

Rapid Running Buffer Solution(20x) for SDS-PAGE

A running buffer for hand-made SDS-PAGE gels, which is able to dramatically shorten protein migration time. Please note that the product is designed for hand-made gels. Any commercially available precast gels should be evaluated beforehand.

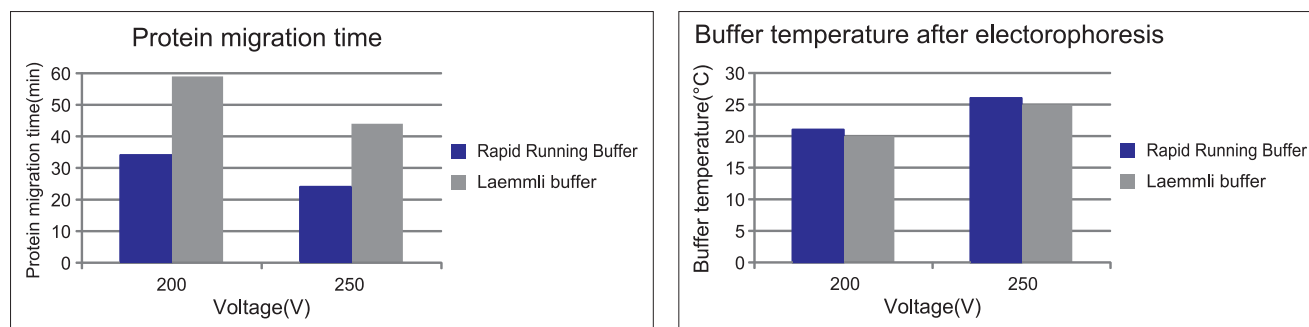
- **Time-saving: Approximately 25-minute protein migration time with mini-gel on 250 V**
- **Simple: Replace Laemmli running buffer with Rapid Running Buffer Solution**
- **Gradient gel-like separation pattern: Wider separation range**
- **High transfer efficiency: Lower acrylamide concentration gel recommended**
- **Applicable to Wide Range Gel***

*Wide Range Gel: Hand-made gels casted with Wide Range Gel Preparation Buffer, Catalog No. 07831-94, which offer gradient gel-like separation pattern -- the gradient in pore size offers wide range of molecular weights separation in a single run -- and also have tensile strength character.

Reference data

This running buffer offers shorter protein migration time than Laemmli running buffer. No significant difference of buffer temperature increase with Laemmli running buffer shows.

■ Comparison of protein migration time and buffer temperature with Laemmli running buffer

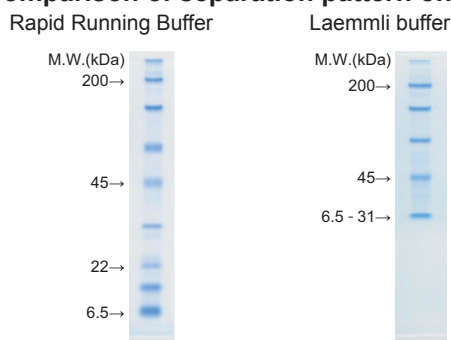


<Experimental details>

Gel : 8% Laemmli gel run with Rapid Running Buffer / 12% Laemmli gel run with Laemmli Running Buffer (0.025 mol/l tris, 0.192 mol/l L-glycine and 0.1% SDS)

Volume of running buffer : 380 ml

■ Comparison of separation pattern on the same acrylamide percentage gel



<Experimental details>

Gel : (Left) 8% Laemmli gel run with Rapid Running Buffer
(Right) 8% Laemmli gel run with Laemmli Running Buffer (0.025 mol/l tris, 0.192 mol/l L-glycine and 0.1% SDS)

Voltage : 250 V

Time required : 23 minutes

Tips

■ Lower acrylamide concentration required

To have a similar separation pattern running with Rapid Running Buffer, 4% lower acrylamide concentration should be used as the below table.

Laemmli method		→	Saving-time protocol	
Gel concentration	Running buffer		Gel concentration	Running buffer
12%	Laemmli running buffer		8%	Rapid Running Buffer

Here is the separation range reference run with Rapid Running buffer and Laemmli buffer;

Gel	6% Laemmli gel
Running buffer	Rapid Running buffer Separation range 30 – 200 kDa (Low molecular weight area) Running buffer Separation range 50 – 300 kDa (High molecular weight area)

Separation pattern

<Experimental details>

Gel : Laemmli mini-gel and Wide Range mini-gel

Running buffer : Rapid Running buffer and Laemmli running buffer

Sample : Protein ladder manufactured by Nacalai, #29458-24

Voltage : 250 V

Gel staining : CBB Stain One manufactured by Nacalai, #04543

■ Laemmli gel run with Rapid Running Buffer

Running buffer	Rapid Running Buffer			
Gel	Laemmli gel			
Gel concentration	6%	8%	10%	4 - 10%
Separation pattern				

■ Laemmli gel run with Laemmli running buffer

Running buffer	Laemmli running buffer				
Gel	Laemmli gel				
Gel concentration	6%	8%	10%	12%	15%
Separation pattern					

■ Wide Range Gel run with Rapid Running Buffer

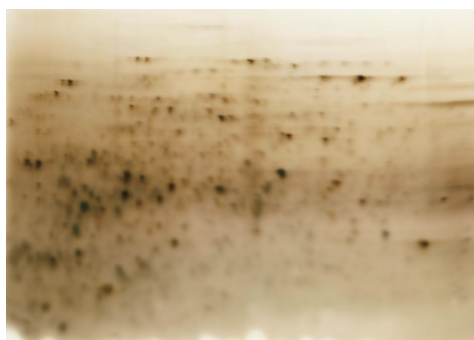
To separate high molecular weight area, Wide Range Gel will be helpful.

Running buffer	Rapid Running Buffer			
Gel	WIDE RANGE Gel			
Gel concentration	4%	6%	8%	10%
Separation pattern	<p>M.W.(kDa) 200→ 45→ 22→</p>	<p>M.W.(kDa) 200→ 45→ 22→</p>	<p>M.W.(kDa) 200→ 45→ 22→</p>	<p>M.W.(kDa) 200→ 45→ 22→ 6.5→</p>

Application

■ 2-D electrophoresis

Rapid Running Buffer is also applicable to 2-D electrophoresis.



<Experimental details>

Sample : HL-60 cell extract

1-D : Immobiline® pH4-7

2-D : 10% Laemmli mini gel

Running buffer : Rapid Running Buffer

Voltage : 250 V

Migration time : 25 minutes

Gel staining : Sil-best Stain One manufactured by Nacalai, #06865-81

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■ Transfer efficiency

Because of lower acrylamide concentration, protein transfer efficiency from a gel to a membrane will improve.

Gel concentration	8%	12%	8%	12%
Running buffer	Rapid Running Buffer	Laemmli running buffer	Rapid Running Buffer	Laemmli running buffer
Transfer time required	10 minutes		30 minutes	
Membrane staining image	<p>M.W.(kDa) ④ ③ ② ① 200→ 45→ 22→ 6.5→</p>	<p>M.W.(kDa) ① ② ③ ④ 200→ 45→ 22→ 14+6.5→</p>	<p>M.W.(kDa) ④ ③ ② ① 200→ 45→ 22→ 6.5→</p>	<p>M.W.(kDa) ① ② ③ ④ 200→ 45→ 22→ 14+6.5→</p>

<Experimental details>

Gel : Laemmli mini gel

Sample : 1 lane Protein Ladder One, Triple-color, #09547-74, 5 µl
2-4 lane Protein Marker, #29458-24, 3x, 1x, 1/3x 2µl each

Voltage : 250 V

Transfer buffer/Voltage : Semi-dry Transfer Buffer, #30650-31/10 V

Membrane staining : CBB Stain One, #04543

Note

- Rapid Running Buffer is designed for hand-made gels, but not for Native-PAGE gels. Any commercially available precast gels should be evaluated beforehand.
- Pre-stained marker bands might appear slightly bigger molecular weight than they actual have due to dye conjugation.
- Actual protein migration time and buffer temperature increased may depend on a gel composition and its size, amount of running buffer, type of chamber, etc.

Ordering information

Product Name	Grade	Storage	Catalog Number	PKG Size
Rapid Running Buffer Solution(20x) for SDS-PAGE	SP	Room temperature	12981-74	250 mL

Related products

Product Name	Catalog Number	PKG Size
■ Gel casting reagents		
40(w/v)%-Acrylamide/Bis Mixed Solution(29:1)	06119-45	500 mL
40(w/v)%-Acrylamide/Bis Mixed Solution(37.5:1)	06121-95	500 mL
30(w/v)%-Acrylamide/Bis Mixed Solution(29:1)	06141-35	500 mL
30(w/v)%-Acrylamide/Bis Mixed Solution(37.5:1)	06144-05	500 mL
10%-SDS Solution	30562-04	100 mL
N,N,N',N'-Tetramethylethylenediamine	33401-72	25 g
10(w/v)%-Ammonium Peroxodisulfate Solution	02634-34	10 mL
WIDE RANGE Gel Preparation Buffer(4x) for PAGE	07831-94	250 mL
■ Running buffer		
Running Buffer Solution(10x) for SDS-PAGE, Tris-Glycine	30329-61	1 L
■ Sample preparation reagents		
Sample Buffer Solution with 2-ME(2x) for SDS-PAGE	30566-22	25 mL
Sample Buffer Solution without 2-ME(2x) for SDS-PAGE	30567-12	25 mL
Sample Buffer Solution with Reducing Reagent(6x) for SDS-PAGE	09499-14	5 mL
Sample Buffer Solution without Reducing Reagent(6x) for SDS-PAGE	09500-64	5 mL
■ Gel staining products		
Dispotray-S Outer size:150 mm x 105 mm x 19 mm Bottom face size: 122 mm x 80 mm	16526-82	25 pieces
Dispotray-M Outer size:200 mm×140 mm×25 mm Bottom face size: 155 mm×105 mm	16551-84	20 pieces
Rapid Stain CBB Kit	30035-14	1 set
CBB Stain One(Ready To Use)	04543-51	1 L
Sil-Best Stain One	06865-81	1 set

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