Labware

Transfer Membranes

Biotrans™ Nylon Membranes

- Neutral
- High Sensitivity
- Low Backgrounds/Enhanced Resolution
- Multiple Hybridizations
- Rapid Wetting
- Forensic and Diagnostic Applications

For Northern, Southern, and Western transfers as well as colony and plaque screening and other sensitive immobilization techniques.

Biotrans membranes are supported Nylon 66 membranes for use in DNA, RNA and protein transfers. These surface controlled nylon membranes offer significant advantages over conventional media such as nitrocellulose and diazobenzyloxymethyl (DBM)– paper.

Biotrans™ Nylon Transfer Membranes have been widely used in research laboratories for years and have proven to exceed most other membranes in the industry. Biotrans™ membranes have 50% amine and 50% carboxyl active surface groups and are availalbe in two pores sizes, 0.2µm and 1.2µm, each of which is designed for specific applications. Our transfer membrane is manufactured under stringently controlled conditions so as to achieve an absolutely rated pore size. This assures that the absorptive area per unit surface area will be predictable and reproducible from lot to lot.

Advantage: Biotrans™ is comparable to DBM paper in sensitivity, but provides higher resolution, lower background and greater ease of handeling. The membranes can be used to detect picogram quantities of nucleic acids. Even femtograms of hybridizable DNA have been detected using the Church and Gilbert method.[1] RNA retention is about 30% more effective with retention of nucleic acids is strong throughout a wide range of fragment sizes. ICN Biotrans™ membranes can also be diazotized for the covalent attachment of nucleic acids, and can be used with both radioisotopic and biotin labeled reagents. Repeated hybridizations will not damage our membrane.[1]

1. Church, G.M. and Gilbert, W. (1984), *Proc. NAT. Acad. Sci. USA* **81**, 1991-1995

High Tensile Strength
These membranes are very durable. They are not brittle and will not tear or rip.

Dimensional Stability
Less than 0.3% expansion on first exposure to water; no further expansion with subsequent exposure. Less than 0.3% contraction on drying. Samples can be preserved indefinitely, dry or wet.

Low Flammability
The membranes of this series are unaffected by extended exposures to temperatures up to 110°C in air. They will not ignite at temperatures below approximately 200°C, burn slowly if ignited, and cannot detonate.

Superior Solvent Resistance
These membranes are not affected by acetone, alcohols, chlorinated aliphatic hydrocarbons, formamide, 2M NaOH, DMSO, DMF, and most other solvents commonly used in biological laboratories. The principal exceptions are concentrated formic acid(>50%), HCl(>4M), oxidizing acids, and prolonged (days to weeks) exposure to pH<2.

Intrinsic Hydrophility
Biotrans membranes are spontaneously wetted by water. They contain no surfactants or other additives; neither detergent, solvent prewetting, nor boiling is necessary to achieve complete and instant wetting.

Low Extractables
These membranes must pass pharmaceutical quality control tests, and have very low and constant contents of extractable material in all of the solvents mentioned.

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References

1. Beck, S., and Rohl, F.M. (1984). DNA sequencing with direct blotting electrophoresis, *The EMBO Journal* **3**, 2905-2909.
2. Barton, P.J.R., et al (1985). The Myosin Alkali Light Chains of Mouse Ventricular and Slow Skeletal Muscle Are Indistinguish able and Are Encoded by the Same Gene, *J. Bio. Chem.* **260**, 8578-8584.
3. Chomczynski, P. and Quasba, P.K. (1984). Alkaline Transfer of DNA to Plastic Membrane, *Biochem. and Biophys. Res. Comm.***122**, 340-344.
4. Church, G.M. and Gilbert, W. (1984). Genomic sequencing, *Proc. Natl. Acad. Sci USA* **81**, 1991-1995.
5. Dhundale, A.R., et al. (1985). Distribution of Multicopy Single-Stranded DNA among Myxobacteria and Related Species, *J. Bacti.* **164**, 914-917.
6. Groet, S., Ostman, J. and Wydro, R. (1986). Binding Nucleic Acid to a Support, *U.S. Patent 4588682.*
7. Hayashida, K., et al. (1985).Molecular Cloning of DNA Complementary to Rat α_2-Macroglobulin mRNA, *J. Eiol. Chem.* **260**, 14224-14229.
8. Meinkoth, J. and Wahl, G. Hybridization of nucleic acids immobilized on solid supports, *Anal. Biochem.* 138 (1984) 267- 284.
9. Nucleic acid hybridization, a practical approach, (1985) Ed. Hames, B.D. and Higgins, S.J. IRL Press Ltd., Oxford UK.
10. Reed, K.C. and Mann, D.A. Rapid transfer of DNA from agarose gels to nylon membranes. *Nucl. Acids Res.* 13 (1985) 7207-7221.
11. Rosen, K.M. Lamperti, E.D. and Komaroff, L.V. (1990) Optimizing the Northern Blot Procedure. *Biotechniques 8, No.* 4, 398-403.
12. Saman, E. (1986). A Simple and Sensitive Method for Detection of Nucleic
Acids Fixed on Nylon-based Filters, Gene Anal. Techn.**3**, 1-5.
13. Shin, H., et al. (1985). An unusual coding sequence from a Drosophila clock gene is conserved in vertebrates, *Nature317, 445-448.*
14. Taylor, G.R. (1985). Southern Transfer of Native DNA Using Nylon
Membranes, *Anal. Biochem.* **148**, 524-526.
15. Wahl, G.M., Stern, M. and Stark, G.R. Efficient transfer of large DNA fragments from agarose gels to diazobenzyloxy-methyl-paper and rapid hybridization by using dextran sulfate. *Proc. Natl. Acad. Sci. USA* 76 (1979) 3683-3687.

Type of Transfer	Recommended Pore Size
DNA (Southern) Transfer	0.2µm
RNA (Northern) Transfer	0.2µm
Proteins (Western) Transfer	0.2µm
Dot Blots	0.2µm
Genomic Sequencing	0.2µm
Plaque Lifts	1.2µm
Colony Lifts	1.2µm

Biotrans™ Selection Table

APPLICATION PROCEDURE	Biotrans 0.2 µm	**Biotrans 1.2 µm**	Biotrans (+)	**Biotrans PVDF**
Southern Transfer	+	+	+++	+
Improved Southern Transfer	+	+	+++	+
Non-Radioactive Detection	+	+	+++	+
32P Detection	+	+	+++	+
Alkaline Transfer	+	+	+++	+
DNA Electro Transfer	+	+	+++	+
DNA Vacuum Transfer	+	+	+++	+
DNA Dot Blot	+++	+	+++	-
Serum Dot Blot	-	+++	-	-
Reverse Dot Blot	+	+	+++	-
Northern Transfer	+	+	+++	-
RNA Electro Transfer	+++	+	+++	-
RNA Vacuum Transfer	+	+	+++	-
RNA Dot Blot	+++	+	+++	-
Colony Lift	+	+++	+	-
Plaque Lift	+	+++	+	-
Replica Plating	+++	+	+	-
Direct Staining	-	-	-	+++
Immunochemical Transfer	+	+	+	+++
Western Transfer	+	+	+	+++
Protein Dot Blot	+++	+	+	+
Protein Sequencini	+	-	-	+++
ELISA	+++	+	+	+
Amino Acid Analysis	+	-	+	+++

Key:

Highly Recommended	+++
Recommended	+
Neutral	+
Not Recommended	-

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Transfer Membranes

Biotrans Nylon Membranes

- Pore Size: 1.2 µm
- Neutral
- Ideal for Plaque and Colony Lifts

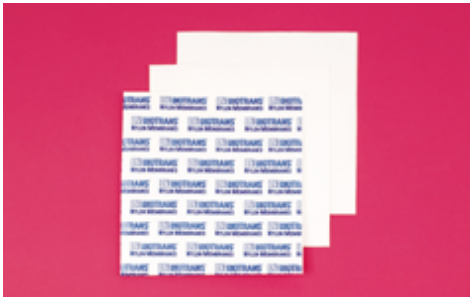
Cat. No.	Description	Qty.	Price
811820	82 mm Diameter	25 discs	132.30
811132	132 mm Diameter	25 discs	209.45
811137	137 mm Diameter	25 discs	215.00
811870	87 x 87 mm	25 sheets	165.35
811222	222 x 222 mm	5 sheets	154.35
811305	30 x 50 cm	5 sheets	248.05
811300	30 cm x 3 m	1 roll	358.30

Biotrans Nylon Membranes

- Pore Size: 0.2 µm
- Neutral
- Ideal for Northern, Southern Western, and Dot Transfers

Cat. No.	Description	Qty.	Price
810820	82 mm Diameter	25 discs	137.80
810132	132 mm Diameter	25 discs	203.95
810137	137 mm Diameter	25 discs	215.00
810870	87 x 87 mm	25 sheets	181.90
810222	222 x 222 mm	5 sheets	137.80
810305	30 x 50 cm	5 sheets	314.20
810300	30 cm x 3 m	1 roll	352.80

Biotrans(+)™



A Positive Development In Northern Blotting

Biotrans(+) membrane has a pore surface populated by a high density of quaternary ammonium groups making it strongly cationic. THe positive charge is maintained in a pH range of 3 to 10 and promotes strong ionic binding of negatively charged proteins and nucleic acid. Biotrans(+) membrane is ideally suited to the new rapid transfer techniques for nucleic acids which provide excellent levels of sensitivity. In addition, the membrane's immediate immobilization characteristics make it suitable for prolonged transfer procedures without the risk of nuclei acid diffusion from the membrane.

Biotrans(+) membrane is exceptionally versatile and can be employed in a wide range of techniques, including Northern, Southern, and Western transfers as well as colony and plaque screening and other sensitive immobilization techniques.

- Alkaline Transfer of DNA
- Rapid High Salt Transfer of DNA and RNA
- Electrotransfer of DNA, RNA and Proteins
- Vacuum Transfer of DNA and RNA
- Chemiluminescence Detection
- DNA Fingerprinting
- Paternity Testing

Using the Alkaline Transfer Procedure DNA binds to Biotrans(+) membrane without baking or U.V. irradiation. Optimum fixation of DNA after the ICN Improved Procedure for high salt transfer is achieved by baking while efficient fixation of RNA requires U.V. irradiation. Recent work has demonstrated that this membrane can detect under 0.1 pg of specific DNA in a genomic Southern transfer either by standard ^{32}P or newer non-radioactive detection systems.

Biotrans(+) membrane is exceptionally versatile and can be employed in a wide range of techniques.

Biotrans(+) Nylon Membrane

- Pore Size: 0.45 µm
- Positive Charge
- For Alkaline, Western, and Improved Southern Blots

Cat. No.	Description	Qty.	Price
810200	82 mm Diameter	25 discs	126.80
810201	132 mm Diameter	25 discs	148.85
810202	137 mm Diameter	25 discs	226.00
810203	87 x 87 mm	25 sheets	181.90
810204	30 x 50 cm	5 sheets	314.20
810205	30 cm x 3 m	1 roll	341.25
810206	222 x 222 mm	5 sheets	137.80

Transfer Membranes

Biotrans™ PVDF

For Western blots, protein binding assays, amino acid analysis an protein sequencing.

- Electrotransfer of DNA, RNA and Proteins
- Vacuum Transfer of DNA and RNA
- Chemiluminescence
- DNA Fingerprinting
- Membrane of Choice For Western Blotting
- Immunodetection Down to the Picogram Range
- Will Not Tear, Crack or Curl During Handlingd

Biotrans PVDF membranes are naturally hydrophobic polyvinylidene difluoride membranes for use in protein transfer and immobilization procedures. Biotrans PVDF membranes are pure white microporous solid phase support membranes which undergo strong hydrophobic interactions with a wide range of proteins. Immobilized proteins can be used directly for protein sequencing or amino acid analysis, and can be visually detected with all common staining reagents, including coomassie blue, amido black, ponceau S, and colloidal gold.

High Protein Binding Capacity: The highly porous structure of Biotrans PVDF membranes, available in 0.2 micron, provides a high surface area for strong hydrophobic interaction with many proteins. For large globular proteins (e.g. immunoglobulins) Biotrans PVDF membranes retain 50-150 fg/sq. cm, while with smaller peptides even higher levels of binding can be achieved.

Ease of Use: The chemical structure of Biotrans PVDF membranes allow convenient use of common laboratory reagents. Non-specific adsorption can be "blocked" with both proteinaceous (e.g. casein, albumin, dry milk, etc.) and non-proteinaceous agents (e.g. ethanolamine, gelatin, detergents, etc.). In addition, common staining reagents including coomassie blue, amido black, ponceau S, colloidal gold as well as biotinylation reagents can be used to visualize bound proteins. Biotrans™ PVDF membranes also allow highly sensitive immunodetection in the picogram to nanogram range.

Mechanical Durability: Biotrans™ PVDF membranes have high tensile strength and will not tear, crack, or curl during handling. This allows for convenient reprobing in western transfers, and easy removal of target bands for amino acid analysis and protein sequencing applications.

Chemical Compatibility: Biotrans™ PVDF membranes are resistant to a wide range of chemical solvents (e.g. acetone, DMSO, dimethyl formamide) and will not shrink during destaining with methanol. In addition, resistance to trifluoroacetic acid and triethylamine allows direct insertion of Biotrans PVDF membranes into amino acid analyzers and gas phase protein sequencing equipment.

Biotrans™ PVDF Membranes

Cat. No.	Description	Qty.	Price
810301	15 x 15 cm	5/box	82.70
810302	20 x 20 cm	5/box	121.25
810303	24 cm x 3 m	1 Roll	325.25

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Transfer Membranes

ICN Biotrans™ Membranes And Diagnostics

An Advancing Wave in Diagnostics

DNA Fingerprinting-Biotrans™ Plus Membrane
DNA Fingerprinting procedures employ the Southern Blot hybridization technique. Recently, several major U.S. laboratories have converted to 0.45 micron Biotrans(+) membranes due to 2-3 fold increased sensitivity and very low backgrounds as compared to the membranes they had been using. Paternity testing is another DNA Fingerprinting application where Biotrans(+) is the membrane of choice by a number of major laboratories performing these tests.

Chemiluminescence- Biotrans™ Membrane
Recent advances in the fields of chemiluminescence have now enabled this technology to be applied to clinical diagnostics. In particular, the development of new enzyme substrates, such as 1,2 dioxetanes which produce stable "glow-type" light emission upon enzyme action, will allow the development of many new ELISA and gene-probe assays with fast reaction times and extremely high sensitivity.Chemiluminescence ELISA methods require immobilization of antibodies or antigens to a chemically stable solid phase support which will not inhibit or quench the chemiluminescent emission.

ICN Biotrans™ Nylon 66 membranes have been found by many investigators to meet all of these requirements, while nitrocellulose and PVDF membranes do not offer the sensitivity required for rapid diagnostic tests. As more and more work is being done in this area, it is becoming clear that ICN Biotrans™ nylon membranes represent the preferred solid phase support for chemiluminescent protocols.

ICN Biotrans™ series membranes are highly uniform, naturally hydrophilic nylon membranes which have been well qualified by many groups developing new chemiluminescent protocols. Biotrans membranes have been found to be the membrane of choice for several ELISA and gene-probe assays and are very versatile solid supports for diagnostic test development.

Forensic Applications

Results from a major U.S. forensic laboratory have shown that in most cases using either radioactive or chemiluminescent detection systems, Biotrans(+) will have better sensitivity than Biotrans membrane. However, if background is a problem, Biotrans membrane should be used.