

# DNA analysis - Electrophoresis

## Capillary Electrophoresis

### A.C.E™ Sequencing Buffer

- ◆ Optimized Running Buffer
- ◆ Allows Long Read Lengths
- ◆ Consistent & Reproducible Results
- ◆ Lot-to-Lot Consistency

A.C.E.™ 10X Sequencing Buffer has been formulated and proven to be an effective running buffer when used with the ABI® PRISM 3730, 3700, 3100, or 310 and the Beckman CEQ® 2000 automated sequencers. This optimized concentrated buffer provides excellent results - Long Read Lengths, High Resolution, and Consistent Run Times. Provided as a 10X concentrate, A.C.E.™ Buffer is conveniently diluted to the desired working concentration, thereby providing an easy and cost-effective buffer for your operating systems.

Description	Cat.#	Qty
A.C.E.™. Sequencing Buffer 10X Concentrate	Q04890	1 L
	Q04892	5 L
A.C.E.™. Sequencing Buffer 1X Ready-to-Use	GS3380	100 ml
	GS3381	500 ml
A.C.E.™. Formamide	Q04900	25 ml
	Q04901	50 ml
	Q04902	100 ml
A.C.E.™. Sequencing grade water	GS3471	25 ml
	GS3470	100 ml

### A.C.E.™. HPCE Buffers

- ◆ Pre-Mixed and Ready-to-Use
- ◆ Consistent and Reproducible Results
- ◆ Quality Control Optimizes Yields

A.C.E.™ HPCE (High Performance Capillary Electrophoresis) Buffers are designed for the highest performance. These include Tetra borate, CAPS, and other buffers that are pre-mixed, convenient, and ready-to-use which eliminates buffer preparation time, enabling you to focus on the experimental results of your research.

### A.C.E.™. General Buffers

Description	Cat.#	Qty
A.C.E.™. Tricine Buffer	R67820	100 ml
pH@25°C : 8.0	R67821	250 ml
A.C.E.™. Acetate Buffer	R67650	100 m
pH@25°C : 4.5	R67651	250 ml
A.C.E.™. MES Buffer	R67660	100 ml
pH@25°C : 6.0	R67661	250 ml
A.C.E.™. TBE Buffer (w/ 7M Urea)	R67810	100 ml
pH@25°C : 8.6	R67811	250 ml
A.C.E.™. Phosphate/Borate/SDS Buffer	R67830	100 ml
pH@25°C : 7.0	R67831	250 ml

### A.C.E.™. CAPS Buffers

Description	Cat.#	Qty
A.C.E.™. CAPS Buffer	R67550	100 ml
pH@25°C : 9.9-10.1mM	R67551	250 ml
A.C.E.™. CAPS Buffer	R67560	100 ml
pH@25°C : 10.5-10.6mM	R67561	250 ml
A.C.E.™. CAPS Buffer	R67560	100 ml
pH@25°C : 10.9-11.1mM	R67571	250 ml

### A.C.E.™. Tetra borate Buffers

Description	Cat.#	Qty
A.C.E.™. Tetra borate Buffer	R67600	100 ml
pH@25°C : 9.9-10.1mM	R67601	250 ml
A.C.E.™. Tetra borate Buffer	R67610	100 ml
pH@25°C : 9.9-10.1mM	R67611	250 ml
A.C.E.™. Tetra borate Buffer	R67630	100 ml
pH@25°C : 9.9-10.1mM	R67631	250 ml
A.C.E.™. Tetra borate Buffer (w/100 mM SDS)	R67640	100 ml
pH@25°C : 9.9-10.1mM	R67641	250 ml

### A.C.E™. Phosphate Buffers

- ◆ Reliable Reproducible Results
- ◆ Convenient and Ready-to-Use
- ◆ Quality Control Optimizes Yields

A.C.E™. Phosphate Buffers are ideal for the separation of various biomolecules including proteins. These convenient pre-mixed and ready-to-use A.C.E Phosphate Buffers have been formulated for CE use.

Manufactured with the highest quality reagents in nuclease-free water, A.C.E Buffers deliver consistent and reproducible results time after time. In order to ensure superior performance, all buffers are 0.2 micron filtered during packaging and strictly tested.

Description	Cat.#	Qty
A.C.E™. Phosphate Buffer pH 2.5 - 50mM	GS3310 GS3311	100 ml 250 ml
A.C.E™. Phosphate Buffer pH 4.5 - 50mM	GS3240 GS3240	100 ml 250 ml
A.C.E™. Phosphate Buffers pH 5.5 - 50mM	GS3290 GS3291	100 ml 250 ml
A.C.E™. Phosphate Buffer pH 6.5 - 50mM	GS3250 GS3250	100 ml 250 ml
A.C.E™. Phosphate Buffer pH 7.0 - 50mM	GS3260 GS3261	100 ml 250 ml
A.C.E™. Phosphate Buffer pH 7.5 - 50mM	GS3270 GS3271	100 ml 250 ml
A.C.E™. Phosphate Buffers pH 8.0 - 50mM	GS3280 GS3281	100 ml 250 ml
A.C.E™. Phosphate Buffers pH 9.3 - 50mM	GS3300 GS3301	100 ml 250 ml

### A.C.E™. General CE Reagents for use in CE Applications

Used as buffer additives to obtain chiral separations in capillary electrophoresis. Neutral cyclodextrin derivative commonly used in capillary electrophoresis. Used for sensitive, fast detection of amino acids, peptides and proteins (particularly proteolytic enzymes). Neutral cyclodextrin derivative commonly used in capillary electrophoresis.

Description	Cat.#	Qty
γ-Cyclodextrin, hydrate	GS3211	250 mg
	GS3210	1 g
Used as buffer additives to obtain chiral separations in capillary electrophoresis.		
Dimethyl-β-cyclodextrin	GS3221	500 mg
	GS3220	1 g
Neutral cyclodextrin derivative commonly used in capillary electrophoresis.		
Fluorescamine, 98%	12631D	100 g
	12631H	500 g
Used for sensitive, fast detection of amino acids, peptides and proteins (particularly proteolytic enzymes).		
2-Hydroxypropyl-β-cyclodextrin	408051	1 g
	408052	5 g
Neutral cyclodextrin derivative commonly used in capillary electrophoresis.		

# Blotting

## Hybridization and detection Kits



Slot blot hybridization



Colony lift hybridization

### HybQUEST® labeling and detection system

- ◆ Sensitive (sub-pg) hybridization detection.
- ◆ Non-radioactive / safe.
- ◆ Reagent and labeled probes are stable.
- ◆ Blots can be stripped and reprobed.
- ◆ Hybridization solutions can be stored and reused.
- ◆ Hybridization conditions are virtually the same.

The **HybQUEST® Complete (DNP) System** contains all the reagents required for the optimized preparation, hybridization, and chemiluminescent detection of dinitrophenyl (DNP)-labeled DNA probes. It is designed for the sensitive, non-radioactive detection of specific DNA hybridization events in membrane-based applications, including Southern blots, bacterial colony and plaque hybridizations, and dot or slot blots.

### Technical tip

Principle - The basic steps involved :

1. immobilization of target DNA on a membrane.
2. non-radioactive labeling of the probe DNA (DNP-labeled DNA).
3. hybridization of labeled probe to homologous immobilized DNA.
4. detection of the probe by enzyme-conjugated antibody and chemiluminescent visualization.

Nucleic acid which is immobilized on a nylon membrane is hybridized with the DNP-labeled DNA probe. After washing the membrane to remove excess probe and blocking it to prevent non-specific binding events, the membrane is incubated with alkaline phosphatase conjugated anti-DNP antibodies. The membrane is washed and developed using Lumi-Phos® Plus, a very sensitive chemiluminescent substrate for alkaline phosphatase. Exposure to X-ray film produces a permanent record of light emissions. Chemiluminescent detection, as opposed to colorimetric detection, readily allows stripping of the probe and reprobing of the target DNA bound to the membrane.

#### Benefits of DNP labeling

Traditional non-radioactive labeling methods (random priming, nick translation) are enzyme-mediated and thus inherently difficult to control. In addition, these types of reactions require more reagents and generate labeled products that are not representative of the starting DNA. The efficiency of the enzyme-mediated labeling reactions is always low and large pools of unincorporated labeled-nucleotide precursors remain after the reaction. The Label IT® DNP Reagent facilitates a chemical reaction which promotes the covalent attachment of DNP 'tags' to non-basepairing sites on the guanine ring within any nucleic acid probe. Since the Label IT® Reagent directly modifies the starting DNA material, it is less variable than enzymatic and other non-enzymatic labeling methods. The reaction is easily controlled, thus enabling the user, if necessary, to modify the density of DNP labels on the probe DNA. Non-radioactive probes can be stored for at least a year allowing consistently sensitive and reproducible hybridization results.

The HybQUEST® Complete (DNP) System contains sufficient reagents to label 10 µg of DNA and process at least 1 000 cm<sup>2</sup> of membrane, and consists of two modules that are available separately

Description	Cat.#	Qty
HybQUEST® Complete DNP System Includes J63970 and J63130	<b>J57060</b> (†)	5 x 2 µg labeling reactions/10 blots
HybQUEST® LabelIT® (DNP) kit	<b>J63970</b>	5 x 2 µg labeling reactions

In addition , similar **HybQUEST® Label IT® kits** are available for the generation of digoxin, biotin, and fluorescein labeled DNA probes. Each of the HybQUEST® Label IT® Kits include the labeling reagent, labeled and unlabeled DNA controls, and a labeled molecular weight marker.

Description	Cat.#	Qty
HybQUEST® LabelIT® (Fluorescein) Kit	<b>J63320</b>	5 x 2 µg labeling reactions
HybQUEST® LabelIT® (Digoxin) Kit	<b>J63490</b>	5 x 2 µg labeling reactions
HybQUEST® LabelIT® (Biotin) Kit	<b>J63500</b>	5 x 2 µg labeling reactions

\*Kit # J57060 Includes :

- DNP LabelIT® Reagent (dried pellet)
- Labeling 10X Buffer A
- Reconstitution Solution
- Denaturation Buffer
- Neutralization Buffer
- G50 Spin Columns
- Unlabeled Control DNA
- DNP-Labeled Control DNA
- DNP-Labeled I *Hind*III Molecular Weight Marker
- HybQUEST® Hybridization and detection (DNP) kit, J63130, 10 blots

Includes :

- HybQUEST® Hybridization Solution
- HybQUEST® 10X Wash Buffer
- HybQUEST® 10X Detection Buffer
- HybQUEST® 10X Block Diluent
- HybQUEST® Block Powder
- Anti-DNP F(abc) Alkaline Phosphatase ConjugateL
- Lumi-Phos® Plus Chemiluminescent Substrate