

Silver Staining Kit, Protein Silver Staining Kit, DNA

Data File

PlusOne® electrophoresis chemicals

Introduction

PlusOne® Silver Staining Kit, Protein and PlusOne® DNA Silver Staining Kit* are two silver staining Kits that bring speed, convenience and very high sensitivity to the staining of proteins and nucleic acids in polyacrylamide electrophoresis gels. The robustness and sensitivity of the Kits make them specially suitable for use in Hoefer® Automated Gel Stainer. In addition, the Kits are also the method of choice for manual silver staining. Both Kits are part of the PlusOne range, a brand of electrophoresis chemicals with the focus on ease of use, reliability and value for money.

The Kits are developed for use with Amersham Biosciences precast gels as well as with conventional mini slab polyacrylamide gels with a thickness of up to 1.5 mm. They are thus suitable for non-denaturing gels, denaturing gels containing sodium dodecyl sulphate (SDS) and/or urea, and isoelectric focusing (IEF) gels. Each kit is described separately.

Silver Staining Kit, Protein

Silver Staining Kit, Protein provides fast, easy, reproducible and sensitive staining of proteins in polyacrylamide gels in about two hours. The Kit is recommended for use in Hoefer Automated Gel Stainer as well as for manual silver staining. Silver Staining Kit, Protein contains ready-to-use solutions and pre-weighed chemicals to minimise preparation time and maximise ease of use and reliability.

The sensitivity of the visualisation technique allows detection of most proteins within the nanogram range, which is 100 times more sensitive than Coomassie Brilliant Blue.

Features

- Ready-to-use solutions and pre-weighed chemicals for minimum preparation time and maximum ease of use and reliability
- High sensitivity – detects 0.2–0.6 ng protein per band

* Patent pending

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Fig. 1. Silver Staining Kit, Protein for high sensitivity staining of proteins. Ready-to-use solutions and pre-weighed chemicals minimise preparation time and maximise ease of use and reliability.

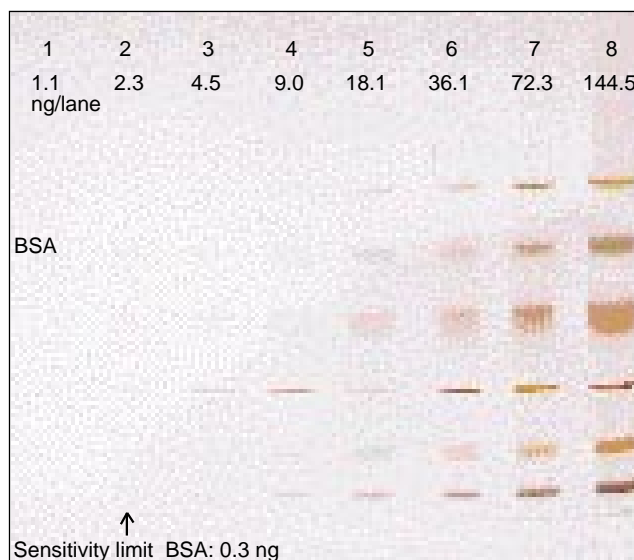


Fig. 2. Low Molecular Weight Calibration Kit run on ExcelGel SDS, gradient 8–18 and stained with Silver Staining Kit, Protein. The sensitivity limit was 0.3 ng for the BSA band.

- Low background
- Fast – protein bands are visualised in about 2 hours
- Reproducible
- Supplied with protocols for precast and lab cast gels

Kit description

Silver Staining Kit, Protein contains sufficient chemicals to stain the following number of different gels:

Gel Size		Reagent volume	Gels/ process	Gels/ kit
SE250 minigel	7 × 8 cm	125 ml	1-2	20-40
SE600	14 × 16 cm	250 ml	1	10
ExcelGel	12.5 × 26 cm	250 ml	1	10
CleanGel	12.5 × 26 cm	250 ml	1	10

Technical data

Staining time:	2 hours
Sensitivity:	0.2-0.6 ng protein per band
Storage:	+4 to +8 °C
Shelf life:	1 year at recommended storage conditions
Water quality:	For best results, use water with a conductivity of 5 mega Ohms or less.

Staining procedure

Silver Staining Kit, Protein is used both for automatic staining in Hoefer Automated Gel Stainer and manual staining. The steps and time schedule are the same in both processes as described below. All steps should be performed with gentle shaking of the staining tray.

Slightly modified processes are used to IEF gels and thick gels as described in information supported by the Kit.

Step	Solution	Processing time
1	Fixing solution	30 min
2	Sensitising solution	30 min
3	Washing in distilled water	3 × 5 min
4	Silver solution	20 min
5	Washing in distilled water	2 × 1 min
6	Developing solution	2 - 5 min
7	Stop solution	10 min
8	Washing in distilled water	3 × 5 min
9	Preserving solution (gels on plastic backing)	20 min

Drying: Put the gel on a glass plate and wrap it in Cellophane Sheet. Treat the plate first with Repel Silane for gels not supported on plastic films. Leave the gel to dry overnight at room temperature.

Ordering information for Silver Staining Kit, Protein – see last page.

Silver Staining Kit, Protein includes the following items:

Item	Quantity	Solutions to prepare
	Not included	Fixing solution*: 40% Ethanol 10% Acetic acid
25% Glutaraldehyde	1 × 12.5 ml bottle	Sensitising solution: 0.125% Glutaraldehyde
Sodium thiosulphate	10 × 0.5 g packets	0.2% Sodium thiosulphate
Sodium acetate	10 × 17 g packets	6.8% Sodium acetate 30% Ethanol
2.5% Silver nitrate	2 × 125 ml bottles See below	Silver solution: 0.25% Silver nitrate 0.015% Formaldehyde
Sodium carbonate	10 × 6.25 g packets	Developing solution: 2.5% Sodium carbonate
37% Formaldehyde	1 × 2.5 ml bottle	0.0074% Formaldehyde
EDTA-Na ₂	10 × 3.65 g packets	Stop solution: 1.46% EDTA-Na ₂
	Not included	Preserving solution for plastic backed gels: 8.7% Glycerol **
Instructions	Booklet	1
Short instructions	Laminated sheet	1

* Fixing solution for Ampholine PAGplate: 20% Trichloroacetic acid (TCA)

** Preserving solution for gels not supported on plastic films: 4% Glycerol, 30% Ethanol

DNA Silver Staining Kit

DNA Silver Staining Kit provides fast, easy, reproducible and sensitive non-radioactive staining of nucleic acids in polyacrylamide gels in about one hour. The Kit is recommended for use in Hoefer Automated Gel Stainer as well as for manual silver staining.

To maximise ease of use and reliability the DNA Silver Staining Kit contains 5 times concentrated solutions ready to dilute and use. The sensitivity of the visualisation technique allows detection of nucleic acids down to 50 pg, which is more than 50 times more sensitive than ethidium bromide.

Features

- Ready-to-use, concentrated solutions for maximum ease of use and reliability
- High sensitivity – detects 50–100 pg DNA per band
- Low background
- Non-radioactive
- Fast – nucleic acid bands are visualised within 1 hour
- Reproducible
- Supplied with protocols for precast and lab cast gels

Kit description

DNA Silver Staining Kit content is sufficient to stain the following number of different gels, using 125 ml of solution to each process step:

Gel Size	Gels/process	Gels/kit
SE250 minigel 7 × 8 cm	1–4	20–80
SE600 14 × 16 cm	1	20
ExcelGel 12.5 × 26 cm	1	20
CleanGel 12.5 × 26 cm	1	20
GeneGel 11 × 12.5 cm	2	40

DNA Silver Staining Kit includes the following items:

Item	Composition	Quantity
Fixing solution 5X	Benzene sulphonic acid; 3.0 % w/v in 24 % v/v ethanol	500 ml
Staining solution 5X	Silver nitrate; 1.0 % w/v Benzene sulphonic acid; 0.35 % w/v	500 ml
Sodium carbonate solution 5X	Sodium carbonate; 12.5 % w/v	500 ml
Formaldehyde 37 %	Formaldehyde; 37 % w/v in water	4 ml
Sodium thiosulphate; 2 %	Sodium thiosulphate; 2 % w/v in water	4 ml
Stopping & Preserving solution 5 X	Acetic acid; 5 % v/v Sodium acetate; 24 % v/v Glycerol; 50 % v/v	500 ml
Instructions	Booklet	1
Short instructions	Laminated sheet	1



Fig. 3. DNA Silver Staining Kit contains 5 times concentrated solutions ready to dilute and use. The Kit provides fast, easy, reproducible and sensitive non-radioactive staining of nucleic acids in polyacrylamide gels in about one hour.



Fig. 4. DNA markers run on GeneGel Excel 12.5/24 and stained with DNA Silver Staining Kit. Lanes 1–5, Φ X-174-RF DNA *Hinc* II; lanes 6–9, 100 Base-Pair Ladder. The sensitivity limit was 100 pg for the 495 bp fragment band.

Technical data

Staining time:	1 hour
Sensitivity:	50 – 100 pg DNA per band
Usage temperature:	+ 20 to +27 °C
Storage:	+10 to +30 °C
Shelf life:	1 year at recommended storage conditions
Water quality:	For best results use water with a conductivity of 5 mega Ohms or less.

Staining procedure

DNA Silver Staining Kit is used for automated silver staining in Hoefer Automated Gel Stainer and also for manual silver staining. The process steps and time schedule are the same for both methods as described below. 125 ml of solutions are needed per step. All steps should be performed with gentle shaking of the staining tray.

Step	Solution	Processing time
1	Fixing solution	30 min
2	Silver solution	30 min
3	Water washing	1 min
4	Developing solution	6 min
5	Stopping and preserving solution	30 min

Drying: Put the gel on a glass plate and wrap it in Cellophane Sheet. For gels not supported on plastic films, treat the plate first with Repel Silane. Leave the gel to dry overnight at room temperature.

Ordering Information

Item	Code No.
Silver Staining Kit Protein	17-1150-01
DNA Silver Staining Kit	17-6000-30

Related products

Hoefer, Automated Gel Stainer,	230 V	80-6330-04
	115 V	80-6330-23
Red Rotor Orbital Shaker 25×35 cm,	115 V	80-6096-91
	230 V	80-6097-10
Red Rotor Orbital Shaker 50×50 cm,	115 V	80-6098-05
	230 V	80-6098-24
LMW Calibration Kit		17-0446-01
100 Base-pair Ladder, 100ng		27-4001-01
ΦX-174 RF DNA <i>Hinc</i> II Digest, 10 µg		27-4040-01
Cellophane Sheets, 210×320 mm, Pack of 50		80-1129-38
Repel Silane ES, 500 ml		17-1332-01

The PlusOne range also includes gel casting chemicals, buffers, additives, detergents, and stains. For more detailed information, contact your local sales office of Amersham Biosciences.