

# Compare Pierce molecular weight markers for relative migration in Precise™ Protein Gels

TR0047.1

## Introduction

Presented in this Tech Tip are photographs of actual gels in which Pierce molecular weight marker mixes have been resolved by electrophoresis in the several different pre-cast, polyacrylamide gels offered by Pierce. In each panel the migration patterns of four different marker mix products resolved in a particular concentration of Precise™ Protein Gel are displayed side by side. Comparison of the general appearance and resolution of these migration patterns may aid in choosing the appropriate gel and marker type for a given application.

### A. Protein Gel Electrophoresis

Electrophoretic separation of proteins is an analytical technique of unrivalled resolving power and exceptional versatility. The most commonly used protein electrophoresis technique is SDS-PAGE (sodium dodecyl sulfate polyacrylamide gel electrophoresis). SDS treatment largely removes differences between proteins in both charge and conformation, making protein size the main determinant of electrophoretic mobility. Thus, SDS-PAGE allows estimation of protein molecular weights by comparison of their migration distances to those of standard proteins electrophoresed in the same gel. These standards are commonly referred to as molecular weight (MW) markers.

### B. Pierce Molecular Weight Marker Mixes

Pierce offers four protein MW marker mix products. (Product names and numbers are indicated in the figures below). These unique mixes of seven proteins (nine in the case of the unstained marker) are packaged as dried, single-use aliquots in foil-sealed, 1 × 48-well microtube plates. The markers, which are already reduced in sample loading buffer, are ready to load immediately after puncturing through the foil cover of one microtube and dissolving the pellet in 10 µl of water.

### C. Precise™ Protein Gels

Precise™ Protein Gels are precast 1 mm-thick mini gels for SDS-PAGE that use a unique Tris-HEPES-SDS running buffer to improve band resolution and decrease run-time compared to traditional gel types. Cast in a stable, neutral buffer, Precise™ Gels yield excellent results throughout their entire 12-month shelf life. The gels are individually packaged in an easy-to-open plastic pouch and are ready to use, with no comb or tape to remove. Precise™ Protein Gels are available in gradient (4-20% and 8-16%) and fixed (8%, 10% and 12%) concentrations and in 10, 12 and 15-well formats (Product numbers for the 12-well gels are specified in the following figures; see Related Pierce Products section for additional Precise™ Gel products).

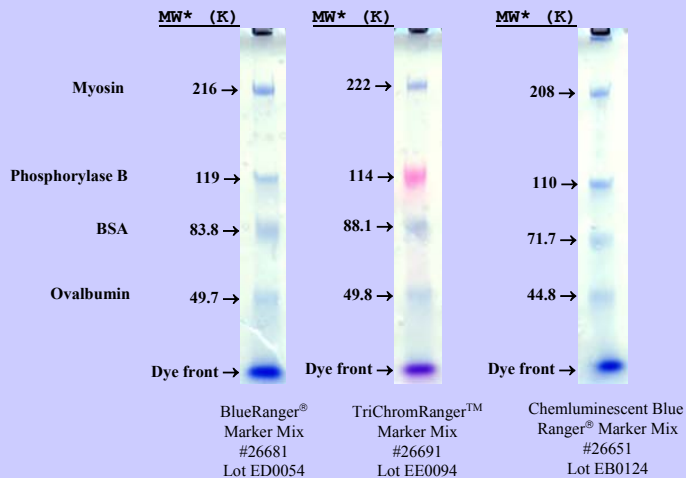
### D. Interpreting Migration Tables

Because all four Pierce marker mixes are based on the same set of standard proteins, choosing among them is primarily a matter of the detection or visualization method needed for a given experiment. For example, the BlueRanger® Marker Mix is most appropriate when the gel will be stained with coomassie dye (Product No. 24590 or 24615) or silver (Product No. 24612). The Chemiluminescent BlueRanger® Marker is most appropriate when subsequent transfer and Western blot detection by SuperSignal® West Chemiluminescent Substrate (Product No. 34080) will be used.

Identification of the component marker proteins that are resolved by a particular fixed or gradient gel may be difficult without comparing results to actual gel photographs. For example, unless one is aware that the three lowest MW markers do not resolve from each other or the dye front in an 8% polyacrylamide gel, one may find it difficult to assign identity (and MW) to the four remaining resolved bands. To aid in this identification process, migration patterns of all four MW marker mixes electrophoresed in each fixed and gradient Precise™ Protein Gel are presented here.

### 8% Precise™ Protein Gel

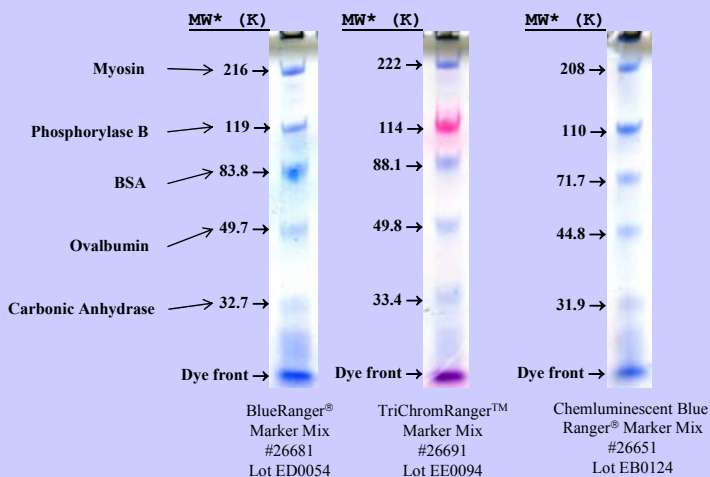
Product #25220, 12 Wells



Electrophoresis was performed at 100 Volts for 57 minutes at room temperature in BupH™ Tris-HEPES-SDS Running Buffer (Product #28398).  
 \*Note. The molecular weights (MW) of the pre-stained marker proteins are lot specific.

### 10% Precise™ Protein Gel

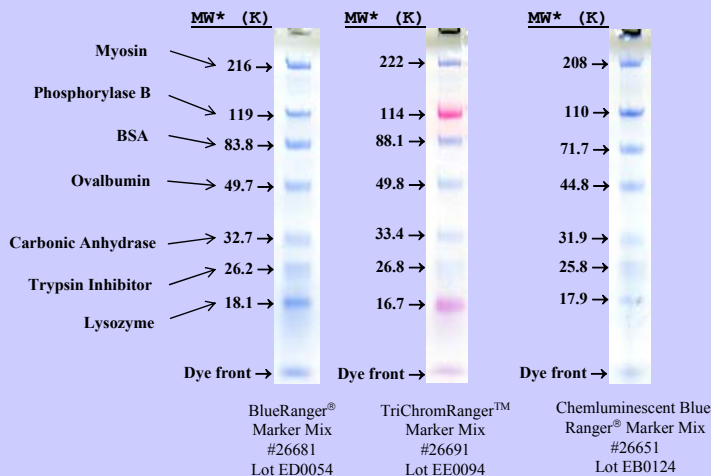
Product #25221, 12 Wells



Electrophoresis was performed at 100 Volts for 57 minutes at room temperature in BupH™ Tris-HEPES-SDS Running Buffer (Product #28398).  
 \*Note. The molecular weight (MW) of pre-stained marker proteins are lot specific.

## 12% Precise™ Protein Gel

Product #25222, 12 Wells

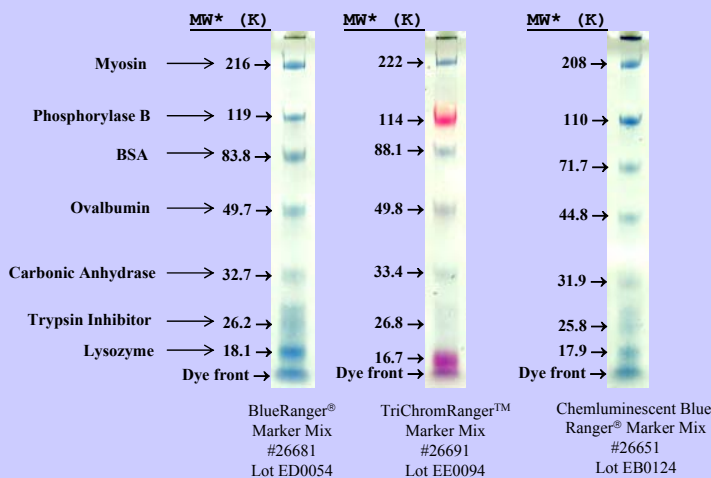


Electrophoresis was performed at 100 Volts for 57 minutes at room temperature in BupH™ Tris-HEPES-SDS Running Buffer (Product #28398).

\*Note. The molecular weight (MW) of pre-stained marker proteins are lot specific.

## 8-16% Precise™ Protein Gel

Product #25223, 12 Wells

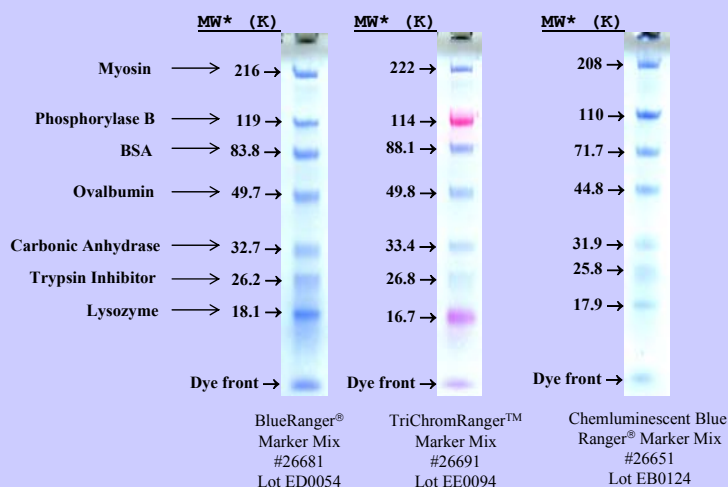


Electrophoresis was performed at 100 Volts for 57 minutes at room temperature in BupH™ Tris-HEPES-SDS Running Buffer (Product #28398).

\*Note. The molecular weight (MW) of pre-stained marker proteins are lot specific.

## 4-20% Precise™ Protein Gel

Product #25224, 12 Wells



Electrophoresis was performed at 100 Volts for 57 minutes at room temperature in BupH™ Tris-HEPES-SDS Running Buffer (Product #28398).

\*Note. The molecular weight (MW) of pre-stained marker proteins are lot specific.

## Related Pierce Products

### Precise™ Protein Gels

Product Number	% Acrylamide	Running Buffer	Cassette Size	Wells	Well Volume	Separation Range (kDa)
25200	8	Tris-HEPES-SDS	100 × 85	10	50 µl	205-45
25201	10	Tris-HEPES-SDS	× 4.5 mm	10	50 µl	205-24
25202	12	Tris-HEPES-SDS		10	50 µl	205-14
25203	8-16	Tris-HEPES-SDS		10	50 µl	205-14
25204	4-20	Tris-HEPES-SDS		10	50 µl	205-6.5
25220	8	Tris-HEPES-SDS	100 × 85	12	30 µl	205-45
25221	10	Tris-HEPES-SDS	× 4.5 mm	12	30 µl	205-24
25222	12	Tris-HEPES-SDS		12	30 µl	205-14
25223	8-16	Tris-HEPES-SDS		12	30 µl	205-14
25224	4-20	Tris-HEPES-SDS		12	30 µl	205-6.5
25240	8	Tris-HEPES-SDS	100 × 85	15	25 µl	205-45
25241	10	Tris-HEPES-SDS	× 4.5 mm	15	25 µl	205-24
25242	12	Tris-HEPES-SDS		15	25 µl	205-14
25243	8-16	Tris-HEPES-SDS		15	25 µl	205-14
25244	4-20	Tris-HEPES-SDS		15	25 µl	205-6.5

### Protein Molecular Weight Marker Mixes

26681	BlueRanger® Prestained Protein Molecular Weight Marker Mix
26691	TriChromRanger® Prestained Protein Molecular Weight Marker Mix
26651	Chemiluminescent BlueRanger® Prestained Peroxidase-Labeled Protein MW Marker Mix

### Lane Marker Sample Buffers

39000	ImmunoPure® Lane Marker Reducing Sample Buffer (5X), 5 ml
39001	ImmunoPure® Lane Marker Non-Reducing Sample Buffer (5X), 5 ml

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