VWR ShiroGel

Vertical Electrophoresis Gel Boxes

INSTRUCTION MANUAL

European Catalogue Number(s):

PAGE	**700-0292**
PAGE and Blotter	**700-0293**
Blotter	**700-0291**

Version: 1
Issued: 08.04.2010

CE

Legal Address of Manufacturer

United States
VWR International
1310 Goshen Parkway
West Chester, PA 19380
800-932-5000
http://www.vwr.com

Europe
VWR International bvba
Researchpark Haasrode 2020
Geldenaaksebaan 464
B-3001 Leuven
+ 32 16 385011
http://be.vwr.com

Country of origin

UK

Table of Contents

Warning

When used correctly, these units pose no health risk. However, these units can deliver dangerous levels of electricity and are to be operated only by qualified personnel following the guidelines laid out in this instruction manual.

Anyone intending to use this equipment should read the complete manual thoroughly.

Safety Information

To avoid electrical shock:

The unit must never be used without the safety lid correctly in position.

To avoid electrical shock:

The unit should not be used if there is any sign of damage to the external tank or lid.

These units comply with the statutory CE safety directives:

Low Voltage Directive: 2006/95/EC	RoHS Directive: 2002/95/EC
EMC Directive: 2004/108/EC	WEEE 2006/96/EC
EN 61010-1:1993/BS EN 61010-1:1993	

Avoiding Damage to the Instrument

The units should never come into contact with the following cleaning agents, these will cause irreversible and cumulative damage:-

Acetone, Phenol, Chloroform, Carbon tetrachloride, Methanol, Ethanol, Isopropyl alcohol Alkalis.

Rnase Decontamination

This can be performed using the following protocol:-

Clean the units with a mild detergent as described above.

Wash with 3% hydrogen peroxide (H_2O_2) for 10 minutes.

Rinsed with 0.1% DEPC- (diethyl pyrocarbonate) treated distilled water,

Caution: DEPC is a suspected carcinogen. Always wear gloves and safety glasses.

RNaseZAP™ (Ambion) can also be used. Please consult the instructions for use with acrylic gel tanks.

Package Contents

VWR ShiroGel PAGE

Units include tank, lid and electrodes and include the following accessories:-

	Glass Plates	**Combs**	**Casting base**	**Cooling Pack**	**Cables**
Mini PAGE	Glass Plates, Notched, Pk/2 Glass Plates, Plain with bonded 1mm spacers, Pk/2 Buffer dam	2, 1mm thick, 12 sample combs	Base with Silicone Mat	Included	Red Black

VWR ShiroGel PAGE and Blotter

Units include tank, lid and electrodes and include the following accessories:-

	Glass Plates	**Combs**	**Casting base**	**Cooling Pack**	**Cables**
Mini PAGE with Blotting Insert	Glass Plates, Notched, Pk/2 Glass Plates, Plain with bonded 1mm spacers, Pk/2 Buffer Dam	2, 1mm thick, 12 sample combs	Base with Silicone Mat	Included	Red Black
Blotting Insert	3 Cassettes, Pack of 6 Fiber pads				

Unpacking

These product descriptions and included component information should be referred to as soon as the units are received to ensure that all components have been included. The unit should be checked for damage when received. Please contact your supplier if there are any problems or missing items.

Installation

Usage Guidance and restrictions:

• Maximum altitude 2,000m.

• Temperature range between 4°C and 60°C.

• Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

• Not for outdoor use.

This apparatus is rated POLLUTION DEGREE 2 in accordance with IEC 664. POLLUTION DEGREE 2, states that: “Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.”

Setting up the Horizontal Gel Tanks:-

Instructions for attaching Electrode Leads

1. Note the position of the lid on the unit. This shows the correct polarity and the correct orientation of the cables, black is negative and red positive.
2. Remove the lid from the unit. Note if the lid is not removed, fitting the cables may result in un-tightening of the gold plug and damage to the electrode.
3. Screw the cables into the tapped holes as fully as possible so that there is no gap between the lid and the leading edge of the cable fitting.
4. Refit the lid.

The unit is now ready for use.

Intended use

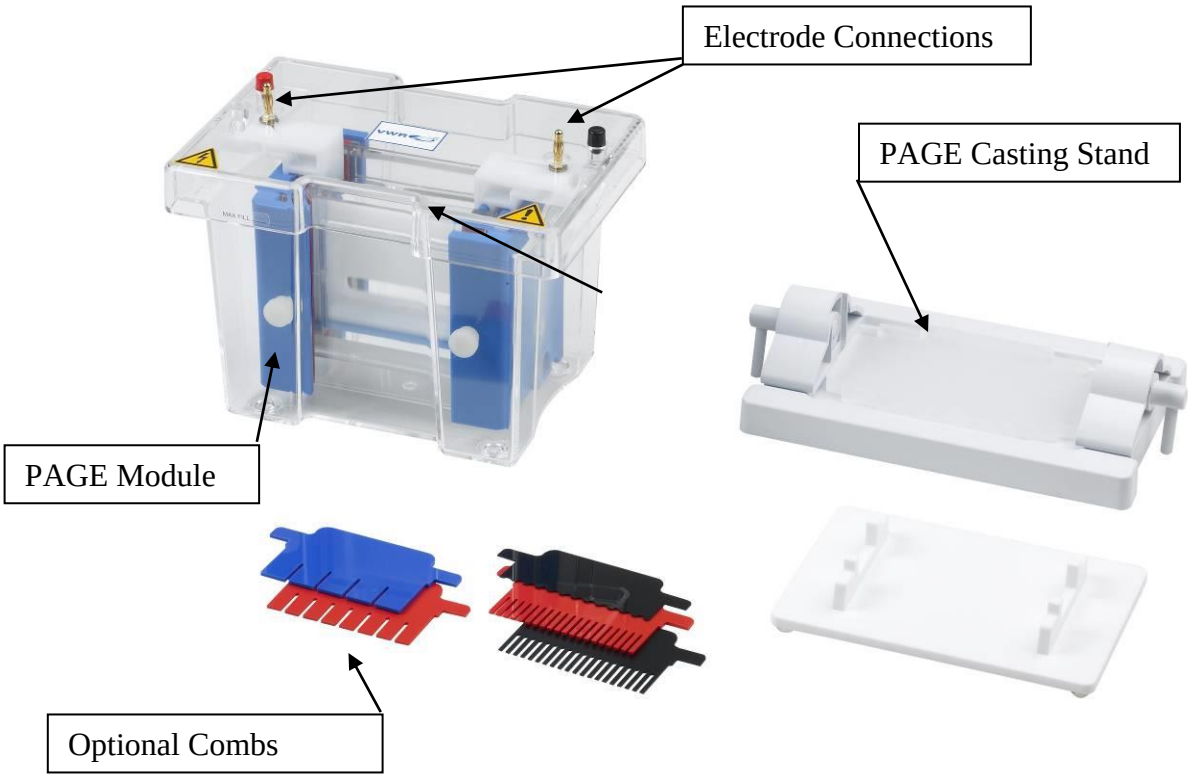
For research use only. Not intended for any animal or human therapeutic or diagnostic use.

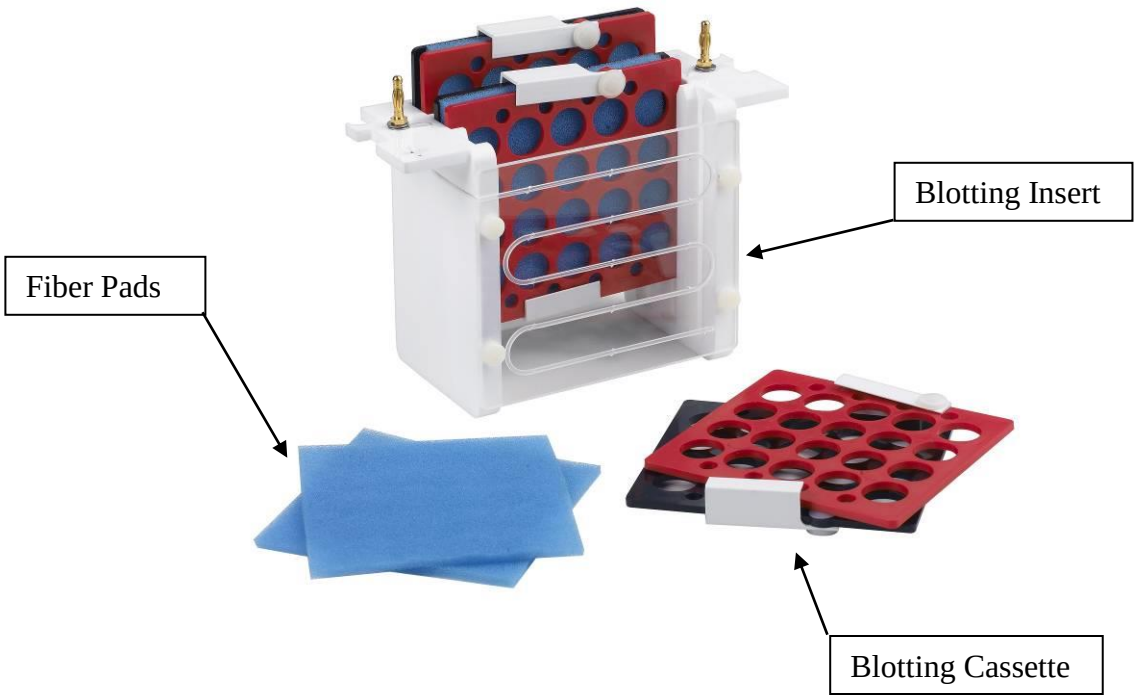
Symbols and conventions

The following chart is an illustrated glossary of the symbols that are used in this manual.

	**CAUTION** This symbol indicates a potential risk and alerts you to proceed with caution
	**CAUTION** This symbol indicates the presence of high voltage and warns the user to proceed with caution

Description of Buttons and Switches





Getting Started

Gel Casting Using the ShiroGel Casting System:-

1. Clean a set of glass plates for each gel first with distilled water and then with 70 % ethanol. One set of glass plates constitutes one notched glass plate and one plain glass plate with bonded spacers. When using a triple glass plate sandwich, two notched glass plates are required, one set of free spacers and a set of plain glass plates with bonded spacers. The plain glass plate is positioned outermost, then a notched glass plate, free spacers and

second notched glass plate. Alternatively, accessory notch glass plates with bonded spacers are available. **All glass plates, modules and casting base accessories must be completely dry during setup. Wet components are more likely to misalign and cause leaks.**

2. Assemble the glass plates so that the bottom of the glass plates and the spacers are perfectly aligned. For triple plate sandwiches, the free spacers need to be perfectly aligned which is best performed using a small spacer or comb to push the spacers apart. Notched glass plates with bonded spacers do not need manual alignment. **NOTE: The glass plates with bonded spacers have an arrow in the top of the spacers which are slightly longer than the glass plate to indicate the top.**
3. The PAGE Gel Insert contains pressure bars which impart even pressure onto the glass plates and allow even screw pressure transfer onto the sealing edge of the glass plate, ensuring complete sealing. Ensure that the pressure bars are adequately open for the thickness of spacer used. The bar can be opened by loosening the screws. When using a triple glass plate sandwich, the pressure bars will need to be in the completely open position.
4. Position the PAGE Gel Insert on a flat surface. **Do not insert thePAGE Gel Insert into the casting base at this point.**
5. Insert the glass plates into the PAGE Gel Insert between the pressure bar and the blue gasket check that the bottoms of the glass plates are touching the surface and fully tighten the pressure bar screws in the order top then bottom. Fully tighten the screw for the PAGE insert. Care must be taken not to over-tighten the screws or breakage will occur. When only one gel is being run, the buffer dam must be used in the second position and fully tightened. **Note, check that the bottom edges of the spacers and glass plates are aligned and that they are all touching the counter.**
6. Open the cam handle and position the pin so they face the counter. downwards. Position the PAGE Gel Insert on the gasket of the casting base so the insert holes are facing the cams. The top of the Gel insert will need to be pushed down very slightly to locate the cam pins.
7. With the cam pin handles facing directly downwards, turn the cam pins fully in the opposite direction 180^0 or until the insert has tightened onto the silicone mat.**. Do not overturn as this will cause the glass plates to push upwards and the assembly will be more likely to leak.**

NOTE: Always reverse the silicone mat after casting to avoid indentations from persisting. Never leave the casting up-stand with glass plates tightened into the casting base for long periods of time as this can cause permanent indentations in the silicone mat.
The unit is now ready for gel preparation.

Gel Preparation:-

1. It is suggested to use stock solutions which provide added convenience and save time when it comes to gel pouring. Stock solutions for SDS PAGE gels which should be prepared prior to use and chilled (page19) . For native gel formulas and running conditions, please consult index of manual. The protocol below is given for use of the standard stock solutions advised. This should be adjusted if you are using different stock solutions or gel formulas.

2. Table 1 below shows the total volume of gel solution required. In subsequent tables, amounts of gel and solutions are given for two 1mm thick gels so adjustments are needed for when running

3. single or more than two gels and for 0.75, 1.5 or 2mm thick spacers.

Table 1.

ShiroGel PAGE	
	Total Gel volume for a 1mm thick gel.
For different thicknesses of gel, multiple the below amounts by the spacer thickness.	
Single – one gel, one dummy plate	7.5ml
Double – two gels	15ml
Using a Triple Plate sandwich – four gels	30ml

Gel Selection:-

Care should be taken when selecting the pore size of the gel to be used. These formulas are for Tris- glycine-SDS gels

The pore size or % of gel determines the resolving ability given different sizes of protein. See Table 2 below which details which percentage of gel to use to separate the sizes of proteins indicated.

Table 2.

Acrylamide Percentage	Separating Resolution
5 %	60 - 220 KD
7.5 %	45 - 120 KD
10 %	25 - 75 KD
12%	14.4 – 65 KD
15 %	6.5 -45 KD

17.5%	5.5 – 30 KD

4. Using the stock solution provided in the index prepare gel solutions as per tables below by first mixing the ddi Water, 30% Acrylamide solution and the 4x TRIS-SDS solutions. After mixing degas for 5 minutes, to remove free oxygen which will inhibit polymerization by removing free radicals.
5. To the above solution add the ammonium persulfate and TEMED and mix gently to avoid air bubbles.

Table 3: Preparation of the separating gel solution for two 10 x 10cm gels using 1 mm spacers.

Solution	**5 %**	**7.5%**	**10 %**	**12%**	**15 %**	**17.5%**
Distilled Water	8.7ml	7.5ml	6.3ml	5.25ml	3.75ml	2.5ml
30 % Stock Acrylamide Solution	2.5ml	3.75ml	5ml	6ml	7.5ml	8.75ml
4 X Tris-SDS Solution pH 8.8	3.75ml	3.75ml	3.75ml	3.75ml	3.75ml	3.75ml
10 % Ammonium Persulphate	150µl	150µl	150µl	150µl	150µl	150µl
TEMED	15ul	15ul	15ul	15ul	15ul	15ul

Gel Pouring:-

For discontinuous gels:-

1. Insert the comb into the glass plates and mark a point on the glass plates 1cm below where the comb teeth finish. This is the level for the resolving gel to.
2. Fill the glass plates again avoiding generating any air bubbles. Filling must be performed quickly before the TEMED causes the gel to become too viscous.
3. Overlay the gel extremely carefully with 1 ml of 1% Isobutanol, Isopropanol or distilled water. When using distilled water extra care must be taken to ensure there is no mixing with the gel solution.

4. Let the resolving gel polymerize. Usually this takes around 15 to 30 minutes but this can vary due to gel concentration. If polymerization is taken a lot longer than this, use fresh stock solutions of APS.
5. Prepare the stacking gel using Table 5 below as a guide. Stock solutions are in the appendix.

Table 5.

Solution	**ShiroGel PAGE**
Distilled Water	4.2ml
30 % Stock Acrylamide Solution	0.65ml
4 X Stacking Gel Tris-SDS Solution pH 6.6	1.6ml
10 % Ammonium Persulphate	67µl
TEMED	6.7 ul

6. Carefully mix the ddi water, acrylamide and Tris-SDS solution, degasses for 5 minutes.
7. Add the ammonium persulfate and the TEMED and mix..
8. Pour off the overlay liquid and rinse the gel with distilled water.
9. Use a Pasteur pipette to fill the glass plates up to the top with stacking gel solution.
10. Carefully insert the comb making sure that no air bubbles get trapped under the ends of the comb teeth as these will inhibit sample progression.
11. Allow the stacking gel polymerize for 30 minutes.

For continuous gels:-

1. Follow the instructions for mixing the acrylamide solution, see section for discontinous gels
2. Fill the glass plates to I cm below top of notched plate, again avoiding generating any air bubbles. Filling must be performed quickly before the TEMED causes the gel to become too viscous.
3. Carefully insert the comb making sure that no air bubbles get trapped under the ends of the comb teeth as these will inhibit sample progression.

4. Let the gel polymerize, this usually takes around 15 to 30 minutes but this can vary due to the concentration of the gel or freshness of the reagents used. If polymerization takes longer than this, use fresh stock solutions of APS.

Preparation of denatured protein samples for loading:

The instructions given below are for denatured samples. For Native samples, please see index.

1. Prepare the protein samples for loading. The volume of sample depends on the capacity of the wells. See well chart on page 23
2. Using a 0.5 ml micro-centrifuge tube or other convenient receptacle, combine equal volumes of the loading dye and the protein sample and 2X sample buffer. It is always advisable to use protein ladders in one of the end lanes to indicate sizes of bands. These should be prepared according to the manufacturers instructions.
3. Heat the samples in a water bath or heating block for 2 minutes to denature the samples. NOTE heating should be done under a fume hood 2-mercaptoenthanol.
4. Centrifuge the samples in a micro-centrifuge for 20 seconds at 12,000 rpm. The protein samples are now ready to load.

Loading the samples:

1. If desired, fit the cooling pack(s) into the end of the tank. These should be fitted with the longest side positioned sideways with the end(s) of the tank and pressed into the recess. Note one pack is supplied as standard. Additional packs can be purchased.
2. Remove the combs with a gentle rocking motion; rinse the well out with ddi H_2O to eliminate any residue.
3. Transfer the Inner gel module containing cast gels into the main tank in the correct orientation as indicated - +ve on the module aligned with +ve on the tank, -ve on the module aligned with –ve on the tank.
4. Fill the outer tank with 1 x reservoir buffer. See page 19 for recommended running buffer solution. Table 6. Shows the volume of buffer required.

Table 6.

Buffer Volume	**ShiroGel PAGE**

Minimum – Inner tank is filled to above the wells. Outer Tank is filled to just flood the bottom of the glass plates. Cooling potential is at a minimum which may affect resolution.	250ml
Maximum – Inner tank is filled to above the wells. Outer Tank is filled to the maximum fill line. Cooling is high offering good resolution of samples.	1200ml
Using the cooling packs – Inner tank is filled to above the wells. Cooling packs are inserted behind the gels. Outer Tank is filled to the maximum fill line. Cooling is at a maximum.	1000ml

5. Load the samples into the wells using a pipette tip taking care not to damage the wells or induce any air bubbles.
6. Fill any unused wells with 1X sample buffer.
7. Note the orientation and order the samples were loaded in. This can be done by noting which samples were loaded adjacent to each electrode.

Gel Running:

1. Fit the lid and connect to a power supply.
2. Consult Table 7 for details on recommended power supply voltage settings.
3. Run times vary with concentration and protein size, when the dye front reaches the bottom 1 cm, turn the power supply off or sooner if your proteins are below 4Kd in size.
4. Always unplug the power cord from the unit prior to removing the lid.
5. Remove the gel running module, first emptying the inner buffer into the main tank..
6. Unscrew the glass plates and gently pry apart the glass plates. The gel will usually stick to one of the plates and can be removed by first soaking in running buffer and then gently lifting with a spatula.
7. The gel is now ready for further analysis.

Table 7.

Recommended Voltage and Current settings for 1mm thick, 12% gels.	**ShiroGel PAGE**
One gel	90-225V, 20-45mA
Two gels	90-225V, 40-90mA
Three gels	90-225V, 60-135mA
Four gels	90-225V, 80-180mA

The recommended power condition for optimal resolution with minimal thermal band distortion is 150 volts, constant voltage setting. No adjustment of the setting is necessary for thickness or number of gels. The usual run time is approximately 40-45 minutes. Current should be approximately 50mA per gel (120mA for two gels) at the beginning of the run. During the 45 minute run, the current will slowly drop to about 20mA per gel. This drop is caused by the change in buffer ions in the gel, causing a slow rise in the resistance in the gel. As one would expect from the Ohms law (V=I*R), at constant voltage (V) a rise in the resistance (R) results in a drop in the current (I).

Protein Blotting using the VWR ShiroGel Blotting Insert

Setting up the cassette sandwich: The most commonly used buffer solutions are listed in the Appendix.

1. Each blot sandwich should be set up as follows:-

   a. Cassette clamp -ve (black) side placed in a tray or other suitable surface.
   b. Pre-soaked fiber pad.
   c. Two pieces of .45um filter paper, pre-soaked in buffer.
   d. Gel. Cut the left hand corner for indexing,
   e. Transfer membrane. Most manufactures require pre-soaking but consult their instructions for the type of membrane you are using. This should be smoothed so that no air bubbles have been trapped.
   f. Two pieces of filter paper, pre-soaked in buffer.
   g. Pre-soaked fibre pad.
   h. Cassette clamp +ve (red) side slotted into the groove in the bottom of the black cassette.

   Note: do not handle the membrane without gloves.

2. Assemble the fiber pads, filter papers, gel transfer membrane in the above order and roll with a pipette to remove any trapped air. Place on the black and red cassette with the membrane facing the anode (red) side, close the hinge carefully so as to not disturb the sandwich.

3. Fill the tank with buffer solution up to the **maximum fill line** indicated on the side of each unit. See the Appendix page 20 for recommended buffer solutions. Improved transfer can be obtained by using chilled buffer.

Table 8. shows the volume of buffer required.

Buffer Volume	**ShiroGel Blotter**
One Cassette	1380ml
Two Cassettes	1290ml
Three Cassettes	1380ml
Each cooling pack takes the place of 100mL of buffer.	

Blot Running Conditions:

1. Insert the cassettes into the slots in the module with the black side of each adjacent to the negative electrode. It is a good idea to note the orientation and order the blot sandwiches were loaded in. This can be done by noting which samples were loaded adjacent to each electrode.
2. Use of a magnetic stirring bar and plate is recommended to mix the buffer to give consistency of transfer. A 4mm diameter stirring bar should be placed underneath the module, in the centre of the tank. The Cooling pack provided, pre-frozen, can be inserted at the side or front of the tank for extended blots. Additional cooling packs can be purchased as accessories to further aid cooling.
3. Insert the module, attach the lid and connect to a power supply.
4. Consult Table 9 for details on recommended power supply voltage settings and blot times. Please note voltages and current will vary according to the amount of cassettes, type and temperature of buffer and thickness and percentage of gel. This will also affect quality of transfer so adjust the time of the blot to your particular samples and conditions.
5. When the blot time is completed, turn the power supply off and remove the lid of the unit.
6. Remove the cassettes from the main tank.
7. Lift the hinge of each cassette and gently pry apart the blot sandwich and remove the membrane from the gel.

8. The membrane can now be further processed. Remember to save the filter paper behind the gel to check for blow through of smaller proteins.

Table 9. Recommended voltage and current settings.

Duration of Blot	ShiroGel Blotter
One Hours	100V, 400mA
Three Hours	50V, 200mA

Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	Cause	Solution
Poor resolution	Sample volume too large	Concentrate samples.
Run taking unusually long time	Buffers too concentrated.	Check buffer protocol; dilute buffer if necessary.
	Current too low.	Increase voltage by 25-50%.
Run too fast, poor resolution	Buffers too dilute.	Check buffer protocol; concentrate buffer if necessary.
	Current too high.	Decrease voltage by 25-50%.
Skewed or distorted bands	Poor polymerization around sample wells.	Increase ammonium persulfate and TEMED concentrations by 25%.
	Excessive pressure applied to the gel plates when the gel is placed into the clamp assembly.	Do not overtighten the screws on the clamp assembly.
	Uneven heating of the gel.	Either use a cooled apparatus or reduce the current at which electrophoresis is performed.
Lateral band spreading	Diffusion of sample out of the wells before the power was turned on.	Minimize the time between sample application and power start-up.
	Diffusion during migration through the stacking gel.	Increase voltage by 25% during stacking gel or increase %T of stacking gel by 1%.
Protein band curves upward at both sides of the gel. "Smile effect"	Center of the gel running hotter than either ends.	Decrease power setting. Check buffer protocol to ensure it is properly formulated.

Gel does not polymerize	Temperature too low.	Cast at room temperature.
	Too little ammonium persulfate or TEMED.	Increase both by 50%.
	Ammonium persulfate or TEMED are old.	Use fresh ammonium persulfate and new TEMED.

Repair and maintenance of ShiroGel units

Cleaning ShiroGel Units

Units are best cleaned using warm water and a mild detergent. **Water at temperatures above 60° C can cause damage to the unit and components.** The tank should be thoroughly rinsed with warm water and distilled water to prevent build up of salts but care should be taken not to damage the enclosed electrode. Vigorous cleaning is not necessary or advised. Air drying is recommended before use.

The units should only be cleaned with the following:-

Warm water with a low concentration of soap or other mild detergent. Compatible detergents include dishwashing liquid. The units should not be left in detergents for more than 30 minutes.

Technical service

Web Resources

Visit the VWR's website at **www.vwr.com** for:

- Complete technical service contact information
- Access to VWR's Online Catalogue, and information about accessories and related products
- Additional product information and special offers

Contact us For information or technical assistance contact your local VWR representative or visit. **www.vwr.com**.

Warranty

VWR International warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of purchase. If a defect is present, VWR will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. For your protection, items being returned must be insured against possible damage or loss. This warranty shall be limited to the replacement of defective products.

IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Equipment disposal

This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.
Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.
For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

APPENDIX

Solutions

Appendix

Stock Solutions for SDS PAGE gels:-

Stock 30% Acrylamide Gel Solution:-

30.0 g acrylamide

0.8 g methylene bisacrylamide

Distilled Water to 100ml

Stock 4 X Resolving Gel Tris (1.5 M Tris HCl pH8.8, 0.4 % SDS)

To 110ml Distilled Water add 36.4 g of Tris base

Add 8ml of 10 % SDS

Adjust pH to 8.8 with 1N HCl

Adjust the final volume to 200ml with Distilled Water.

Stock 4 X Stacking Tris (0.5 M Tris HCL pH 6.8, 0.4 % SDS)

To 110ml Distilled Water add 12.12 g of Tris base

Add 8ml of 10 % SDS

Adjust pH to 6.8 with 1N HCl

Stock 4 X Tris-glycine tank buffer - SDS

36 g Tris base

172.8 g glycine

Distilled Water to 3 L

1 x Tris-glycine tank buffer - SDS

750ml of 4 X Tris-glycine reservoir buffer - SDS

30ml of 10 % SDS

Distilled Water to 3L

Add Distilled Water to a final volume of 200ml

10 % AP (ammonium persulphate solution)

0.1 g ammonium persulphate

1ml Distilled Water

Note ammonium persulfate degrades quickly in solution for best results discard after 1 week.

Stock 2 X Sample Buffer

2ml 50% glycerol

.5 ml 2-mercaptoethanol

4 ml 10% SDS

2.5ml .5 M Tris -HCL

1 ml 1% Bromophenol blue

Ddi H_2O to 10 ml

Aliquot into 1.5ml microcentrifuge tubes. Store at -20°C.

Membrane Selection

Nitrocellulose

Good binding capacity proteins bind by hydrophobic interactions

Pore Size: .45цm .22цm

Western Transfer

Amino acid analysis

Nylon

Microporous membrane modified with strongly basic charged groups

Binds negatively charged macromolecules DNA or RNA with Low background

Pore Size .45цm

Can Re-probe

Southern Transfer

Northern Transfer

Solid phase immobilization

Enzyme immobilization

Gene probe assays

PVDF

High binding capacity

High hydrophobic binding solvent resistant

Compatible with Protein stains and immunodetection Techniques

Pore Size 45цm .22цm

Can Re-probe

Western Transfer

Protein Sequencing

Amino Acid Analysis

Solid Phase Assay Systems

Buffer Preparation Proteins

Towbin Buffers

Native Gels

Towbin Buffer pH 8.3

25 mM TRIS, 192 mM glycine, 20% Methanol,

3.0 gm TRIS

14.4 gm glycine

200 ml Methanol

add dd H_2O to 1 liter

Denatured Gels

Towbin Buffer pH 8.3, No Methanol

25 mM TRIS, 192 mM glycine Methanol,

3.0 gm TRIS

14.4 gm glycine

add dd H_2O to 1 liter

shiroGel Accessories

700-0290		Module blot shiroGEL includes 3 cassettes
700-0294		Base casting for PAGE system shiroGEL
700-0295		Module PAGE only (no accessories) shiroGEL
700-0296		Spacer gel 0,75mm for PAGE system shiroGEL
700-0297		Spacer gel 1,5mm for PAGE system shiroGEL
700-0298		Comb 10 sample wells 0,75mm for PAGE system shiroGEL
700-0299		Comb 10 sample wells 1,0mm for PAGE system shiroGEL
700-0300		Comb 10 sample wells 1,5mm for PAGE system shiroGEL
700-0301		Comb 12 sample wells 0,75mm for PAGE system shiroGEL
700-0302		Comb 12 sample wells 1,0mm for PAGE system shiroGEL
700-0303		Comb 12 sample wells 1,5mm for PAGE system shiroGEL
700-0304		Comb 12 sample wells 2,0mm for PAGE system shiroGEL
700-0305		Comb MC 16 sample wells 1,0mm for PAGE system shiroGEL
700-0306		Spacer gel 1mm for PAGE system shiroGEL
700-0307		Comb 20 sample wells 0,75mm for PAGE system shiroGEL
700-0308		Comb 20 sample wells 1,0mm for PAGE system shiroGEL
700-0309		Comb 20 sample wells 1,5mm for PAGE system shiroGEL
700-0310		Spacer gel 2mm for PAGE system shiroGEL
700-0311		Comb 5 sample wells 0,75mm for PAGE system shiroGEL
700-0312		Comb 5 sample wells 1,0mm for PAGE system shiroGEL
700-0313		Comb 5 sample wells 1,5mm for PAGE system shiroGEL
700-0314		Comb MC 8 sample wells 1,0mm for PAGE system shiroGEL
700-0315		Pad fiber blotting shiroGEL
700-0316		Cassette blotting shiroGEL
700-0317		Cooling pack mini for PAGE system shiroGEL
700-0318		Plate dummy 10x10cm for PAGE system shiroGEL
700-0319		Plate glass notched with 0,75 spacers shiroGEL
700-0320		Plate glass notched with 1,5 spacers shiroGEL
700-0321		Plate glass notched with 1,0 spacers shiroGEL
700-0322		Plate glass notched 10x10cm shiroGEL
700-0323		Plate glass notched with 2,0 spacers shiroGEL
700-0324		Plate glass with 0,75 spacers shiroGEL
700-0325		Plate glass with 1,5 spacers shiroGEL
700-0326		Plate glass with 1,0 spacers shiroGEL
700-0327		Plate glass 10x10cm shiroGEL
700-0328		Plate glass with 2,0 spacers shiroGEL

Local VWR offices in Europe and Asia Pacific

Austria
VWR International GmbH
Graumanngasse 7
1150 Wien
Tel.: 01 97 002 0
Fax: 01 97 002 600
E-mail: info@at.vwr.com

Belgium
VWR International bvba
Researchpark Haasrode 2020
Geldenaaksebaan 464
3001 Leuven
Tel.: 016 385 011
Fax: 016 385 385
E-mail:
customerservice@be.vwr.com

China
VWR International China Co., Ltd
Suite 1802 - 1803,
Xing Ye Bank Mansion, No 168,
168 Jiangning Road
Shanghai 200041, China
Tel.: +86- 21 521 388 22
Fax: +86- 21 521 33 933
E-mail: sales_china@vwr.com

Denmark
VWR - Bie & Berntsen
Transformervej 8
2730 Herlev
Tel.: 43 86 87 88
Fax: 43 86 87 90
E-mail: info@dk.vwr.com

Finland
VWR International Oy
Pihatörmä 1 C 1
FI - 02240 Espoo
Tel.: +358 9 80 45 51
Fax: +358 9 80 45 52 00
E-mail: info@fi.vwr.com

France
VWR International S.A.S.
Le Périgares – Bâtiment B
201, rue Carnot
94126 Fontenay-sous-Bois cedex
Tel.: 0 825 02 30 30 (0,15 EUR TTC/min)
Fax: 0 825 02 30 35 (0,15 EUR TTC/min)
E-mail: info@fr.vwr.com

Germany
VWR International GmbH
Hilpertstrasse 20a
D - 64295 Darmstadt
Tel.: 0180 570 20 00*
Fax: 0180 570 22 22*
E-mail: info@de.vwr.com
*0,14 €/Min. aus d. dt. Festnetz,
Mobilfunk max. 0,42 €/Min.

Hungary
Spektrum-3D Ltd.
A VWR International Company
Simon László u. 4.
4034 Debrecen
Tel.: (52) 521-131
Fax: (52) 470-069
E-mail: info@spektrum-3d.hu

India
VWR Lab Products Pte Ltd
2nd Floor, Front Wing, 135/12, Brigade Towers
Brigade Road
Bangaluru 560025 India
Tel: +91-2522-277876 (Mumbai)
Tel: +91-80-41117124 (Bangalore)
Fax +91-80-41117120
E-mail: vwr_india@vwr.com

Ireland
VWR International Ltd
Orion Business Campus
Northwest Business Park
Ballycoolin
Dublin 15
Tel.: 01 88 22 222
Fax: 01 88 22 333
e-mail sales@ie.vwr.com

Northern Ireland
VWR International Ltd
A10 Harbour Court, 7 Heron Rd
Sydenham Business Park
Belfast BT3 9HB
Tel.: 028 9058 5800
Fax: 028 9080 7812
e-mail sales@ie.vwr.com

Italy
VWR International s.r.l.
Via Stephenson 94
20157 Milano (MI)
Tel.: 02 332 03 11
Fax: 800 152 999
E-mail: info@it.vwr.com

The Netherlands
VWR International B.V.
Postbus 8198
1005 AD Amsterdam
Tel.: 020 4808 400
Fax: 020 4808 480
E-mail: info@nl.vwr.com

Norway
VWR International AS
Haavard Martinsensvei 30
0978 Oslo
Tel.: 02290
Fax: 815 00 940
E-mail: info@no.vwr.com

Portugal
VWR International - Material de Laboratório, Lda
Edifício Neopark
Av. Tomás Ribeiro, 43- 3 D
2790-221 Carnaxide
Tel.: 21 3600 770
Fax: 21 3600 798/9
E-mail: info@pt.vwr.com

Singapore
VWR Singapore Pte Ltd
18 Gul Drive
Singapore 629468
Tel: +65 6505 0760
Fax: +65 6264 3780
E-mail: sales@sg.vwr.com

Spain
VWR International Eurolab S.L.
Ronda Can Fatjó, nº 11
Edifici Tecnopark, 3
Parc Tecnològic del Vallés
08290 Cerdanyola del Vallés
(Barcelona)
Tel.: 902 222 897
Fax: 902 430 657
E-mail: info@es.vwr.com

Sweden
VWR International AB
Fagerstagatan 18a
163 94 Stockholm
Tel.: 08 621 34 00
Fax: 08 621 34 66
E-mail: info@se.vwr.com

Switzerland
VWR International AG
Lerzenstrasse 16/18
8953 Dietikon
Tel.: 044 745 13 13
Fax: 044 745 13 10
E-mail: info@ch.vwr.com

UK
VWR International Ltd
Customer Service Centre
Hunter Boulevard
Magna Park
Lutterworth
Leicestershire
LE17 4XN
Tel.: 0800 22 33 44
Fax: 01455 55 85 86
E-mail: uksales@uk.vwr.com