Protein Research

7

PROTEIN RESEARCH

REAGENTS FOR POLYACRYLAMIDE GEL PREPARATION

Polyacrylamide gel electrophoresis (PAGE) is probably the most common analytical technique used to separate and characterize proteins. Polyacrylamide gels are chemically crosslinked gels formed by the reaction of acrylamide with a bifunctional crosslinking agent such as N,N′-methylenebisacrylamide (Bis). The 'pore size' is determined by the ratio of acrylamide to bisacrylamide, and by the concentration of acrylamide.

Acrylamide/ Bisacrylamide Solution, 30%

It is a high purity and ready-to-use Acrylamide/ Bisacrylamide Solution 30%. It contains 29.22% (w/v) acrylamide and 0.78% (w/v) bis-acrylamide for a monomer to crosslinker ratio of 37.5:1 (2.6% crosslinker).

Ammonium Persulfate

It is a strong oxidizer commonly used in the preparation of polymer materials. In polymerization reactions, ammonium persulfate is often used as a radical initiator to start the polymerization process. It can generate free radicals that react with the monomers to form polymer chains.

TEMED

TEMED is a co-initiator in polymerization reactions in combination with ammonium persulfate.

SDS, Sodium Dodecyl Sulfate

SDS is an anionic detergent used in molecular biology and protein field. It is highly used in protein purification for membranes & inclusion bodies solubilization, protein denaturation and analysis (SDS-PAGE) preparation. It is presented in solution (10 or 20%) and in powder.

2-Mercaptoethanol

2-Mercaptoethanol is a potent reducing agent commonly used in biochemistry and molecular biology applications to reduce disulfide bonds in proteins and denatured protein samples, which makes the

REFERENCES	DESCRIPTION	FORMAT
TBR0315	ACRYLAMIDE/ BISACRYLAMIDE SOLUTION 30% (37.5:1)	100 mL
TBR0316		500 mL
TBR0139	TEMED	10 g
TBR0140	AMMONIUM PERSULFATE	10 g
TBR0141		25 g
TBR0107	2-MERCAPTOETHANOL 99%	25 mL
TBR0108	2-MERCAPTOETHANOL SOLUTION, 50 mM	20 mL
TBR0109		100 mL
TBR0144	SDS SOLUTION 20%	1 L
TBR0145		100 mL
TBR0146	SDS SOLUTION 10%	1 L
TBR0147		100 mL
TBR0143	SDS POWDER	500 g

LOADING BUFFERS

Laemmli Loading Buffer, 2x or 4x

Laemmli Loading Buffer is a ready to use buffer to dilute protein samples before loading in SDS-PAGE gels. It ensures optimal band resolution when preparing proteins for SDS-PAGE with Tris-Glycine-SDS running buffer. Laemmli Loading Buffer contains bromophenol blue to monitor the electrophoresis, and SDS to denature and charge negatively the protein, separating them by size and not by charge. To obtain reducing conditions is necessary to add β-mercaptoethanol or DTT.

Tricine Loading Buffer, 2x

Tricine Loading Buffer 2x is a ready to use buffer to dilute protein samples before loading in SDS-PAGE gels. It ensures optimal band resolution when preparing peptides and small proteins for SDS-PAGE with Tris-Tricine-SDS running buffer. Tricine Loading Buffer 2x contains Coomasie Blue G-250 to monitor the electrophoresis, and SDS to denature and charge negatively the protein separating them by size and not by charge.

Native Loading Buffer, 2x

Native Loading Buffer 2x is a ready to use non-denaturing buffer to dilute protein samples before loading in polyacrylamide gel. It maintains the proteins' secondary structure and native charge density. Native Loading Buffer 2x ensures optimal band resolution when preparing proteins for polyacrylamide gel electrophoresis with Tris-Glycine buffer.

REFERENCES	DESCRIPTION	FORMAT
TBB0390	LAEMMLI LOADING BUFFER, 2x	5 x 1 mL
TBB0391	LAEMMLI LOADING BUFFER, 2x	30 mL
TBB0392	LAEMMLI LOADING BUFFER, 4x	5 x 1 mL
TBB0393	LAEMMLI LOADING BUFFER, 4x	20 mL
TBB0394	TRICINE LOADING BUFFER, 2x	20 mL
TBB0397	NATIVE LOADING BUFFER, 2x	30 mL

PROTEIN BUFFERS

Glycine Buffer 0.1M

Glycine Buffer 0.1 M pH 3.0, is a high quality, ready to use buffer used extensively with affinity chromatography, particularly with proteins and antibodies. Glycine is a zwitterionic compound which has pKa values of 2.3 and 9.6-9.8. Glycine Buffer 0.1 M pH 3.0, low pH and mild conditions are ideal to break weak hydrogen bonds formed during affinity chromatography and selective removal of antibodies.

Tris-Glycine Buffer

Tris-Glycine Buffer pH 8.3, is the perfect buffer to work with proteins in applications such as native and gradient polyacrylamide gel electrophoresis and as Western transfer buffer. It must be diluted in water or 20% methanol to working concentration of 1x. It is presented in liquid format (10x) and in powder formulation (1x).

Tris-Glycine-SDS Buffer

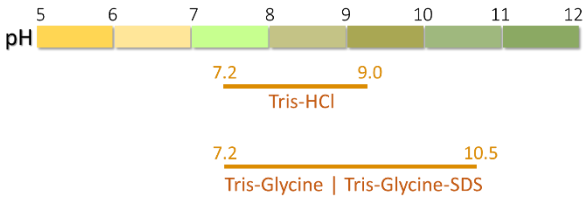
Tris-Glycine-SDS Buffer pH 8.3, is a buffer suited for protein gel electrophoresis. It is commonly used as the electrophoresis buffer of SDS-PAGE where proteins migrate by their size. It is presented in liquid format (10x, 1x) and in powder formulation (1x).

Tris-Tricine-SDS Buffer

Tris-Tricine-SDS Buffer, pH 8.3 is the perfect buffer in the separation of peptides, low molecular weight proteins and hydrophobic proteins. Replacement of traditional glycine (pK 9.6) with Tricine (pK 8.15) allows a better resolution of low molecular weight proteins when compared to the Laemmli method. Besides, Tricine gel are particularly suitable for isolating hydrophobic proteins from 2D gels, facilitates its transfer during Western blotting and it is effective in the isolation of protein complexes from biological membranes.

Tris-HCl Buffer, 1.5M, pH 8.8

Tris HCl Buffer is a high quality and effective buffer in the physiological range. It is commonly buffer used in molecular or biochemistry labs to be used directly or to prepare other solutions.



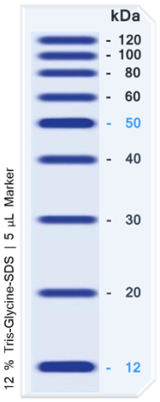
REFERENCES	DESCRIPTION	FORMAT
TBB0109	GLYCINE BUFFER 0.1 M, pH 3.0	1L
TBB0333	TRIS-GLYCINE BUFFER 10X, pH 8.3	1 L
TBB0334	TRIS-GLYCINE BUFFER 10X, pH 8.3	4 x 1 L
TBB0610	TRIS-GLYCINE BUFFER 1X, POWDER 10X 1L	10 pouches
TBB0611	TRIS-GLYCINE BUFFER 1X, POWDER 20X 1L	20 pouches
TBB0335	TRIS-GLYCINE-SDS BUFFER 1X, pH 8.3	1 L
TBB0336	TRIS-GLYCINE-SDS BUFFER 1X, pH 8.3	4 x 1 L
TBB0614	TRIS-GLYCINE-SDS BUFFER 1X, POWDER 10X 1L	10 pouches
TBB0615	TRIS-GLYCINE-SDS BUFFER 1X, POWDER 20X 1L	20 pouches
TBB0339	TRIS-GLYCINE-SDS BUFFER 10X, pH 8.3	1 L
TBB0340	TRIS-GLYCINE-SDS BUFFER 10X, pH 8.3	1 L
TBB0395	TRIS-TRICINE-SDS BUFFER 10X, pH 8.3	0.5 L
TBB0396	TRIS-TRICINE-SDS BUFFER 10X, pH 8.3	1 L
TBB0332	TRIS-HCl BUFFER 1.5M, pH 8.8	1 L

PROTEIN MARKERS & REFERENCES

Ready-to-use molecular weight markers that include visual references and labeled proteins, which serve as indicators of the efficiency of gel-to-membrane transfer procedures for use in Western blotting.

Unstained Protein Marker, 12-120 kDa

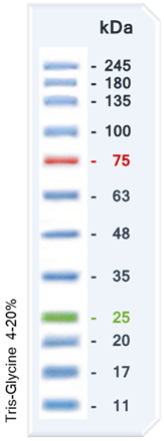
It is a ready to use molecular weight marker composed by 9 proteins ranging from 12 to 120 kDa. For easy identification, 12 and 50 kDa bands have increased intensity relative to the other bands. The product includes a 12 kDa prestained band for electrophoresis and transfer monitoring.



REFERENCES	DESCRIPTION	FORMAT
TBR0295	TIARIS™ UNSTAINED PROTEIN MARKER, 12-120 kDa	0.5 mL

Multicolour Protein Marker, 11-245 kDa

It is a ready to use molecular weight marker composed by 12 prestained proteins ranging from 11 to 245 kDa. All bands appear in blue, excepting the 25 kDa band, which is green, and the 75 kDa band, which is red. This color differentiation makes it easy to identify them.



REFERENCES	DESCRIPTION	FORMAT
TBR0298	TIARIS™ MULTICOLOUR PROTEIN MARKER, 11-245 kDa	0.5 mL

BSA, Bovine Serum Albumin

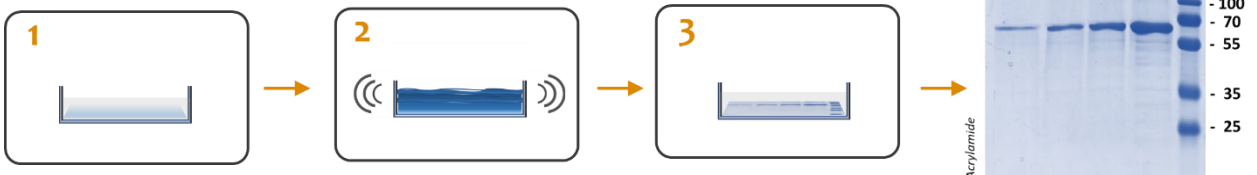
Bovine Serum Albumin (BSA) Solution 30 % is an aqueous solution of high purity bovine serum albumin (>96%). BSA is a well-known protein used as blocking reagent in immunological applications, as nutrient in microbiological cultures, as protein standard and it is present in many enzymatic formulations.

REFERENCES	DESCRIPTION	FORMAT
TBR0280	BSA SOLUTION 30%	25 mL

GEL STAIN

SuperFast-Blue™ Coomasie Stain, 1x

It is a next generation staining solution specially formulated for nonhazardous sensitive detection of proteins. It is based on the colloidal properties of Coomassie Blue dyes created in aqueous solutions containing inorganic acids and high salt concentrations.



Wash gel 3 times with deionized water (15 min)

Add SuperFast-Blue™ Coomasie Stain and shake gently (1 hour)

Wash gel 3 times with deionized water (15 min)

SDS-PAGE stained with SuperFast-Blue™ Coomasie Stain. Detection limit < 10 ng BSA on 4-20% of 1 mm gel.

REFERENCES	DESCRIPTION	FORMAT
TBB0419	SUPERFAST-BLUE™ COOMASIE STAIN	1 L

Ponceau S Staining Solution

It is a ready to use solution that provides a qualitative assessment of protein presence and transfer efficiency in Western procedure. Ponceau S dye selectively binds to proteins, forming a stable complex.

REFERENCES	DESCRIPTION	FORMAT
TBR0290	PONCEAU S STAINING SOLUTION	0.5 L
TBR0291	PONCEAU S STAINING SOLUTION	1 L

PROTEIN QUANTITATION

Bradford Reagent, 5x

It is a known reagent used in Bradford assay. It is the mostly used colorimetric assay to determine the concentration of proteins. The procedure is based on the formation of a complex between the dye Brilliant Blue G and protein in a solution at acidic pH. The colorimetric reaction depends on the content of aromatic and basic amino acids. The protein-dye complex causes a shift in the maximum absorption of the dye from 465 to 595 nm. Absorbance increase is proportional to the amount of protein.

REFERENCES	DESCRIPTION	FORMAT
TBR0299	BRADFORD REAGENT 5X	200 mL
TBR0300	BRADFORD REAGENT 5X	500 mL
TBR0301	BRADFORD REAGENT 5X	50 mL

PROTEASE INHIBITORS

Set of two different cocktails of protease inhibitors dissolved mainly in DMSO.

Inhibitor	MW	Concentration (mM)	Inhibited Proteases	Type	TBZ0333	TBZ0334
Bestatin	308.38	2	Aminopeptidase B & Leu aminopeptidase	Reversible	✓	✓
E-64	357.41	0.3	Cysteine Proteases	Irreversible	✓	✓
EDTA.Na_2	372.24	100	Metalloproteases	Reversible	✓	x
Pepstatin A	685.9	0.3	Aspartic Proteases	Reversible	✓	✓
PMSF	174.2	100	Serine & Cysteine Proteases	Irreversible	✓	✓

KO Protease Inhibitor Cocktail Set 1

KO Protease Inhibitor Cocktail Set 1 is a convenient formulation comprising 5 proteases inhibitors: PMSF, Bestatin, E-64, Pepstatin A and EDTA. It is a wide spectrum protease inhibitor cocktail for the inhibition of various proteases and esterases.

KO Protease Inhibitor Cocktail Set 2

KO Protease Inhibitor Cocktail Set 2 is a formulation comprising 4 proteases inhibitors: PMSF, Bestatin, E-64 and Pepstatin A.

REFERENCES	DESCRIPTION	FORMAT
TBZ0333	KO PROTEASE INHIBITOR COCKTAIL SET 1, 100X	1 mL
TBZ0334	KO PROTEASE INHIBITOR COCKTAIL SET 2, 100X	1 mL

"There are no better models when it comes to being better adaptive to this planet than the models set by species that have preceded us for millions of years"

Janine Benyus

The Arab World Institute (IMA), inaugurated in Paris in 1987, is a masterpiece by French architect Jean Nouvel (*France, 1945*). This eleven floor building stands out for its biomimetic innovation, particularly its southern façade—a modern and functional reinterpretation of traditional mashrabiya, the Islamic latticework used to control light in Arab architecture. Inspired by the compound eyes of insects, Nouvel designed 240 motorized panels with diaphragms that automatically open and close based on the intensity of sunlight. This biomimetic system optimizes the entry of natural light while reducing heat gain, providing sustainable thermal and visual comfort.

The connection to insect eyes is not just aesthetic but functional. Like the compound eyes of insects, which consist of thousands of tiny independent photoreception units called ommatidia, each window contains a central photoelectric sensor larger than the rest, alongside others of two smaller sizes, arranged geometrically in the glass. Similar to ommatidia, each of the hexagonal diaphragms operates autonomously in response to sunlight, creating a perfect balance of shade and brightness.

During initial tests, the light sensors struggled to adapt to Paris's changing weather, causing the diaphragms to move erratically. However, after meticulous adjustments, the system began to function flawlessly, becoming an iconic example of biomimicry in architecture. The Arab World Institute not only bridges East and West through its design but also showcases how nature can inspire innovative solutions to modern design challenges.

The innovative design of the Arab World Institute is one of the many achievements that led to Jean Nouvel receiving the prestigious Pritzker Prize in 2008. The award recognized his ability to integrate modern architectural concepts with cultural and environmental considerations, as exemplified by the Institute's façade. This project showcased his mastery of harmonizing technology and tradition, blending cutting-edge mechanics with the timeless elegance of Islamic mashrabiya. Nouvel's vision continues to inspire architects worldwide, cementing his legacy as a pioneer in merging sustainability, biomimicry, and cultural identity in architecture.

#SetAllEyesOnNature