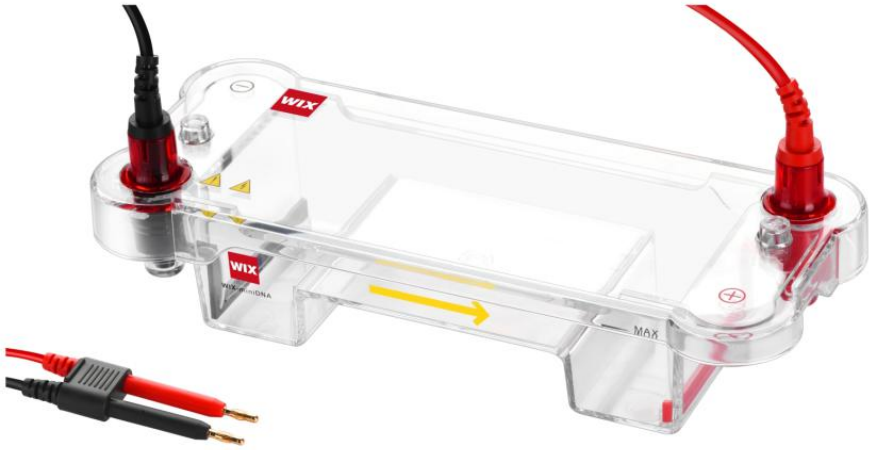
WIX-midiDNA Multipurpose Horizontal Electrophoresis Cell

Instruction Manual



WIX TECHNOLOGY BEIJING CO.,LTD

Content

Proper operation procedures!

Please read carefully before usage!

Please carefully read this instruction manual which contains the proper operation procedures.

Please make the instrument power off while not in the usage in order to avoid shock hazard .Please check the condition of instrument completely before the usage in the aspect of body crack, body damage, loosed connection, rubber damage, wire corrosion, wire disconnection, electricity leakage, buffer leakage in order to guarantee the smooth operation, please discontinue the usage and report to WIX or local agency immediately in case of any phenomenon mentioned above.

Note: We will not bear the responsibility for any result caused by any improper usage.

Statement: It is not used in the clinical test for it is the instrument for scientific research and teaching.

Chapter 1 Introduction

1.1 Brief introduction

WIX-midiDNA Multipurpose Horizontal Electrophoresis Cell equipped with the function of adding sample by pipette is mainly used for electrophoresis of the agarose gel of DNA and RNA, whose special-used gel casting bench and flexible combination of tray with ear-shaped structure are convenient to be used. It can conduct the experiment of 96-hole PCR sample electrophoresis with different volume of agarose and size like 6.5×6.5 cm, 6.5×13 cm, 13×6.5 cm, 13×13 cm etc. The instrument mainly consists of gel tray, lower body, upper body, gel-making kit, comb etc.

1.2 Structure

Prior to usage, please check the accessories according to the packing list and the condition of instrument. Please contact the head quarter or local agency in case of any discrepancy.

Please refer to the following packing list:

Accessory	Quantity	Accessory	Quantity
Main body	1 piece	Upper lid and power supply wire	1 set
Electrode	1 pair	Gel-making frame	1 piece
Gel tray	5 pieces	Comb	9 pieces
	13×13cm, 1 piece		1 piece, 7+7/14 wells, 0.75mm thickness
	13×6.5 cm, 1 piece		1 piece, 9+9/19 wells, 0.75mm thickness
	6.5×13cm, 1 piece		4 pieces, 12+12/27 wells, 1.0mm thickness
	6.5×6.5cm, 2 pieces		1 piece, 7+7/14 wells, 1.5mm thickness
			1 piece, 9+9/19 wells, 1.5mm thickness
			1 piece, 3+3/3+2 wells, 2.0mm thickness
Instruction manual	1 set	Qualification certificate	1 piece

1.3 Main technical parameter

Size	300×170×80mm
Tray size (W*L)	Standard: 13×13cm, 13×6.5cm, 6.5×13cm, 6.5×6.5cm
Comb	7+7/14 wells, 0.75mm thickness
	9+9/19 wells, 0.75mm thickness
	12+12/27 wells, 1.0mm thickness
	7+7/13 wells, 1.5mm thickness
	9+9/19 wells, 1.5mm thickness
	3+3/3+2 wells, 2.0mm thickness
Quantity of gel to be made	1-4 piece(s)
Buffer	1000ml
Net weight	1.1kg

The instrument requires direct current, the followings are the specific:
The maximum voltage: 200V
The maximum power: 40W
The maximum buffer temperature: 40℃

Chapter 2 Operation procedure

1. Put the gel-making frame on the horizontal desk and put the gel tray into the grid of gel-making frame accordingly then put the comb in the narrow slot.4 types of gel can be made in the gel-making frame like 13×13 cm, 13×6.5 cm, 6.5×13 cm, 6.5×6.5 cm according to the actual needs.

2. Make the agarose solution with proper concentration by electrophoresis buffer according to the size of separated DNA fragment: measure the dry powder of agarose accurately and put it in the conical flask or the glass bottle with fixed volume of electrophoresis buffer, and then use the glass stick to stir it evenly and put it into the boiling water or microwave oven for being heated until the agarose is fused (to determine the concentration of agarose according to the attached list).

3. Put the gel into the gel tray slowly while it is slightly cooled, the ideal thickness of gel is 3～5mm (Note: avoid the bubble in the gel).

4. Let the gel coagulates completely for 30～45min in room temperature (The coagulation period can also be shortened by putting it in the 4℃ refrigerator after the gel coagulates slightly). Take out the comb carefully and put gel in the cell, the side of hole is close to cathode (black end).

5. Put the buffer in the electrophoresis cell and keep the surface of buffer at least 2mm higher than the gel (Note: TAE buffer should be replaced after 2 to 3 times, the TBE buffer can be used for around 10 times).

6. Mix proper amount of DNA sample and 10×buffer (analyze single DNA sample, such as L bacteriophage or plasmid DNA, each sample-adding hole with width of 5mm is suitable for 100～500ng DNA. The resolution is not decreased obviously when 20～30μg is added if sample consists of many DNA fragments, such as DNA enzyme digestion sample of mammal). Use the pipette to add the sample with proper amount of standard DNA molecular weight into the right side hole and left side hole.

7. Lid the electrophoresis cell after sample adding and power on by 5～8V/cm, the distance in which should be matched with the measured distance between anode and cathode. The bubble is created by electrolytic action. DNA migrates to the anode (red plug).The period of electrophoresis is determined by the length of gel voltage, and the size of DNA fragment. The longer the gel is, the lower the voltage is, the bigger the DNA fragment is, the more time required. However the resolution of big DNA fragment is very low and the band is not clear if the high voltage is adopted (The voltage per centimeter of gel is less than 8V because the high voltage causes the lower resolution. The electrophoresis migration rate of linear DNA molecular is increased as voltage rises accordingly only in the lower voltage.).

8. When indicator migrates to the bottom of gel, power off and take out sample and put it in the EB solution for being dyed for 5～10min (EB will be resolved in the sunshine and should be stored in the dark room),Observe the sample in UV Transilluminator and take photo if necessary (EB can be put in the gel during the gel-making process).

Chapter 3 Maintenance

1. Operation temperature: the temperature is 4~40℃, the relative humidity is less than 95%, good ventilation and no erosive air.
2. Please use the soft decontaminant to cleanse carefully the gel tray, lower body, gel-making kit and comb.
3. In order to avoid the rust, please use bibulous paper to dry the electrode tip once it is wetted.
4. In order to avoid the damage and corrosion, please keep the electrophoresis cell clear of acid solution and aqueous alkali.

Chapter 4 Trouble shooting

Trouble description	Analysis	Solution	Remark
Vague DNA band	DNA degradation	Avoid nuclease pollution during the process of experiment.	
	The electrophoresis buffer is used more times.	Renew the electrophoresis buffer. If the electrophoresis buffer is used many times, the ionic strength is lowered, the pH value is decreased, buffer efficiency is lowered,Which affects the electrophoresis.	
	The condition of electrophoresis is not suitable.	While being during the electrophoresis, the voltage should be less than 8V/cm, the temperature should less than 30℃. In case of huge DNA electrophoresis, the temperature should be less than 15℃. Check whether the electrophoresis buffer is available enough to conduct the electrophoresis.	
	Over-volume of DNA sample.	Reduce the volume of DNA sample.	
	DNA sample with high volume of salt.	Remove the surplus salt via ethyl alcohol precipitation before the electrophoresis.	
	Protein pollution	Remove the protein via phenol.	
	DNA denaturation	No heating before electrophoresis, dilute the DNA via 20mM NaCl buffer	

Trouble description	Analysis	Solution	Remark
Irregular migration of DNA band.	Recovery feature of cos position λ/Hind III fragment .	Should be heated for 5 minutes under temperature of 65℃ and be cooled for 5 minutes on the ice before electrophoresis.	
	The condition of electrophoresis is not suitable.	While being during the electrophoresis, the voltage should be less than 8V/cm,the temperature should less than 40℃. Renew the electrophoresis buffer frequently.	
	DNA denaturation	No heating before electrophoresis, dilute the DNA via 20mM NaCl buffer.	
Unclear band or no DNA band.	Not enough DNA sample	Increase the volume of DNA sample.	
	DNA degradation	Avoid nuclease pollution during the process of experiment.	
	DNA migrate out of gel.	Shortening the electrophoresis period, lowering the voltage, increase the concentration of gel.	
	The light source is not suitable for the DNA that is polluted by EB.	The ultraviolet source with short wave light (254mm) should be adopted.	
Disappearance of DNA band	Small-sized DNA migrates out of gel.	Shortening the electrophoresis period, lowering the voltage, increase the concentration of gel.	
	Hardly recognition of DNA with similar sized molecule.	Prolonging the period of electrophoresis and use the gel with proper concentration.	
	DNA denaturation	Do not heat DNA chain with high temperature before electrophoresis, dilute the DNA via 20mM NaCl buffer	
	DNA china is huge, normal gel electrophoresis is not suitable.	Conduct the analysis in pulse gel electrophoresis.	

Trouble description	Analysis	Solution	Remark
Channel of sample is not straight.	The gel is not solidified completely, the comb is slanting, there is bubble in the gel	The gel should be solidified at least 30-40 minutes. Check the comb. Avoid the bubble during the process gel-making.	
The band of high molecular weight is clear and beautiful while the band of low molecular weight is scattered.	The concentration of gel is low.	Using the gel with proper concentration. Use acrylamide to separate the gel.	
The gel is melted.	High temperature	Choose the most suitable voltage. High frequency usage of buffer or the content is wrong, the buffer has to be re-formulated.	
The band of sample is scattered.	The concentration of salt is high. High temperature, Over amount of sample DNA degradation Sample is ruptured	Reduce the concentration of salt in the sample. Lower the voltage or re-formulate the buffer. Make the gel thicker or choose the suitable sample, Re-extract the sample. Re-make the gel.	

Chapter 5 Transportation and storage

1. Please handle the instrument carefully and lightly during the transportation and storage and avoid the heavy-object bearing.

2. Packaged instrument should be stored in the room with temperature -20℃~55℃ and humidity less than 93%, without erosive air and with good ventilation.

Chapter 6 Quality guarantee

(1) The warranty is 2 years since the date of sales.

(2) The warranty excludes the following situations otherwise it is charged.

a. No presentation of warranty card and invoice.

b. The invoice is revised.

c. Improper operation or accident factors.

d. The damage is caused by the user’s repair.

e. Out of the warranty, the instrument is still in usage after repair.

Attachment (for your reference)

Concentration of arose gel (ratio of weight to volume)	The size of recognizable linear DNA fragment (kb)
0.4 %	5~60
0.7 %	0.8~10
1.0 %	0.4~6
1.5 %	0.2~4
1.75 %	0.2~3
2.0 %	0.1~3

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