



## Product Specifications

Non-Radioactive Southern Blot Analysis, Electrophoresis Reagents  
 Polymerase Chain Reaction Reagents, Omni-Pure Reagents,  
 Hybridization and Detection Reagents, Custom Primers and Probes

### Non-Radioactive Southern Blot Reagents

Store as labeled. For research use only.

	Catalog Number	Description	Unit Size
<input type="checkbox"/>	40-3010-10	Agarose LE Molecular Biology Grade	100 gms
<input type="checkbox"/>	40-5023-20	Lumisol™ II Hybridization Solution; for non-toxic hybridizations; 200 mL	200 mL
<input type="checkbox"/>	40-5024-20	Lumisol™ III Hybridization Solution; for oligonucleotide probes; 200 mL	200 mL
<input type="checkbox"/>	40-5010-10	CDP-Star® Substrate; Ready-to-Use 0.25 mM in spray bottle; 10 mL	10 mL
<input type="checkbox"/>	40-5020-25	Hybwash A, Hybridization Wash Solution Concentrate( 20X SSC); 250 mL	250 mL
<input type="checkbox"/>	40-5021-10	Hybwash B, Hybridization Wash Solution Concentrate (10% SDS); 100 mL	100 mL
<input type="checkbox"/>	40-5025-20	Maleic acid buffer 10X (Buffer M 10X); 200 mL	200 mL
<input type="checkbox"/>	40-5025-50	Maleic acid buffer 10X (Buffer M 10X); 500 mL	500 mL
<input type="checkbox"/>	40-5026-10	Blocking solution for hybridization (10%); 100 mL	100 mL
<input type="checkbox"/>	40-5031-10	AP Detection buffer 10X (Alkaline Phosphatase buffer); 100 mL	100 mL
<input type="checkbox"/>	40-5034-10	Depurination Solution (2X) for Southern Blotting; 1 L	1 L
<input type="checkbox"/>	40-5035-10	Denaturation Solution (2X) for Southern Blotting; 1L	1 L
<input type="checkbox"/>	40-5036-10	Neutralization Solution (2X) for Southern Blotting; 1L	1 L

Lumisol™ II Hybridization Solution; for non-toxic hybridizations; 200 mL	Catalog Number	40-5023-20
Lumisol™ III Hybridization Solution; for oligonucleotide probes; 200 mL	Catalog Number	40-5024-20

Storage: Room Temperature. **Below 22°C precipitates may appear. Warm to 40°C and gently swirl to dissolve the precipitates. DO NOT SHAKE VIGOROUSLY. The reagent is slight turbid yellow in color.**

#### Product Description

Lumisol™ II & III are ready-to-use hybridization solutions specifically formulated for non-radioactive chemiluminescent hybridization.

#### Lumisol™ II

Lumisol™ II is for use with digoxigenin or biotin labeled DNA or RNA probes in Southern & Northern blot protocols. It can also be used with radioactive labeled probes.

#### Lumisol™ III

Lumisol™ III is specifically formulated for use with oligonucleotide probes labeled with biotin, digoxigenin, alkaline phosphatase or other detection ligand or enzymes.

## Applications

**Lumisol™ II** hybridization solution can be used for all stringent types of nucleic acid blot hybridization conditions, particularly using non-radioactive digoxigenin labeled probes. Lumisol™ II hybridization solution can be used for prehybridization and hybridization. The hybridization temperature should be calculated for proper results. Duration of hybridization can be reduced to 6 hours and overnight hybridization can be used for high sensitivity requirements and for convenience.

**Lumisol™ III** hybridization solution is specifically formulated for oligonucleotide probes that require only 30 minute pre-hybridization and 30 minute hybridization. Longer hybridization is not recommended. The hybridization temperature should be calculated for proper results and should not be more than 55°C for alkaline phosphatase labeled oligo probes.

### Hybridization Temperature for Lumisol™ II

Hybridization temperature is an essential criterion for obtaining reliable hybridization results and should preferably be calculated. A rule of the thumb hybridization temperature of 50°C is satisfactory for perfectly homologous probes greater than 100 bp; probes of this and larger fragment length are usually achieved by random prime labeling method.

The appropriate hybridization temperature is calculated according to GC content according to the following equation:

$$T_m = 49.82 + 0.41 (\% G + C) - (600/l)$$

[l = length of hybrid in base pairs]

$$T_{opt.} = T_m - (20 \text{ to } 25^\circ\text{C})$$

(The given numbers of the equation are according to a standard equation for denaturing hybridization solutions)

$T_{opt.}$  can be regarded as a stringent hybridization temperature allowing up to 18 % mismatches between probe and target. When the degree of homology of the probe to template is less than 80%, the  $T_{opt.}$  should be lowered; approximately 1.4°C below  $T_m$  per 1 % mismatch. Likewise the stringent washing steps should be adjusted accordingly by increasing the SSC concentration and/or lowering the washing temperature.

**Example** For hybridization of human genomic DNA with a 100% homologous probe use 50°C to 55°C, depending on the GC content of the probe.

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## Chemiluminescent Detection Substrate

CDP-Star® Substrate; Ready-to-Use 0.25 mM in spray bottle; 10 mL	Catalog Number	40-5010-10
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® \*Disodium 2-chloro-5-(4-methoxy Spiro {1,2-dioxetane-3,2'-(5'-chloro)tricyclo[3.3.1.1<sup>3,7</sup>]decan}-4-yl) phenyl phosphate

CDP-Star is a trademark of Tropix, Inc. Bedford, MA, USA and covered by US patent 5,326,882 assigned to Tropix Inc. USA  
A Tropix Applied Biosystems product.

## Storage & Stability

Store the unopened reagent at +2 to +8°C. Reagent supplied in opaque spray bottle. Do not transfer to clear bottle. Store protected from light.

## Application

CDP-Star® is a chemiluminescent substrate for alkaline phosphatase that upon dephosphorylation emits light at 466 nm. This emission of light in the visible range is a convenient non-hazardous alternate to radioactive detection. The extremely sensitive detection is recorded on X-ray films or by suitable cameras, or luminescence imager systems. It is specifically formulated as a ready to use reagent for high sensitivity detection of molecules labeled either directly or indirectly with alkaline phosphatase (AP) in membrane-based applications such as Southern, Northern, and Western blotting applications with X-ray film exposure. Southern blotting with Digoxigenin labeled probe followed by anti-dig alkaline phosphatase detection is a particularly recommended application and detects single copy genes with specificity and sensitivity. X-ray film exposure time varies from a few minutes to overnight. Nylon membranes are strongly suggested for use with CDP-Star.

Gene Link packaging of CDP-Star® in convenient spray bottles enables cost savings as well as ease of use. Spray CDP-star ready-to-use substrate evenly to cover the blot. DO NOT OVER SPRAY. Cover the blot with plastic sheet and wipe entire surface of the covered blot to expel any excess substrate and air bubbles. Expose the film at room temperature for 1 hr. or for shorter or longer time as required.

Luminescence continues for at least 24 hours and signal intensity remains almost constant during the first few hours. Multiple exposures can be taken to achieve the desired signal strength.

### Southern Blot Gel Depurination, Denaturation and Neutralization Solution Concentrates

Depurination Solution (2X) for Southern Blotting; 1L	Catalog Number	40-5034-10
Denaturation Solution (2X) for Southern Blotting; 1L	Catalog Number	40-5035-10
Neutralization Solution (2X) for Southern Blotting; 1L	Catalog Number	40-5036-10

Storage: Room Temperature

### Southern blot gel treatment

Short term exposure of DNA to acidic conditions results in random depurination. In the subsequent denaturation step, exposure to alkaline conditions results in DNA strand breaks at the sites of depurination, resulting in smaller fragments that are easier to transfer. Neutralization step neutralizes the alkaline denaturing condition prior to blotting. It is important to note that depurination is an optional treatment and is usually carried out when fragments >15 kb must be transferred. Depurination is generally not required or even recommended when transferring DNA that has been digested with restriction enzymes. Furthermore, excessive treatment with acid produces fragments that will be too small for efficient transfer, which results in poor detection sensitivity.

1X Depurination Solution (0.2M HCl)		
Product Description	Catalog No.	Volume
Depurination Solution (2X) for Southern Blotting	40-5034-10	150 mL
Sterile water		150 mL
<b>Total Volume</b>		<b>300 mL</b>

1X Denaturation Solution (0.4M NaOH, 0.6M NaCl)		
Product Description	Catalog No.	Volume
Denaturation Solution (2X) for Southern Blotting	40-5035-10	150 mL
Sterile water		150 mL
<b>Total Volume</b>		<b>300 mL</b>

1X Neutralization Solution (0.5M Tris-HCl pH 7.5, 1.5M NaCl)		
Product Description	Catalog No.	Volume
Neutralization Solution (2X) for Southern Blotting	40-5036-10	150 mL
Sterile water		150 mL
<b>Total Volume</b>		<b>300 mL</b>

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**Hybridization Wash Solution Concentrates**

Hybwash A; Hybridization Wash Solution Concentrate (20X SSC)	Catalog Number	40-5020-25
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Storage: Room Temperature

Hybwash B, Hybridization Wash Solution Concentrate (10% SDS)	Catalog Number	40-5021-10
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Storage: Room Temperature. **Below 22°C precipitates may appear. Warm to 40°C and gently swirl to dissolve the precipitates. DO NOT SHAKE VIGOROUSLY.**

Hybwash A, Hybridization Wash Solution Concentrate and Hybwash B, Hybridization Wash Solution Concentrate are 20X SSC and 10% SDS solutions. Appropriate compositions of these two stock reagents are commonly used in Southern blot wash conditions. Preparation of Hybwash I and Hybwash II used in Gene Link protocols are given below.

<b>Hybwash I (2xSSC, 0.1% SDS)</b>		
<b>Product Description</b>	<b>Catalog No.</b>	<b>Volume</b>
Hybwash A; Hybridization Wash Solution Concentrate (20X SSC)	40-5020-25	35 mL
Sterile water		311 mL*
Hybwash B, Hybridization Wash Solution Concentrate (10% SDS)	40-5021-10	4 mL*
<b>Total Volume</b>		<b>350 mL</b>
<b>* Volumes adjusted to whole numbers</b>		

<b>Hybwash II (0.5xSSC, 0.1% SDS)</b>		
<b>Product Description</b>	<b>Catalog No.</b>	<b>Volume</b>
Hybwash A; Hybridization Wash Solution Concentrate (20X SSC)	40-5020-25	9 mL*
Sterile water		337 mL
Hybwash B, Hybridization Wash Solution Concentrate (10% SDS)	40-5021-10	4 mL*
<b>Total Volume</b>		<b>351 mL</b>
<b>* Volumes adjusted to whole numbers</b>		

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**Maleic Acid Buffer and Block Reagent**

Maleic acid buffer 10X (Buffer M 10X)	Catalog Number	40-5025-20
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Storage: Room Temperature

Blocking solution for hybridization (10%)	Catalog Number	40-5026-10
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**Store at 4°C until opened. Note:** The reagent is turbid yellow in color and will form precipitates on storage. Warm to 50°C and shake well before aliquoting. **DO NOT SHAKE VIGOROUSLY.**

**Storage:** We recommend storing the concentrated 10X Blocking solution after first use in aliquots at -15 to -25°C.

Maleic acid buffer solution is used in non-radioactive digoxigenin based Southern blot analysis after stringent washing post hybridization with SSC/SDS based buffer solutions. Prior to anti-DIG-AP conjugate incubation the membrane is equilibrated in 1X Maleic after hybridization and then incubated in anti-DIG-AP conjugate diluted in Buffer MB composed of Maleic Acid buffer and Blocking reagent. The preparation of these buffers is given below.

**1X Maleic Acid Buffer (Buffer M 1X)  
(100 mM Maleic acid, 150 mM NaCl pH7.5)**

Product Description	Catalog No.	Volume
Maleic acid buffer 10X (Buffer M 10X)	40-5025-20	10 mL
Sterile water		90 mL
<b>Total Volume</b>		<b>100 mL</b>

**Buffer MB  
(1 x Maleic acid buffer (Buffer M) with Blocking Reagent)  
Always prepare fresh!**

Product Description	Catalog No.	Volume
Maleic acid buffer 10X (Buffer M 10X)	40-5025-20	10 mL
Sterile water		80 mL
10% Blocking Reagent*	40-5026-10	10 mL
<b>Total Volume</b>		<b>100 mL</b>

The prepared reagent will be turbid yellow in color

\* The 10% Blocking Reagent is turbid yellow in color and will form precipitates on storage.  
Warm to 50°C and shake well before aliquoting. DO NOT SHAKE VIGOROUSLY

**Alkaline Phosphatase Detection Buffer**

AP Detection buffer 10X (Alkaline Phosphatase buffer)	Catalog Number	40-5031-10
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Storage: Room Temperature

Non-radioactive digoxigenin based Southern blot detection is based on anti-digoxigenin anti-bodies conjugated to alkaline phosphatase and the subsequent incubation with chemi-luminescent substrate e.g CDP star that emits photons to expose an X-ray film. The AP detection buffer is an optimized buffer for alkaline phosphatase activity. A 10X stock buffer is supplied that can be diluted to 1X using sterile water. A sample dilution protocol is given below.

**1X Detection Buffer, Alkaline phosphatase detection buffer  
(100mM Tris-HCl pH 9.5, 100mM NaCl)**

Product Description	Catalog No.	Volume
Detection Buffer 10X; Alkaline phosphatase detection buffer	40-5031-10	10 mL
Sterile water		90 mL
<b>Total Volume</b>		<b>100 mL</b>

## Southern Blot Buffers & Reagents

Product	Catalog No.	Unit Size
Agarose Tablets, 0.5 gm each	40-3011-10	100 tablets
Agarose LE Molecular Biology Grade; 100 gms	40-3010-10	100 gms
Agarose LE Molecular Biology Grade; 500 gms	40-3010-50	500 gms
Hybwash A, Hybridization Wash Solution (20X SSC)	40-5020-20	200 mL
Hybwash B, Hybridization Wash Solution (10% SDS)	40-5021-10	100 mL
TAE Buffer; 50 X Concentrate; 100 mL	40-3007-01	100 mL
TAE Buffer; 50 X Concentrate; 1000 mL	40-3007-10	1 L
TBE Buffer; 5 X Concentrate	40-3008-10	1 L
Maleic acid buffer 10X (Buffer M 10X)	40-5025-20	200 mL
Maleic acid buffer 10X (Buffer M 10X)	40-5025-50	500 mL
10% Blocking solution	40-5026-10	100 mL
Loading Buffer 2X BPB/XC Denaturing for Sequencing	40-5027-10	1 mL
10x AP Detection buffer (alkaline phosphatase detection buffer)	40-5031-10	100 mL
Lumisol™ I Hybridization Solution; contains formamide	40-5022-20	200 mL
Lumisol™ II Hybridization Solution; for non-toxic hybridizations	40-5023-20	200 mL
Lumisol™ III Hybridization Solution; for oligo probes	40-5024-20	200 mL
CDP-Star® Substrate; Ready-to-Use 0.25 mM in spray bottle; 10 mL	40-5010-10	10 mL
Depurination Solution (2X) for Southern Blotting; 1 L	40-5034-10	1 L
Denaturation Solution (2X) for Southern Blotting; 1L	40-5035-10	1 L
Neutralization Solution (2X) for Southern Blotting; 1L	40-5036-10	1 L

## Loading Buffers

Product	Catalog No.	Size
Gel Loading Buffer 5X BPB/XC non-denaturing	40-3002-10	1 mL
Gel Loading Buffer 5X BPB/XC non-denaturing	40-3002-15	15 mL
Gel Loading Buffer 10X BPB/XC non-denaturing	40-3003-10	1 mL
Gel Loading Buffer 10X BPB/XC non-denaturing	40-3003-15	15 mL
Gel Loading Buffer 5X Orange G/XC non-denaturing	40-3004-10	1 mL
Gel Loading Buffer 5X Orange G/XC non-denaturing	40-3004-15	15 mL
Gel Loading Buffer 2X BPB/XC Denaturing for Sequencing	40-5027-10	1 mL
Gel Loading Buffer 2X BPB/XC Denaturing for Sequencing	40-5027-15	15 mL
DNA SDS Gel Loading Buffer 5X BPB/XC DNA binding protein denaturing buffer	40-5028-10	1 mL
DNA SDS Gel Loading Buffer 5X BPB/XC DNA binding protein denaturing buffer	40-5028-15	15 mL
RNA Gel Loading Buffer 2X BPB/XC with ethidium bromide	40-5029-10	1 mL
RNA Gel Loading Buffer 2X BPB/XC with ethidium bromide	40-5029-15	15 mL
RNA Gel Loading Buffer 2X BPB/XC without ethidium bromide	40-5030-10	1 mL
RNA Gel Loading Buffer 2X BPB/XC without ethidium bromide	40-5030-15	15 mL

## Omni-Marker™

Product	Catalog No.	Size*
Omni-Marker™ Universal unlabeled	40-3005-10	1 mL
Omni-Marker™ Low unlabeled	40-3006-10	1 mL
Omni-Marker™ GScan™-2 Tamra labeled 50 bp - 600 bp	40-3062-05	500 µL

## Related Products Ordering Information

### Omni-Pure™ Plasmid DNA Purification Systems

Product	Catalog No.	Unit Size*(Purifications)
Omni-Pure™ Plasmid DNA Purification System	40-4020-01	100
Omni-Pure™ Plasmid DNA Purification System	40-4020-05	500

\*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

### Omni-Clean™ Gel DNA Purification and Concentration Systems

Product	Catalog No.	Unit Size*(Purifications)
Omni-Clean™ Gel DNA Beads Purification System	40-4110-10	100
Omni-Clean™ Gel DNA Beads Purification System	40-4110-50	500
Omni-Clean™ Gel DNA Spin Column Purification System	40-4120-10	100
Omni-Clean™ Gel DNA Spin Column Purification System	40-4120-50	500
Omni-Clean™ DNA Beads Concentration System	40-4130-10	100
Omni-Clean™ DNA Beads Concentration System	40-4130-50	500
Omni-Clean™ DNA Spin Column Concentration System	40-4140-10	100
Omni-Clean™ DNA Spin Column Concentration System	40-4140-50	500

\*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

### Omni-Pure™ DNA & RNA Purification Systems

Product	Catalog No.	Unit Size*(Purifications)
Omni-Pure™ Blood DNA Purification System	40-4010-01	100
Omni-Pure™ Blood DNA Purification System	40-4010-05	500
Omni-Pure™ Blood DNA Purification System	40-4010-10	1000
Omni-Pure™ Tissue DNA Purification System	40-4050-01	100
Omni-Pure™ Tissue DNA Purification System	40-4050-05	500
Omni-Pure™ Tissue DNA Purification System	40-4050-10	1000
Omni-Pure™ Plant DNA Purification System	40-4060-01	100
Omni-Pure™ Plant DNA Purification System	40-4060-05	500
Omni-Pure™ Plant DNA Purification System	40-4060-10	1000
Omni-Pure™ Viral DNA Purification System	40-3720-01	100
Omni-Pure™ Viral DNA Purification System	40-3720-05	500
Omni-Pure™ Microbial DNA Purification System	40-3700-01	100
Omni-Pure™ Microbial DNA Purification System	40-3700-05	500
Omni-Pure™ Viral RNA Purification System	40-3650-01	100
Omni-Pure™ Viral RNA Purification System	40-3650-05	500

\*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

All Gene Link products are for research use only

Current pricing are posted at <http://www.genelink.com/>

## GeneProber™ Product Ordering Information

The GeneProber™ product line is based on the chemiluminescent Southern blot detection method. Gene Link's non-radioactive detection systems for genotyping of triple repeat disorders are rapid, reliable and as sensitive as the <sup>32</sup>P labeled southern blots. No more decayed probes and radioactive exposure. Kits are available for reliable genotyping of the fragile X, myotonic dystrophy and other triple repeat mutation group disorders.

**Unlabeled GeneProber™ probes are also available for radio labeling and radioactive based detection.** Gene Link strongly recommends the use of non-radioactive gene detection systems. Consider switching to Gene Link's product line of non-radioactive detection systems

Product	Unit Size	Catalog No.
Fragile X GeneProber™ GLFX1 Probe unlabeled	500 ng	40-2004-40
Fragile X GeneProber™ GLFXDig1 Probe Digoxigenin labeled	110 µl	40-2004-41
Huntington's Disease GeneProber™ GLHD14 Probe unlabeled	500 ng	40-2025-40
Huntington's Disease GeneProber™ GLHDDig2X Probe Digoxigenin labeled	110 µl	40-2025-41
Myotonic Dystrophy GeneProber™ GLDM1 Probe unlabeled	500 ng	40-2026-40
Myotonic Dystrophy GeneProber™ GLDMDig2 Probe Digoxigenin labeled	110 µl	40-2026-41
Friedreich's Ataxia GeneProber™ GLFRDA21 Probe unlabeled	500 ng	40-2027-40
Friedreich's Ataxia GeneProber™ GLFRDADig21 Probe Digoxigenin labeled	110 µl	40-2027-41

## GScan™ Products Product Ordering Information

Gene Link's GScan™ gene detection products are safe, convenient and sensitive, and afford automated compilation of data. The kits contain optimized PCR amplification reagents and a wide array of fluorescent-labeled primers for genotyping after PCR using fluorescent genetic analyzer instrument(s). Included in these kits are ready-to-run control samples of various repeats of the triple repeat disorder kit. These control samples are for calibration with the molecular weight markers for accurate size determination of the amplified fragments.

The GScan™ kits are simple and robust for routine triple-repeat detection of greater than 100 repeats of all triple repeat disorders listed, except Fragile X. The CGG repeat in Fragile X can be detected up to ~50 repeats.

Product	Unit Size	Catalog No.
Fragile X GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2004-15XX
Fragile X GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2004-15FMS
Huntington's Disease GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2025-15XX
Huntington's Disease GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2025-15FMS
Myotonic Dystrophy GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2026-15XX
Myotonic Dystrophy GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2026-15FMS
Friedreich's Ataxia GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2027-15XX
Friedreich's Ataxia GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2027-15FMS

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Current pricing are posted at <http://www.genelink.com/>