C	≥ 6 months
-20°C	≥ 24 months



Viewed with B-Box™ Viewed with UV light

Fig. 1. λDNA was amplified with ExcelTaq™ 5X Fluorescent PCR Master Mix. The λDNA was amplified with specific primers for amplifying different ranges. The pictures were captured under B-BOX™ blue light (left). While using UV light (right), the amplicons can be seen in the right picture (M: DM 3160).



Viewed with B-Box™ Viewed with UV light

Fig. 2. Colony PCR with ExcelTaq™ 5X Fluorescent PCR Master Dye Mix. The JM109 or modified JM109 was used for amplifying the genomic galactosidase Z gene. The pictures were captured under B-BOX™ blu light (left). While using UV light (right), the amplicons can be seen in the right picture (M: DM 3160).

B-BOX™ Blue Light LED epi-illuminator

VE0100

Description

SMOBIO's B-BOX™ is a long wavelength, blue light LED epi-illuminator. It is compact in design and robust in construction. TheB-BOX™epi-illuminator provides an unprecedented level of safety for its user due to its non-UV light source and a low operating voltage of only 12 Volts, as well as its capability in working with non-carcinogenic DNA/ protein dye. The B-BOX™ comes with high quality non-flickering LED light that is highly sensitive for DNA and protein dye. B-BOX™ can greatly ease the routine chore of gel extraction, enabling easy visualization and gel cutting even in bright ambient light. The multi-angle filter plate (Cat. No. VE0102) provides optimal angles for gel cutting, visualization, and documentation. The B-BOX™ also comes with amber colored filter goggles (Cat. No. VE0103) for gel cutting and visualization. The Phox™ Photobox (Cat. No. VE0104) provides a mini darkroom environment for images taken with any smartphone. Finally, a built-in barrier system around the working area helps facilitate cleaning.

Features

- Improved cloning efficiency
- Compact, lightweight, and portable (less than 1 kg (in weight)
- Safety features include 470 nm long wavelength, without any UV radiation hazard to its user
- Compatible with non-carcinogenic, non-ethidium bromide DNA staining dye
- User friendly: Samples are easy to visualize (when using the filt er plate or goggles)
- LED light source lasts up to 50,000 hours
- Superior detection sensitivity: ≤ 0.04 ng of DNA when using FluoroStain™ DNA Fluorescent Staining Dye, ≤3 ng of protein when using FluoroStain™ Protein Fluorescent Staining Dye (as sensitive as silver stain)
- Adjustable and removable filter plate allows for gel cutting, visualization, and documentation
- Built-in barrier design, for easy clean up
- Visible in bright ambient light
- Emphasizes minimal power reliance, low heat generation, with its own built-in heat sink

Physical Specifications

Overall Dimensions (mm)
201.4 x 200 x 38 (D x W x H)

Viewing Area (mm)
158 x 96 (D x W)

Wavelength of LEDs (nm)
470

Number of LED Units
72 Super Flux LEDs

LED Life
Up to 50,000 hours

Power
12 Volt DC , 0.72 Amp

Electrical Requirements
AC 100~240 V, 50/ 60 Hz (Adapter)

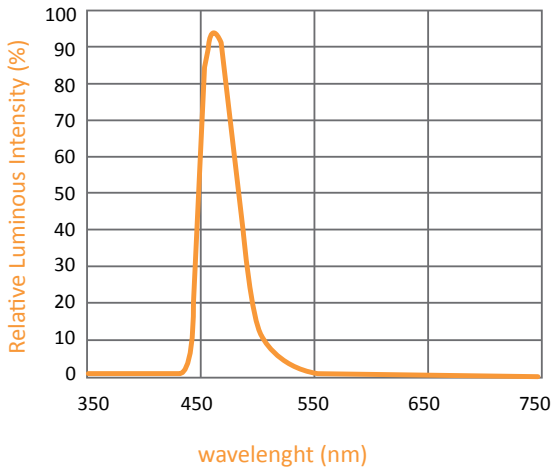
Weight (kg)
0.95kg (Net Weight)

Shipping Weight (kg)
1.0 (Gross Weight) – Adapter (0.5 kg) not included

Material
ASA for housing; tempered glass working area

Recommended Dyes

- ExcelDye™ DNA Fluorescent Loading Dye
- FluoroDye™ DNA Fluorescent Staining Dye
- FluoroStain™ Protein Fluorescent Staining Dye
- FluoroVue™ Nucleic Acid Gel Stain
- SYBR Green I Nucleic Acid Gel Stain.



FluoroStain™ Protein Fluorescent Staining Dye (Red, 1000X)

PS1000 (1 ml) **PS1001** (1 ml x 5)

Description

The FluoroStain™ Protein Fluorescent Staining Dye (Red, 1000X) is designed to substitute the common Coomassie Blue protein staining method, offering greater sensitivity and ease of operation. Unlike Coomassie Blue stain, the FluoroStain™ Protein Fluorescent Staining Dye binds to protein with high specificity, making destaining process an option rather than a requirement. With further reduction of background signals via destaining process, the FluoroStain™ Protein Fluorescent Staining Dye is capable of achieving detection level parallel to silver stain without specialized imaging equipment (Fig. 1), making it one of the most sensitive dyes available. In addition to its remarkable sensitivity, the FluoroStain™ Protein Fluorescent Staining Dye brings a more reliable and safer user experience, since the stained gel can be visualized with blue-light illumination, users avoid the risk of skin/eye damage caused by UV light. For best result, we suggest using the B-BOX™ Blue Light LED epi-illuminator to visualize and analyze the gel stained with FluoroStain™ Protein Fl uorescent St aining Dye.

The FluoroStain™ Protein Fluorescent Staining Dye is compatible to the analysisof mass spectra, i.e. LC-MS/MS, MALDI-TOF, etc. (Fig. 2). The FluoroStain™ Protein Fluorescent Staining Dye is also for a less toxic (Fig. 4) and more environmentally-friendly procedure for protein staining, because it's designed to be used in a aqueous solution of ethanol and phosphoric acid for staining, avoiding the use of conventional methanol/acetic acid solution which is much more harmful and stimulating.

Spectral Characteristics

When it is bound with bovine serum albumin (BSA), the fluorescent emission of FluoroStain™ Protein Fluorescent Staining Dye can be excited by UV and blue light sources, with excitation peaks around 369 and 517 nm and emission at 605 nm (Fig. 3). In absence of BSA, FluoroStain™ Protein Fluorescent Staining

Dye shows ignorable fluorescence as compared with protein-bound form, therefore giving a clear background for photographic analysis. These spectral characteristics made this fluorescent dye compatible with a wide variety of gel reading facilities, including UV/blue light epi- and transilluminator, argon laser and mer cury-arc lamp excitation gel scanners.

Working Reagent preparation

1:1000 dilution in 40% ethanol and 2% H_3PO_4.

Storage

Protected from light

-20°C ≥ 12 months

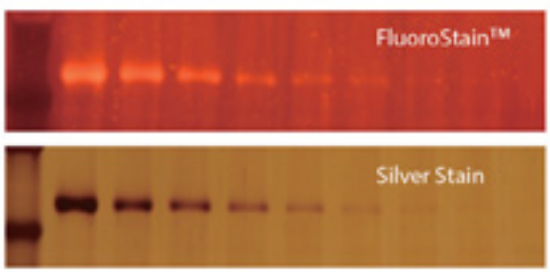


Fig. 1. Comparison of FluoroStain™ Protein Fluorescent Staining Dye with Silver stain of a 2X serially diluted BSA sample.

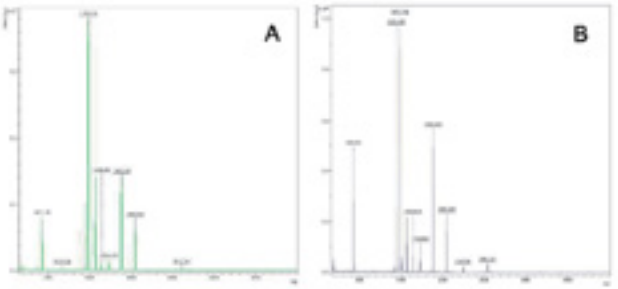


Fig. 2. Comparison of MALDI-TOF mass spectra of bovine serum albumin (BSA) stained with FluoroStain™ Protein Fluorescent Staining Dye (A) and with Coomassie Blue (B). BSA proteins are seperated on an SDS-PAGE, stained with fluorescent dye or conventional Coomassive Blue, followed by trypsin digestion in gel, and then analy zed b y MA LDI-TOF.

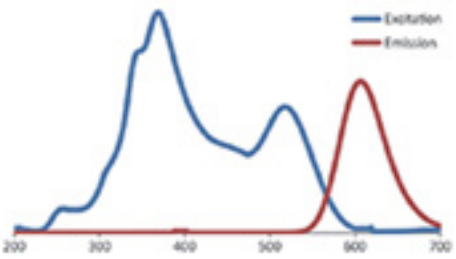


Fig. 3. Excitation and emission spectrum of FluoroStain™ Protein Fluor escent Staining Dye.

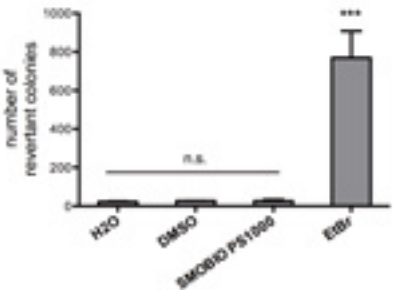
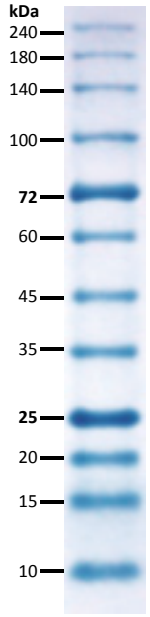


Fig. 4. Fluoro stainTM Protein Fluorescent Staining Dye shows no mutagenic activity in the Ames test.

ExcelBand™ All Blue Broad Range Protein Marker (9-240 kDa)

PM1700 (250 µl × 2)



4-20% Tris-Glycine

Description

The PM1700 ExcelBand™ All Blue Broad Range Protein Marker is a blue protein standard with 12 pre-stained proteins covering a wide range of molecular weights from 10 to 240 kDa in Tris-Glycine buffer (9 to 235 kDa in Bis-Tris (MOPS) buffer and Bis-Tris (MES) buffer). Proteins are covalently coupled with a blue chromophore, and two reference bands (at 25 kDa and 72 kDa, respectively) are enhanced in intensity when separated on SDS-PAGE (Tris-Glycine buffer).

The PM1700 ExcelBand™ All Blue Broad Range Protein Marker is designed for monitoring protein separation during SDS-polyacrylamide gel electrophoresis, verification of Western transfer efficiency on membranes (nitrocellulose, PVDF, or nylon) and for approximating the size of proteins.

Contents

Approximately 0.1~0.5 mg/ml of each protein in the buffer (20 mM Tris-phosphate (pH 7.5), 2% SDS, 0.2 mM DTT, 3.6 M Urea, and 15% (v/v) Glycerol).

Quality Control

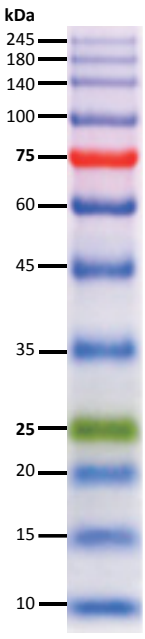
Under suggested conditions, the PM1700 ExcelBand™ All Blue Broad Range Protein Marker resolves 12 major bands in 15% SDS-PAGE (Tris-Glycine buffer) and after Western blotting to a nitrocellulose membrane.

Storage

4°C	≥ 3 months
-20°C	≥ 24 months

ExcelBand™ Enhanced 3-color High Range Protein Marker (9-245 kDa)

PM2610 (250 µl × 2) **PM2611** (250 µl × 10)



12 % Tris-Glycine

Description

The PM2610 ExcelBand™ Enhanced 3-color High Range Protein Marker is a ready-to-use three-color protein standard with 12 pre-stained proteins covering a wide range of molecular weights from 10 to 245 kDa in Tris-Glycine Buffer (9 to 235 kDa in Bis-Tris (MOPS) buffer and 10 to 235 kDa in Bis-Tris (MES) buffer). Proteins are covalently coupled with a blue chromophore except for two reference **green** and **red** bands (25 kDa and 75 kDa, respectively) when separated on SDS-PAGE (Tris-Glycine buffer). The ExcelBand™ Enhanced 3-color High Range Protein Marker is designed for monitoring protein separation during SDS-polyacrylamide gel electrophoresis, verification of Western transfer efficiency on membranes (nitrocellulose, PVDF, or nylon) and for approximating the size of proteins.

Contents

Approximately 0.2~0.6 mg/ml of each protein in the buffer (20 mM Tris-phosphate (pH 7.5), 2% SDS, 3.6 M Urea, and 15% (v/v) Glycerol).

Quality Control

Under suggested conditions, the PM2610/ PM2611 ExcelBand™ Enhanced 3-color High Range Protein Marker resolves 12 major bands in 15% SDS-PAGE (Tris-Glycine buffer) and after Western blotting to a nitrocellulose membrane.

Storage

4°C	≥ 3 months
-20°C	≥ 24 months

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