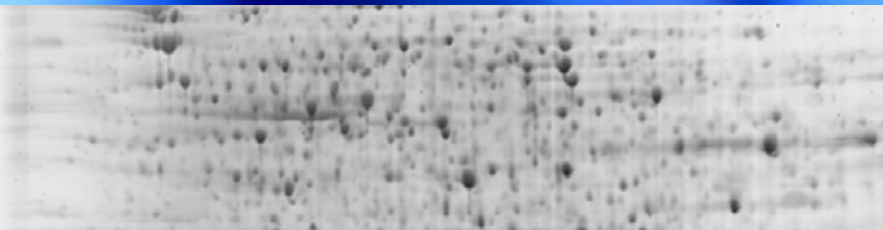


2D Electrophoresis



Reagents and Equipment

Reagents for 2D Sample Preparation

SERVA Protein Standards

SERVA IPG *BlueStrips*

SERVA 2D Gels

SERVA 2D Gels for Blotting

SERVA Stains for 2D gels

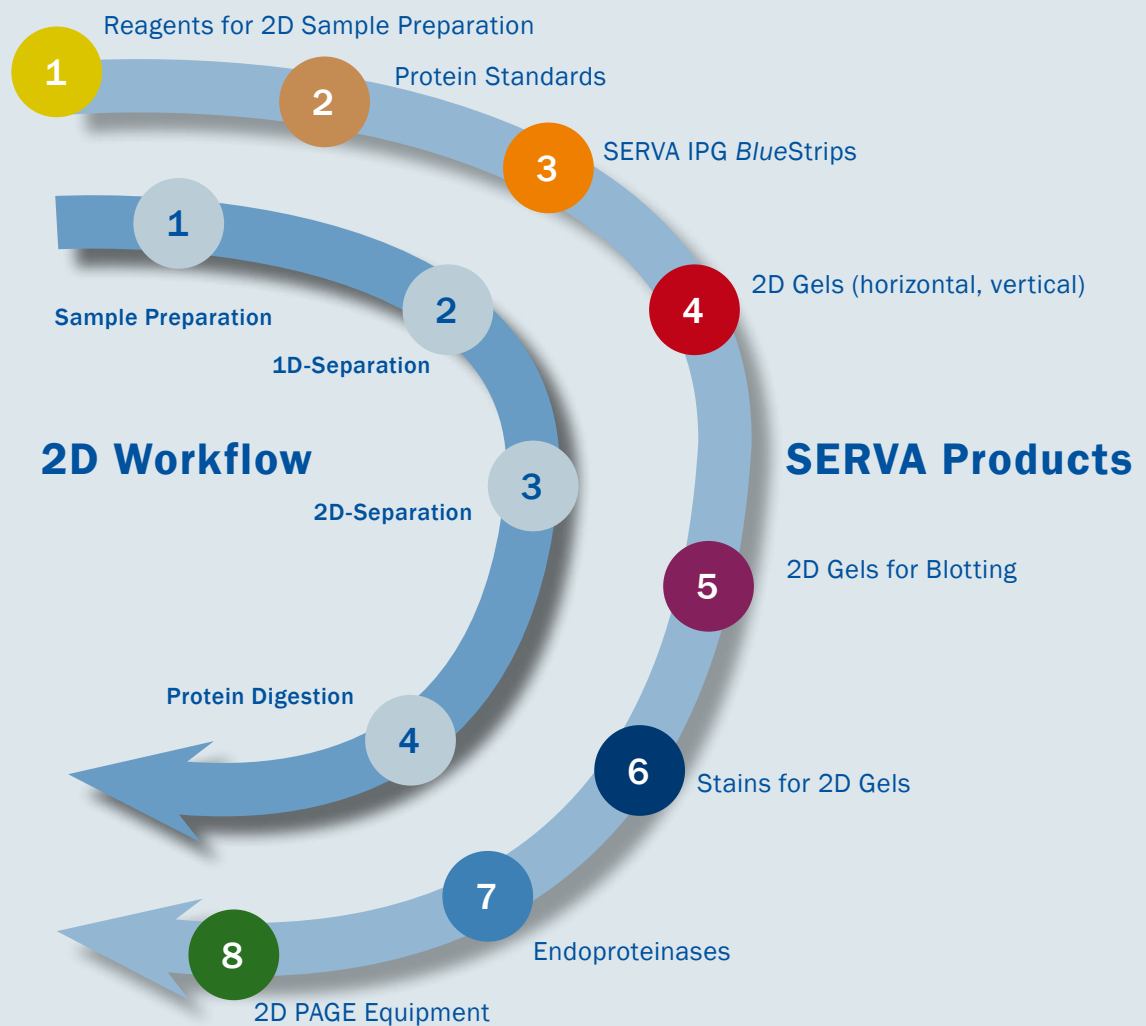
Endoproteinases

2D PAGE Equipment

All you need for... 2D Electrophoresis

SERVA offers a complete range of products for 2D gel electrophoresis. Starting with sample preparation and isoelectric focusing of proteins by applying SERVA IPG *BlueStrips* in the presence of urea, the focused proteins will be further processed on a PAA gel for second dimension electrophoresis apply-

ing separation by molecular weight in the presence of SDS. After staining the protein spots, or immediately if pre-labelling by SERVA Lightning Red has been done, the spots will be identified and further analyzed by spot picking and mass spectrometry or by Western blotting analysis.



SERVA produces gels for more than 40 years – hard to find a place with more experience in manufacturing, developing and supporting the use of electrophoresis gels!

1

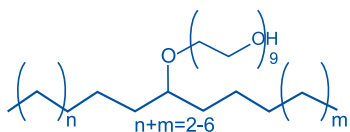
Reagents for 2D Sample Preparation

For lysis of cells and tissues by membrane disintegration, for release of proteins and protein complexes as well as for solubilization of proteins, SERVA offers a broad range of detergents. For sample preparation of proteins to be separated by 2D PAGE, you will find

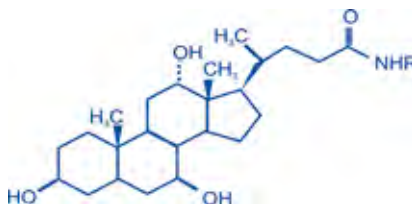
a specific selection of detergents here. Find more details in the SERVA brochures "Detergents", "Dialysis", and "Sample Preparation", covering a broad range of detergents, inhibitors, enzymes and dialysis tubings often used in sample preparation of proteins.

Product	Size	Cat. No.
Tergitol™ 15-S-9*	100 ml	37242.01
	500 ml	37242.02
	2.55 L	37242.03
CHAPS (3-[(3-Cholamidopropyl) dimethylammonio]-1-propanesulfonate)	5 g	17038.02
	25 g	17038.03
	100 g	17038.04
ASB-14 (3-[N,N-Dimethyl-(3-myristoylamino)propyl]-ammonio)-propanesulfonate	1 g	20757.01
	5 g	20757.02
NDSB-201 1-(3-Sulfopropyl)pyridinium betain	250 g	20762.02

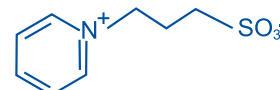
* Tergitol 15-S-9 is an equivalent alternative to Triton X-100, which is no longer distributed by SERVA due to legal regulation.



Tergitol™ 15-S-9



CHAPS



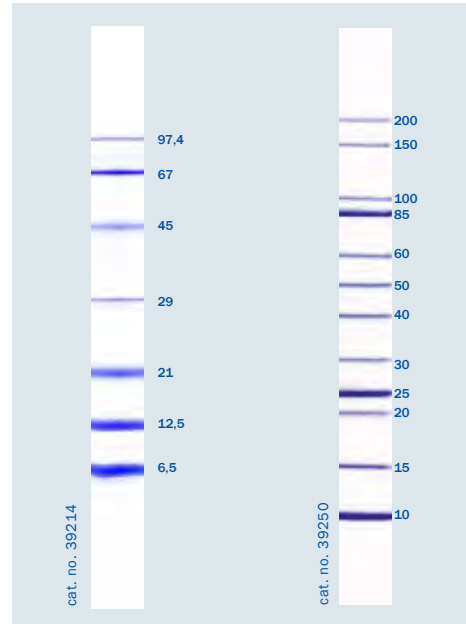
NDBS-201

2 Protein Standards

For 2D electrophoresis SERVA offers different protein standards for molecular weight determination as well as a set of proteome standards for pI and molecular weight identification.

Protein Standards

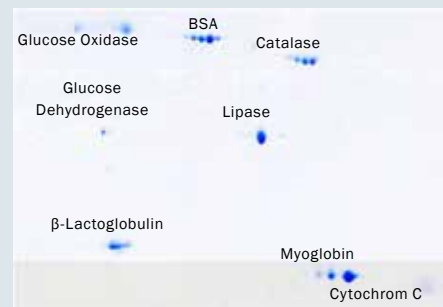
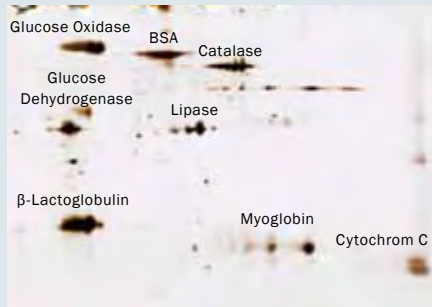
To determine the molecular weight of proteins separated by a 2D gel in the presence of SDS SERVA offers various protein markers of natural and recombinant origin. Protein markers are ready-to-use.



Proteome Standard

SERVA offers a unique set of proteome markers containing 8 proteins, spanning the entire pI region and ranging from 11.7 to 77.0 kDa. The marker proteins are characterized carefully by 2D elec-

trophoresis and also by LC/MS, identity of each protein is verified by protein sequence analysis. The kit contains 5 vials of marker proteins (lyophilized) for 5 to 10 gels in 2D electrophoresis.



Product	Size	Cat. No.
SERVA Unstained Protein Standard 6.5 - 97 kDa	500 µl	39214.01
SERVA Unstained Protein Standard IV	500 µl	39250.01
SERVA Proteome Markers	1 kit	39220.01

Protein Marker: Precise determination of molecular weight

Proteome Standard: Unique tool to calibrate 2D gels

SERVA IPG *BlueStrips*

SERVA IPG *BlueStrips* are dried gel strips with immobilized pH gradient used in high resolution 2D gel electrophoresis of proteins. The homogeneous polyacrylamide gel matrix is covalently bound to GEL-FIX™ to stabilize the gel. Additionally, a nonbinding cover film (GEL-FIX™ for Covers) protects the gel from damage and contamination.



SERVA IPG <i>BlueStrips</i> (12 strips each)	7 cm	11 cm	17 cm	18 cm	24 cm
3-10	43001.01	43031.01	43041.01	43011.01	43021.01
3-10 NL	43002.01	43032.01	43042.01	43012.01	43022.01
4-7	43003.01	43033.01	43043.01	43013.01	43023.01
5-8	43006.01	43036.01	43046.01	43016.01	43026.01

For IPG strip rehydration and sample preparation SERVA offers the SERVA HPE™ IPG strip buffer, a 40 % (w/v) SERVALYT mixture. It works for all pH gradients. Due to the low molecular weight of the ampholyte buffer molecules there is no background staining in

the 2D gels. To run SERVA IPG strip we recommend to cover the strips with the SERVA HPE™ IPG overlay. This helps to sharp protein spots in high resolution 2D gel electrophoresis. For easy applying the oil a separate dropping bottle is included.

Product	Size	Cat. No.
SERVA HPE™ IPG Strip Buffer	1 ml	43368.01
SERVA HPE™ IPG Overlay	1 L	43397.01

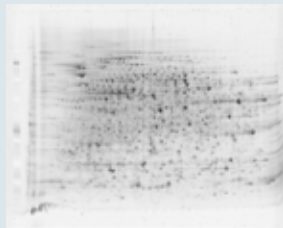
- Consistent performance – 12 strips per package, all derived from the same production lot
- Reliability – accurate casting procedures ensures lot-to-lot reproducibility of pH profile
- GMP/GLP conformity – each strip has its individual lot number

SERVA Gels for Horizontal and Vertical 2D PAGE

The HPE™ gels for horizontal 2D PAGE are film-backed gels. A pre-formed trench in the gel for applying the focused IPG strip guarantees high efficient sample transfer from 1st to 2nd dimension. Each kit contains 4 gels, equilibration and running buffers, wicks and cooling contact fluid.

Product	Size	Cat. No.
2D HPE™ Triple Gel NF 12.5 % Kit	1 kit	43300.01
2D HPE™ Triple Gel NF 10 - 15 % Kit	1 kit	43301.01
2D HPE™ Double Gel NF 12.5 % Kit	1 kit	43302.01
2D HPE™ Double Gel NF 10 - 15 % Kit	1 kit	43303.01
2D HPE™ Large Gel NF 12.5 % Kit	1 kit	43304.01
2D HPE™ Large Gel NF 10 - 15 % Kit	1 kit	43305.01
2D HPE™ Triple Gel 12.5 % Kit	1 kit	43306.01
2D HPE™ Triple Gel 10 - 15 % Kit	1 kit	43307.01
2D HPE™ Double Gel 12.5 % Kit	1 kit	43308.01
2D HPE™ Double Gel 10 - 15 % Kit	1 kit	43309.01
2D HPE™ Large Gel 12.5 % Kit	1 kit	43310.01
2D HPE™ Large Gel 10 - 15 % Kit	1 kit	43311.01

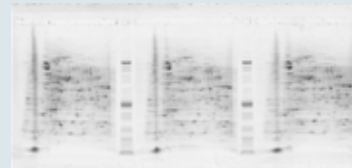
NF = non-fluorescent film backing



2D HPE™ Large Gel NF 12.5 %, stained with SERVA Purple



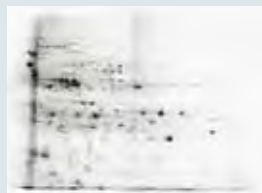
2D HPE™ Double Gel NF 12.5 %, stained with SERVA Purple



2D HPE™ Triple Gel NF 12.5 %, stained with SERVA Purple

For 2D in mini vertical systems use the SERVAGE™ PRiME for 2D PAGE. Gels are cast into stable cassettes (10 cm x 10 cm x 0.7 cm) with one very planar 2D slot for optimum transfer from a 7 cm IPG strip to gel.

Product	Size	Cat. No.
SERVAGE™ TG PRiME 12 %, 2D well	10 gels	43268.01
SERVAGE™ TG PRiME 14 %, 2D well	10 gels	43271.01
SERVAGE™ TG PRiME 8 - 16 %, 2D sample well	10 gels	43281.01
SERVAGE™ Neutral HSE, 2D well	10 gels	43247.01



2D electrophoresis on SERVAGE™ TG PRiME™ 14 % vertical mini gel stained with SERVA HPE™ Lightning Red

- 2D HPE™ Large Format Gel (gel size 255 mm x 200 mm) accommodating one 24 cm IPG strip
- 2D HPE™ Double Gel and 2D HPE™ Triple Gel (gel size 250 mm x 100 mm) accommodating two 11 cm IPG strips and three 7 cm IPG strip, respectively
- SERVAGEs™ 2D Gels accomodating one 7 cm IPG Strip

SERVA Gels for 2D Western Blotting

The newly developed 2D HPE™ Double Blot-Gel combines high-resolution 2D gel electrophoresis with the Western Blotting detection method. The gel is not covalently bound to the (non-fluorescent) carrier foil as usual.

After electrophoresis, the carrier foil, which interferes with the downstream process, can be removed from the gel easily and allows direct and efficient transfer of separated proteins by semi-dry blotting.

Special Application: HCP Analysis by 2D Western Blotting

One application of 2D Western blotting is host cell protein (HCP) analysis in the biotechnological production of antibodies or other recombinant proteins. Here, high-resolution horizontal 2D HPE™ gel electrophore-

sis can show all its advantages, especially the high resolution in protein separation and the efficient semi-dry transfer of protein spots from the gel onto the membrane.

A. Sample prep, desalting and pre-labelling



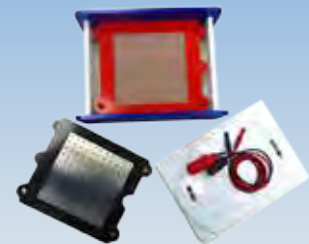
B. 1st dimension on SERVA IPG BlueStrip, 2nd dimension on 2D HPE™ Double BlotGel NF



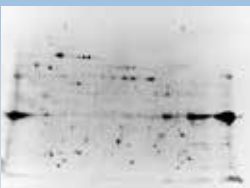
C. In-Gel-Fluorescence Detection



D. Carrier foil removal & Semi-Dry Blotting



E. On-Membrane Fluorescence Detection



F. Blocking and AB Probing



G. Chemiluminescence Detection



H. Imaging and Analysis



For more details please refer to the SERVA brochure "HCP Analysis and Beyond"

The gel sizes and slot designs of the 2D HPE™ BlotGels are identical with those of the corresponding 2D HPE™ Gels. They also

come in a kit of 4 plastic-backed gels with running and equilibration buffers, wicks as well as cooling contact fluid.

Product	Size	Cat. No.
2D HPE™ Triple BlotGel NF 12.5 % Kit	1 kit	43429.01
2D HPE™ Double BlotGel NF 12.5 % Kit	1 kit	43430.01
2D HPE™ Large BlotGel NF 12.5 % Kit	1 kit	43432.01

NF=non-fluorescent film backing

SERVA Stains for 2D Gels

To detect separated proteins as spots in the gel proteins have to be stained, either before or after electrophoresis. There are versatile staining methods available. You may pre-label the

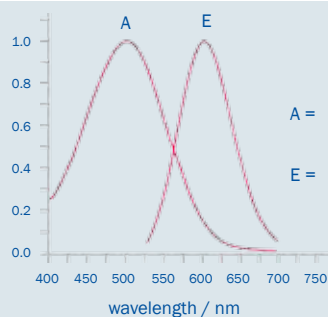
proteins before loading on the IPG strip or you may process the 2D gel after electrophoresis.

Here is a selection of different stains available from SERVA for 2D gel staining.

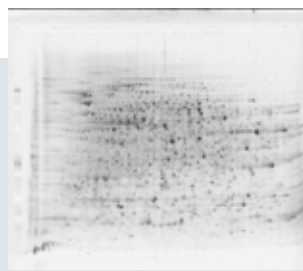
	Pre-Staining	Post Staining	Fluorescent	Silver	Coomassie
HPE™ Lightning Red	✓		✓		
SERVA Purple		✓	✓		
HPE™ Silver Staining Kit		✓		✓	
HPE™ Coomassie Staining Kit		✓			✓



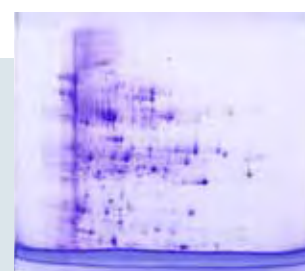
SERVAge™ TG PRIME™ 14 % 2D vertical mini gel stained with SERVA HPE™ Lightning Red



2D HPE™ Large Gel 12.5 % stained with HPE Silver Staining Kit



2D HPE™ Large Gel NF 12.5 %, stained with SERVA Purple



SERVAge™ TG PRIME™ 14 % 2D vertical mini gel stained with SERVA HPE™ Coomassie Staining Kit

Product	Size	Cat. No.
SERVA HPE™ Lightning Red	1 kit	43400.01
SERVA Purple, 250x concentrate	5 ml	43386.03
	25 ml	43386.01
SERVA Purple HiSens, 250x concentrate	5 ml	43408.01
	25 ml	43408.02
SERVA HPE™ Coomassie Staining Kit	1 kit	43396.01

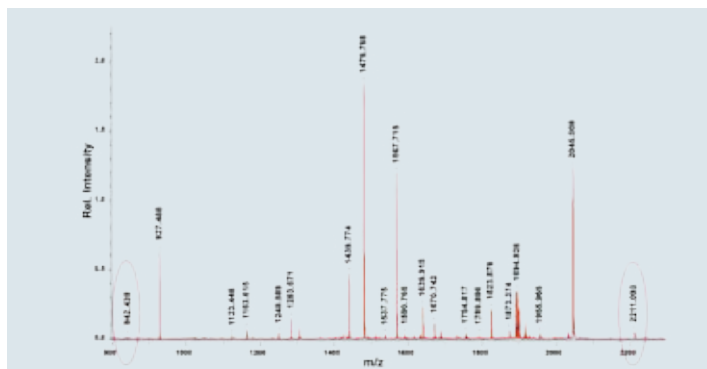
Pre-labeling of protein samples with SERVA HPE™ Lightning Red allows direct spot detection without staining and washing steps after the run.

7

Endoproteinases

Trypsin MS approved is suitable for digestion of proteins for mass spectrometry analysis. Reductive methylation of the lysine residues of trypsin results in a stable product that is extremely resistant to autolytic degra-

tion. The enzyme is purified by chromatography. No chymotryptic activity is detectable. Every lot is approved for use in in-gel digestion and mass spectrometry analysis.



Spectrogram of BSA digested with Trypsin MS approved.

Lysyl Endopeptidase (LysC) is an approved quality for use with in-gel digestion, protein sequence analysis and mass spectrometric analysis. It cleaves specifically the peptide bonds at the carboxy-terminal side of Lysine residues and S-aminoethylcysteine residues

with a high degree of specificity. An added feature of Lysyl Endopeptidase is its ability to retain complete activity after incubation in 4 M urea or in 0.1 % SDS solution for up to 6 hours at 30 °C.

Product	Size	Cat. No.
Trypsin MS approved, from porcine pancreas	100 µg	37286.01
	150 µg	37286.02
	1 mg	37286.03
	4 x 25 µg	37286.04
Lysyl Endopeptidase®, MS approved	20 µg	20987.01

- Approved quality for use with in-gel digestion and mass spectrometric analysis
- High purity & specificity
- For peptide mapping and protein sequence work

2D PAGE Equipment

HPE™ BlueHorizon™

- Highly sophisticated flatbed system for horizontal electrophoresis
- High capacity cooling plate for highest resolution and band sharpness
- Suitable for gels up to 260 mm x 205 mm
- For 1D and 2D SDS PAGE, for high voltage applications like IEF
- Wide range of horizontal precast gels available
- Platinised electrodes with variable spacing - depending on the application
- Samples easy to load, low buffer consumption
- Stackable, up to four units under the control of one power supply and one chiller
- Smart design – made in Germany



Product	Size	Cat. no.
HPE™ BlueHorizon™	1 unit	HPE-BH
HPE™ BlueHorizon™ System (including HPE™ BlueHorizon™, HPE™ Cooling Unit, BluePower™ 3000 HPE™ Power Supply)	1 system	HPE-BSYS

BlueVertical™ PRiME™

- Dual mini tank systems
- Accommodates 1 – 2 gels in cassettes with outer dimensions of 10 cm x 10 cm x 0.7 cm
- Leak-free inner core unit with a unique clamp system
- Gel Casting Stand for casting two gels
- Unique, easy-to-handle blotting insert for tank blotting
- Quality designed and made in Germany



Product	Size	Cat. no.
BlueVertical™ PRiME™	1 unit	BV-104
BlueVertical™ PRiME™ Casting Stand	1 unit	BV-104-CS
BlueVertical™ PRiME™ Blot Module	1 unit	BV-104-B

BluePower™ Power Supply

- For vertical mini gel electrophoresis: BluePower™ 600 PRiME™ Power Supply (600 V, 1000 mA, 300 W)
- For horizontal electrophoresis: BluePower™ 3000 HPE™ Power Supply (3000 V, 200 mA, 300 W)
- Fully programmable (9 programmes with 9 steps each)
- 4x 2 outlets



Product	Size	Cat. no.
BluePower™ 600 PRiME™ Power Supply	1 unit	BP-600-PRI
BluePower™ 3000 HPE™ Power Supply	1 unit	BP-3000-HPE

SERVA BlueStain

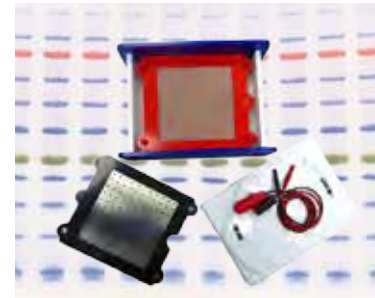
- Stains all gels and membranes - accurate and reproducible
- For 1D SDS and native PAGE, 2D and IEF gels, DNA gels
- Suitable for the whole range of currently applied staining methods
- For short or long time incubations – even over night
- Supplies up to 10 liquids in volumes up to 500 ml each
- Maintenance-free, quiet mechanics for moving the staining platform
- Smart design – made in Germany



Product	Size	Cat. no.
SERVA BlueStain	1 unit	BST-01
SERVA BlueStain Pharma Upgrade Kit	1 unit	BST-PU
SERVA BlueStain Spare Part Kit	1 kit	BST-R01

BlueBlot Semi-Dry Blotter

- Best blot results for small and large proteins
- Platinum-covered steel net as anode, spring-mounted
- Stainless steel plate as cathode
- Easy to clean
- Versatile models:
 - 11 cm x 11 cm for mini gels
 - 17 cm x 17 cm for mini and midi gels
 - 26 cm x 24 cm for 2D HPE™ BlotGels and other large format gels
- Deployable for thicker gels and blotting stacks



Product	Blot Area	Size	Cat. no.
BlueBlot Semi-Dry Blotter SD 11	11 cm x 11 cm	1 unit	BB-SD11
BlueBlot Semi-Dry Blotter SD 17	17 cm x 17 cm	1 unit	BB-SD17
BlueBlot Semi-Dry Blotter SD 26	24 cm x 26 cm	1 unit	BB-SD26
Electrode Set for BB-SD11	11 cm x 11 cm	1 unit	BB-E11
Electrode Set for BB-SD17	17 cm x 17 cm	1 unit	BB-E17

Gravity Blotter

- Pressure blotting of gels covalently bound to carrier foil
- For horizontal IEF, SDS PAGE and 2D gels
- High efficiency protein transfer from gel to membrane within 4 hours or overnight
- Transfer area: 14 cm x 29 cm



Product	Size	Cat. no.
Gravity Blotter	1 unit	GB-14X29



SERVA WORLDWIDE
www.serva.de

SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg / Germany
Fon: +49 6221 13840-0
Fax: +49 6221 13840-10
E-mail: info@serva.de · www.serva.de

