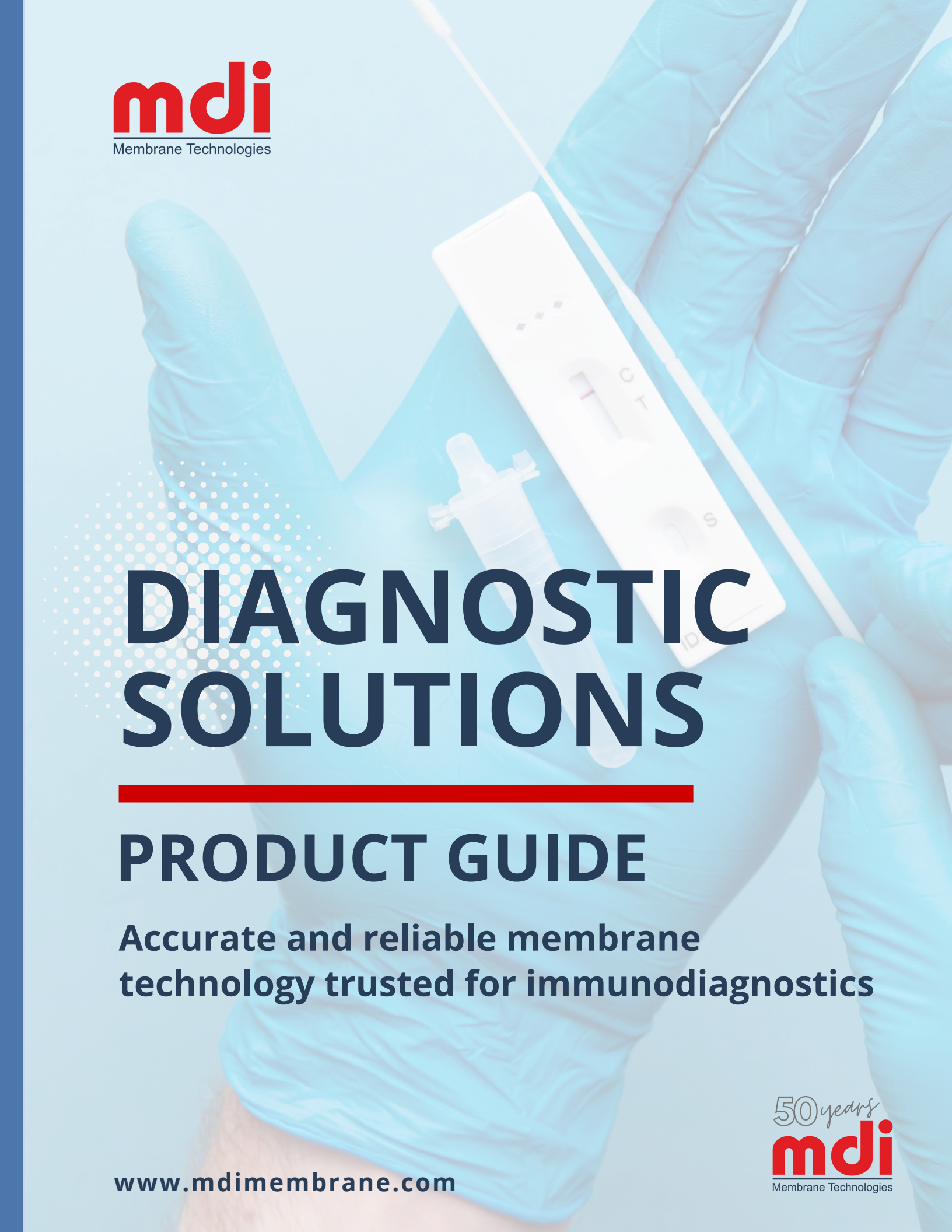
mdi
Membrane Technologies



DIAGNOSTIC SOLUTIONS

PRODUCT GUIDE

Accurate and reliable membrane technology trusted for immunodiagnostics

www.mdimembrane.com

50 years
mdi
Membrane Technologies

About mdi

Advanced Microdevices (mdi) is a pioneer in membrane technologies and filtration systems. Our expertise lies in developing advanced membrane technologies and refining existing solutions to deliver tangible benefits to customers across high-end purification, separation, and medical diagnostics.

Making a difference with innovation

CUSTOMIZED PRODUCTS UNCOMPROMISED QUALITY

Advanced Microdevices (mdi) is a leader in innovative membrane technologies and filtration systems. Starting as a single-person R&D operation in 1976, mdi has grown into a dedicated team of over 1,400 professional, producing more than 800,000 products.

mdi's core strength lies in developing new membrane technologies and enhancing existing ones to deliver meaningful benefits in high-end purification, separation, and medical diagnostics. We serve diverse sectors, including pharmaceuticals, biopharmaceuticals, biotechnology, food & beverage, hospitals, and immunodiagnostics, applying innovation to meet rigorous standards and complex challenges.

Innovation Leadership

With strong R&D and customization capabilities, mdi has established itself as a global technology leader in immunodiagnostic membranes and materials, producing the most consistent nitrocellulose membranes for rapid immunodiagnostic tests.

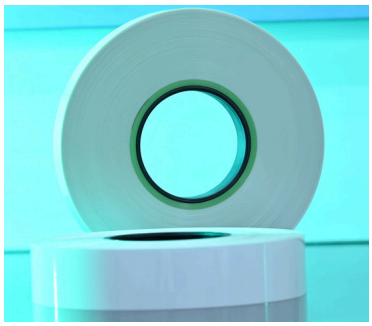
In filtration applications, membranes are integrated into user-friendly devices, making plastic design, moulding, and sealing technologies essential to the value chain. Recognizing this, mdi has evolved into a fully vertically integrated company, enabling rapid prototyping and faster transition from design to finished product.

Global Reach

Over the years, mdi has built a strong market position by developing state-of-the-art technologies at competitive costs and commercializing internationally accepted products. Today, our products are exported to over 50 countries, with major markets in the USA, Western Europe, China, and South Korea.

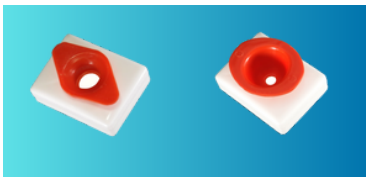
Product Portfolio

Rapid Tests

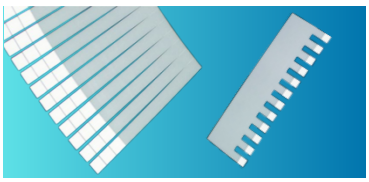


Lateral Flow Test

Blood Separation

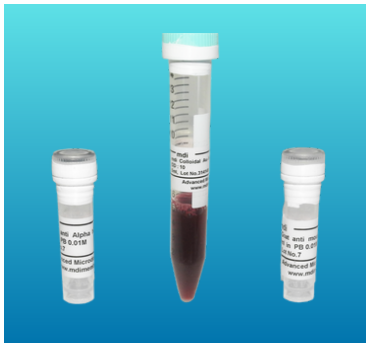


Immunofiltration

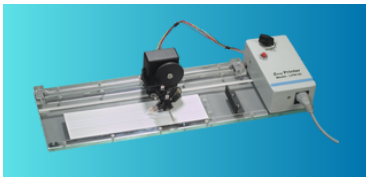


Immunodiffusion

mdi Membrane Technologies



EasyPack Starter Kits



Lab Equipment

Lab Filtration Devices

Other Products

mdi
Membrane Technologies

Rapid Tests

Rapid Tests or Rapid Immunoassays are well-established technologies ideally suited for point-of-care (POC) or field use, where speed, simplicity, and portability are essential. These tests qualitatively or semi-quantitatively detect analytes such as antigens, antibodies, or even products of nucleic acid amplification.

The most common format is **lateral flow immunoassay**, where the sample migrates by capillary action and reaches colored conjugate, which mixes with the sample and transits as a substrate, encountering immobilised detactable reagents. The sample first meets the target reagent called 'test line', and then flows across the 'control line' which acts as a control, signaling the successful running of the test. Based on whether the target is present, a visible signal develops at the test line.

Other immunoassay formats used in rapid tests include **immunofiltration** (where the sample is forced through a membrane filter with immobilized capture reagents) and immunodiffusion (where analytes diffuse through a medium to meet reagents).

Advantages of Rapid Tests

Membrane-based rapid tests cover a wide range of clinical applications. While most are used by healthcare professionals in clinical settings, an increasing number is approved for use by relatively untrained home users. Rapid tests offer many advantages, including ease of use, small sample volume, fast turnaround, reliable performance, and low cost.

1) Ease of Use: These tests use simple, robust biochemical methods that require little to no operator training, no complex laboratory infrastructure, and often no electricity. Features that enhance usability include single-step protocols and a quick, clear and unambiguous visual readout. A great advantage is a relatively stable shelf life, making it possible for easier access, storing at home and using whenever needed

2) Small Sample Volume: Requiring only a small sample is advantageous for both clinicians and lay users. Benefits include easier sample collection (less skill needed), faster processing, reduced discomfort or risk to the patient, and less waste.

3) Speed: Rapid tests return results within minutes (as few as 3-5 minutes, depending on the test and analyte), which is invaluable in emergencies where prompt decision-making is crucial.

4**) Reliability:** Rapid tests provide good reliability in terms of specificity (correctly identifying negative case) andsensitivity (correctly detect positives even at small volumes) and good long-term stability (>12 months)

5) Low Cost: Compared with clinical laboratory tests involving instrumental analysis, rapid tests generally cost much less per result: less capital investment, simpler consumables, fewer supporting infrastructure needs. This makes them especially useful in field settings, for screening, or in lower-resource environments.

What MDI offers

FOR R&D LABS AND BEGINNERS

mdi offers Easypack Starter Kits for developing rapid tests (Page 28-31). These can be used to select the best materials for immunoassay development and are the starting point for those who are new to immunodiagnostics as well as for those skilled in the art who want to develop new immunoassays.

Different types of Easypack Starter kits are available:

- solid supports required for immunoassay development (both lateral flow and flow through tests)
- reagents for getting familiar with the development techniques
- packaging materials for the final test
- different types of plastic cassettes/ devices

mdi also offers sophisticated equipment for development of lateral flow tests. **Easyprinter** is one such machine which is suitable for printing reagent lines on Nitrocellulose membrane without any wastage of reagents. It is ideal for development and for Quality Control labs. **Programmable Strip Cutter** is also available to cut the test strips into desired widths for developmental phase.

FOR SMALL TO MEDIUM SCALE PRODUCTION

Once the test has been developed and all the components have been finalized, mdi will provide the selected device components suitable to meet manufacturing process requirements.

For Lateral Flow Tests, mdi can provide Nitrocellulose membrane laminated on the plastic backing (Page 13) as per the dimensions/design required by the customer so the customer does not have to invest in a lamination machine in the beginning.

Other pad materials such as Sample Pad, Conjugate Pad and Absorbent Pad can be provided in strip form of desired width instead of sheets or rolls which eliminates the requirement of special cutters for cutting sheets/rolls into strips. Additionally, Cover Tapes and blood separation membranes can also be provided precut in required dimensions.

For **Flow Through tests**, mdi can provide Nitrocellulose membrane placed in a snap-fit plastic housing with absorbent pads to make complete immunofiltration device. Flow Through Membranes are also available in required strips/sheets to be used in the test manufacturer's own device (Page 24-25).
mdi also offers RBC separating filter funnels for whole blood flow through tests. Special Flow Through Membranes are available for quantitative detection of the analytes.

FOR MEDIUM TO LARGE SCALE PRODUCTION

mdi produces the most consistent and the most sensitive Nitrocellulose membranes, that are being used by the largest production houses of Rapid Tests worldwide.

For Lateral Flow Tests, mdi provides Nitrocellulose membranes in rolls of desired width which can be used with lamination machines. Blood Separation Membranes, Conjugate Pads, Cover Tapes and selected Absorbent Pads can also be provided in the roll form of desired width. Other components such as Sample Pads and selected Absorbent pads which are not available in rolls can be offered in sheets of required dimensions.

For Flow Through tests, mdi can provide Nitrocellulose membrane and Absorbent Pads in sheet form. Special Flow Through Membranes for quantitative detection can be provided in rolls or sheets.

FOR PRODUCTION MACHINES

For Lateral Flow Tests manufacturing, mdi offers Reagent Dispenser as well as Strip Cutter for High Volume Production as well as for the development phase. Please refer to (Page 32-34) for detailed specifications.

Product Portfolio

mdi
Membrane Technologies

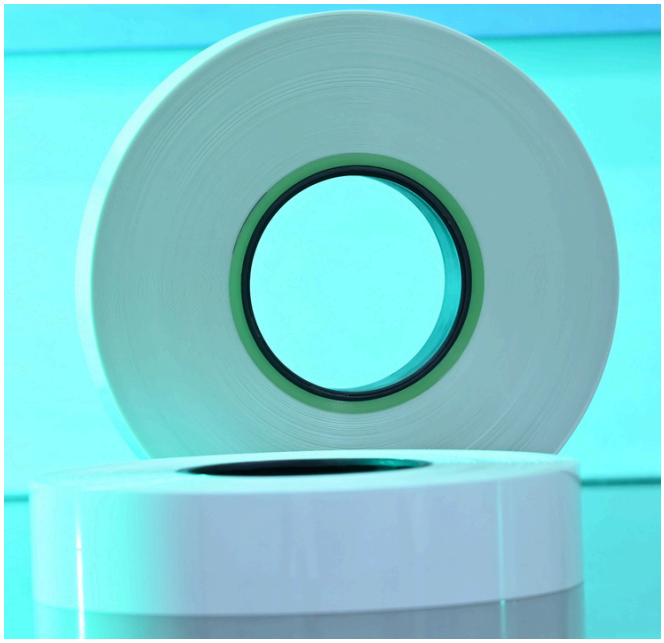
Lateral Flow Tests

> NITROCELLULOSE MEMBRANES

The development of rapid diagnostic tests involve selection and validation of various test components. Many permutation-combinations are tried before freezing a set of components for a test under development. This makes it very important that all the components exhibit high inter and intra-lot consistency.

Keeping pace with advances in detection technologies, mdi thoroughly understands the assay design process and offers a wide variety of very high quality rapid test components.
Among the lateral flow test components, Nitrocellulose membrane is pivotal as it is the platform on which the final reaction takes place. The membrane is required to provide sufficient protein binding for strong test lines and at the same time should give minimum non-specific background. By an optimized surface chemistry and unique processing techniques mdi has resolved these issues.

mdi membranes are highly consistent and exhibit extremely low variation. Typical coefficient of variation for wicking rate is 2.4% whereas that for the thickness of membranes is 1.5%.

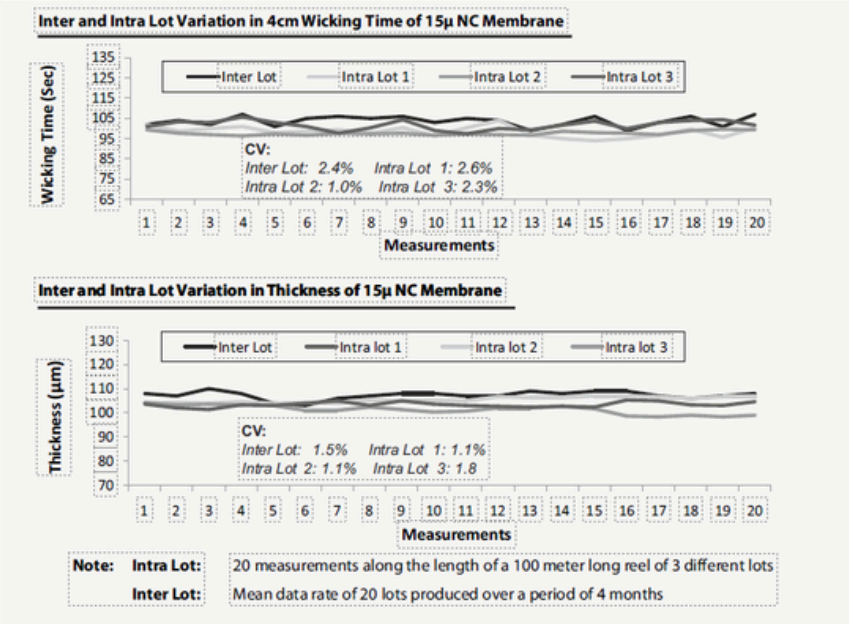


TECHNICAL INFORMATION

Wicking rate is an important characteristic of Nitrocellulose membrane for lateral flow tests and primarily determines the reaction kinetics.

mdi membranes are designated by pore size/wicking rate and have reproducible and defined wicking rates. The wicking rates of blocked membranes will, however, depend on blocking protocol. All mdi membranes exhibit extremely stable wicking rates without blocking and can be used successfully for making assays without blocking.

> NITROCELLULOSE MEMBRANES



TYPES AVAILABLE

A wide variety of membranes are available to meet requirements of different tests. These membranes are directly cast on a transparent polyester backing to improve handling strength. Standard polyester film is 100 µm thick, although other thickness can be available on order.

Type CNPF: Lower protein binding
Type CNPC: Higher protein binding
Type CNPH-N: - Highest protein binding

Type	Sub Type	Rating	Mylar Thickness (µm)	Membrane Thickness (µm)	4 cm Wicking Time (Sec)
CNPF	SN12	5µm	100	100	220
		8µm	100	100	170
		10µm	100	100	125
CNPC	SS12	10µm	100	105	140
		12µm	100	105	120
		15µm	100	105	100
CNPH-N	SS60	200	100	110	200
	SS40	150	100	110	150
		90	100	110	90
		70	100	110	70

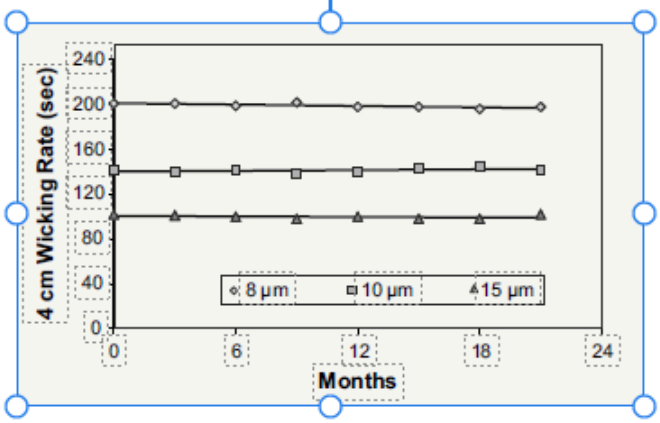
Type CNPC and CNPF are rated by pore size (nominal)
Type CNPH is rated by Wicking Time

> NITROCELLULOSE MEMBRANES

HOW TO SELECT

Selection of membrane depends on the assay. Highest sensitivity is obtained with smaller pore size (slower wicking rate). For high affinity Ag/Ab reaction, use of bigger pore size (faster wicking rates) can result in faster test with adequate sensitivity.

Membrane Pore Size	Wicking Time	Sensitivity	Migration Speed	Test Time	Line Intensity	Typical Application
5,8µm	165-245 sec	Highest	Slower	Longer	Sharp	• HbsAg Serum test • Urine Ab tests • Environmental and Agricultural Analytes • Milk testing
10,12µm	110-150 sec	Medium	Medium	Medium	Sharp	• hCG • Heart disease markers • Cancer markers • Drugs of Abuse • Infectious disease tests • Whole blood tests • Environmental and agriculture analytes
15µm	90-110 sec	Lower	Faster	Quick	Less Sharp	• hCG • Malaria • Whole blood tests



STORAGE

At mdi, membranes are stored in specially designed cold storage areas. We recommend storage of membrane rolls sealed in original foil packing at **1 °C to 35 °C** for longer shelf life. The membrane rolls should be kept away from direct sunlight and heat radiators. The membrane is inflammable when subjected to direct heat.

ORDERING INFORMATION

Information	Membrane Type	Width of Roll (in mm)*	Length of Roll (in meters)**	Quantity
Example 1	CNPC-SS12,15µm	25 mm	100 M	20000 M
Example 2	CNPF-SN12,10µm	20 mm	100 M	15000 M
Example 3	90 CNPH-N-SS40	28 mm	100 M	18000 M

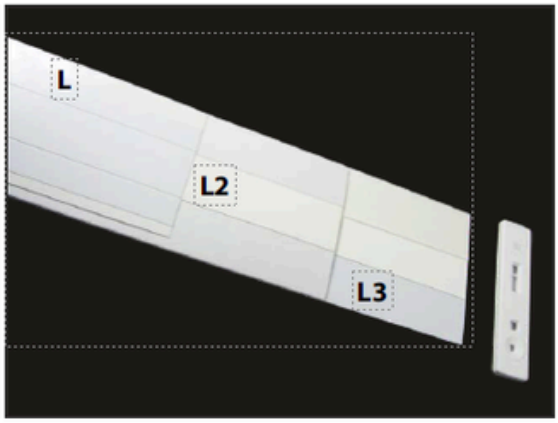
*The width is as per the customer requirement. 25 mm is most widely used membrane size.

mdi Membrane Technologies

Lateral Flow Tests

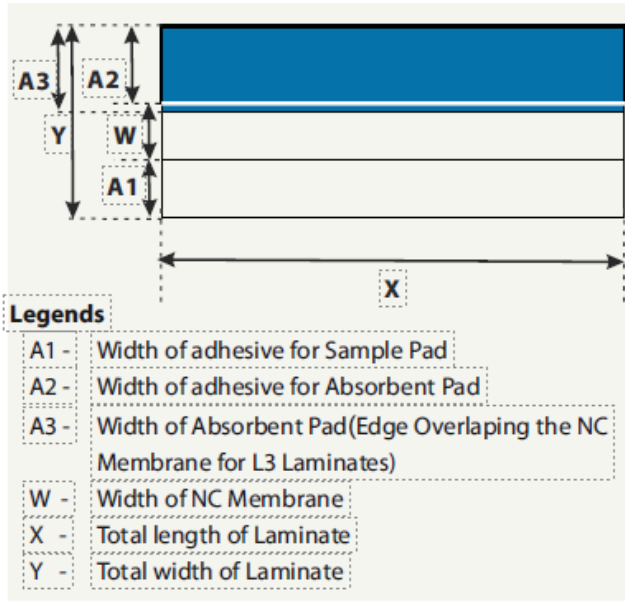
> MEMBRANE LAMINATES

Production of a lateral flow test requires the NC membrane and other materials to be attached to a plastic backing. mdi laminates or cards are such ready-to-use sub-assemblies of membrane, adhesive, and plastic. These are convenient to handle for application of reagents, and later cutting into strips to make the complete test.



Advantages of mdi Laminates

- Allow immediate development and scale-up for production
- Can be custom designed to fit existing cassette or dipstick design
- All components are proven and will not interfere with the immunoassays



TYPES AVAILABLE

All laminates come with adhesive attached. Placement of other pads depends on the type of laminate and the dimensions specified by the customer.

Type	Components Placed on the Plastic Backing		
	Sample Pad	NC Membrane	Absorbent Pad
L-P25	No	No	No
L-H50	No	No	No
CNP*-L2-P25	No	Yes	No
CNP*-L2-H50	No	Yes	No
CNP*-L3-P25	No	Yes	Yes
CNP*-L3-H50	No	Yes	Yes

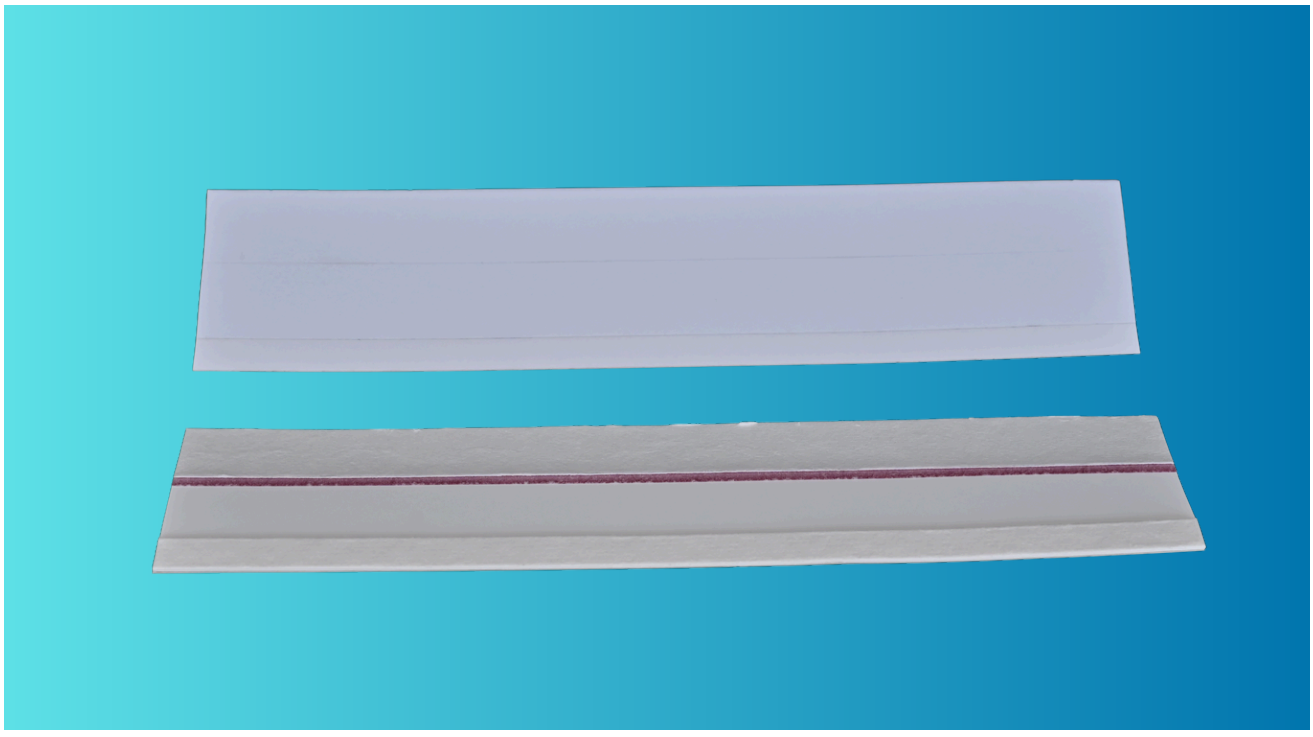
> MEMBRANE LAMINATES

STORAGE

mdi recommends storage of membrane laminates in a sealed condition at 1 °C to 35 °C for longer shelf life. The membrane is inflammable when subjected to direct heat. The laminates should be kept away from heat radiators and direct sunlight and should not be allowed to lie in the open for long periods.

ORDERING INFORMATION

To order a membrane laminate, please specify the laminate type, membrane, membrane pore size, and the dimensions A1, A2, A3, W, X, and Y.



Lateral Flow Tests

> SAMPLE PADS

mdi Glassfiber sample pad type GFB exhibits high absorption capacity and does not bind proteins. It forms the platform where sample/analyte is placed at the time of testing.

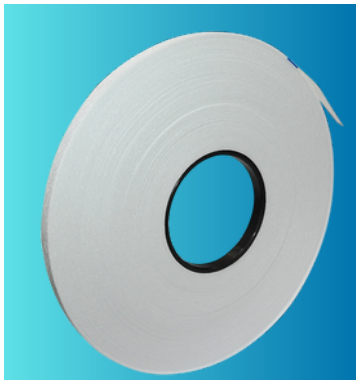
The non-reactive and non-binding properties of glassfiber material allows steady and uniform flow of analyte and prevents non-specific binding of sample components to the pad.

GFB pads are available in standard thickness of 0.35mm and 0.60mm in sheet/strip form. Specially impregnated pads can be offered to meet specific needs and for difficult to filter samples such as stool, milk etc.

TYPES AVAILABLE

Type	Application
GFB-R4	with minimal additives, allowing a user to include additives as per requirement
GFB-R7L	with buffers and detergents

> CONJUGATE RELEASE MATRIX



ORDERING INFORMATION

To order, please specify the desired length and width along with quantity.

mdi Conjugate Pad is a polyester matrix. It is the platform where the assay detection conjugate (such as gold conjugate) is placed. The synthetic material composition of conjugate pad ensures its quick, efficient and uniform release along with the flow of test sample by rehydrating it. The 'detection conjugate-analyte' complex moves into and up the nitrocellulose membrane.

TYPES AVAILABLE

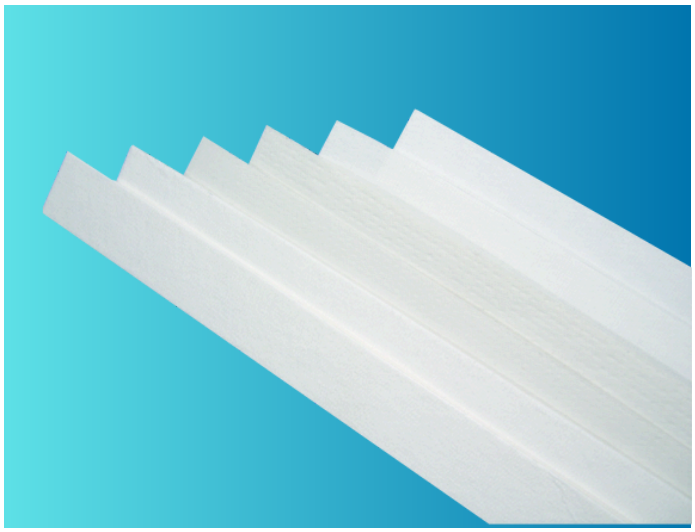
Type	Application
PT-R1	Includes blocking agents
PT-R5	Incorporates minimal additives. User may include additives as per requirement
PT-R6	Includes buffers and detergents to maintain sample pH
PT-R7	Includes buffers for uniform movement of gold

Lateral Flow Tests

> ABSORBENT PADS (SINK PADS)

Absorbent pads, located at downstream end of the test, control the sample flow along the strip. These are hydrophilic in nature, have excellent absorption capacity and thus help drive the flow of test fluids across the nitrocellulose membrane.

mdi offers cellulose fiber based absorbent pads for dipstick as well as device formats.



TYPES AVAILABLE

Type	Thickness	Application
AP045	0.40mm	Dipstick Tests
AP080	0.80mm	Device Test
AP110	1.10mm	Device Test
AP120	1.40mm	Device Test

P045 and AP080 are available in reel, sheet as well as strip formats. However, AP110 and AP120 are available in strip and sheet format only.

ORDERING INFORMATION

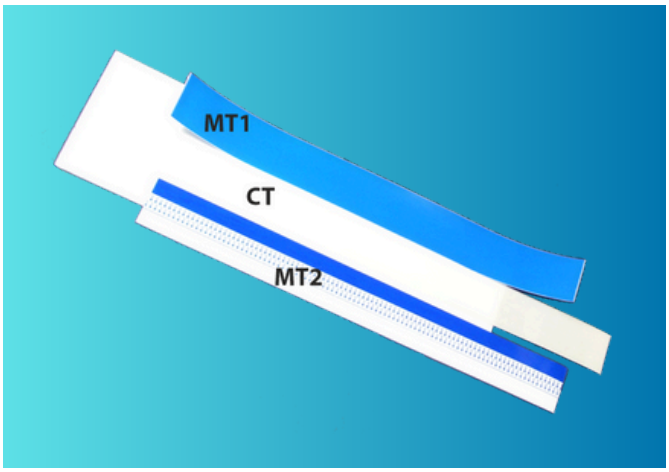
To order, please specify the type, desired length and width along with quantity.

Lateral Flow Tests

> Cover Tapes

Cover tapes are required for dipsticks to maintain good contact between the membrane, the sample pad, and the sink pad. These also prevent evaporation of samples when running besides offering mechanical strength to the delicate test components.

mdi cover tapes use special adhesives which are non-reactive and non-migrating, and therefore do not interfere with the nitrocellulose membrane characteristics to affect its flow properties.



TYPES AVAILABLE

On the basis of application, the cover tapes have been named as given in the table below:

Type	Application
Masking Tape MT1 and MT2	These are used on the absorbent pad (MT1), and sample pad (MT2) sides of the test strip.
Clear Tape CT	Clear transparent tapes cover the NC membrane. These are required specially to reduce the effect of sample evaporation when serum tests are run in hot weather.

ORDERING INFORMATION

The Masking Tapes are offered in desired sizes in strip format and can be custom printed.

The Clear Tape is available in both, strip as well as roll format.

Kindly specify the format, size, and quantity.

Lateral Flow Tests

> Plastic Cassettes

High quality, standard two piece, snap-fit plastic housing for lateral flow tests are available for 4 mm, 5 mm, and 8 mm wide strips. The plastic cassettes prevent the test strip from damage and makes handling safer and easier. Slot is made for pouring the test sample and the result can be seen through the window.

Special 5 mm housing with 2 holes for whole blood tests and tests requiring additional clearing buffer is also available.

TYPES AVAILABLE

Type	Description
Device 1	4 mm plastic cassette
Device 2	Special 5 mm cassette with 2 holes for whole blood tests and tests requiring additional clearing buffer
Device 3	5 mm plastic cassette
Device 5	3 mm plastic cassette
Device 9	5 mm plastic cassette with extra space between sample hole and window. Suitable for whole blood tests

ORDERING INFORMATION

Kindly specify the device type and the quantity.

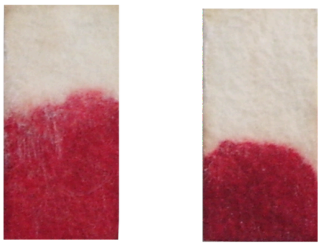
Blood Separation

> BLOOD SEPARATION MEMBRANES

Advancements in blood separation research at mdi has resulted in a unique set of Red Blood Cell (RBC) separation materials which satisfy the long standing demands of the lateral flow diagnostic test manufacturing industry.

Blood separators are useful as they offer following advantages to a point of care rapid test manufacturer.

- Eliminates the need for storage, centrifugation, or clotting of blood samples.
- No technical expertise and lab equipment is required.
- True one-step method. No liquid buffer is required in the kit with type WFR1.
- On-the-spot results in critical situations.
- Results are reliable as intermixing of patient's sample is avoided.



Competition **mdi**

mdi's Solution to Commonly Faced Problems with Blood Separators

Problems	Solutions Offered by mdi Blood Separators
Leakage of RBC onto the membrane (specially at high hematocrit level).	Higher void volume and extremely high retention efficiency of mdi Blood Separators results in full stoppage of RBC.
The migration of plasma on the membrane is very slow resulting in delayed results.	The unique composite design of mdi Blood Separators facilitates faster migration of plasma through the separator.
High volume of blood is required due to poor plasma recovery.	The unique composite structure of mdi Blood Separators allows high plasma recovery making it possible to make one step whole blood assays with as little as 25µl whole blood.
The separator may work for fingerprick blood but does not work with stored blood (with anticoagulant).	mdi Blood Separators work well with finger prick as well as stored blood.
The separator adsorbs the analyte resulting in reduced sensitivity.	The adsorption of the analyte in mdi Blood Separators is minimal resulting in higher sensitivity.

> BLOOD SEPARATION MEMBRANES

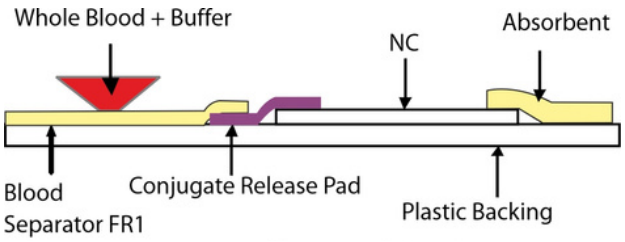
Types Available

RBC Separator Type FR Suitable for Tests Using Liquid Buffer	
Variants	**Features**
FR1(0.35)	This acts as a sample pad and stores the Red Blood Cells (RBCs). A separate conjugate release pad is required which is in direct contact with the NC membrane. The blood separation matrix does not touch the NC membrane.
FR1(0.6)	
FR2(0.7)	

RBC Separator Type WFR Suitable for Tests Without Using Liquid Buffer	
Variants	**Features**
WFR1	This is a composite assembly comprising of a polyester matrix and a white matrix. The white matrix is attached at one end of polyester matrix with biochemically inert glue. This composite assembly acts as sample pad as well as conjugate pad, and is placed on the laminate in such a manner that the white matrix is in direct contact with NC membrane.

ORDERING INFORMATION

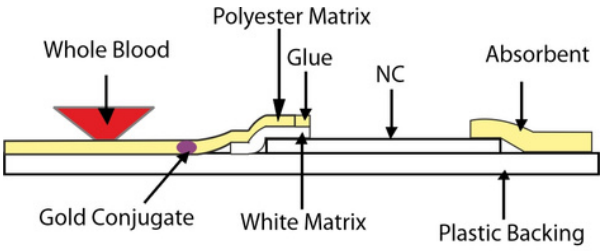
Type	Format	Quantity
FR1 (0.35)/(0.6)	Sheet, Strip/Roll	Numbers/Meters
FR2 (0.7)	Sheet, Strip/Roll	Numbers/Meters
WFR1	Strip	Numbers



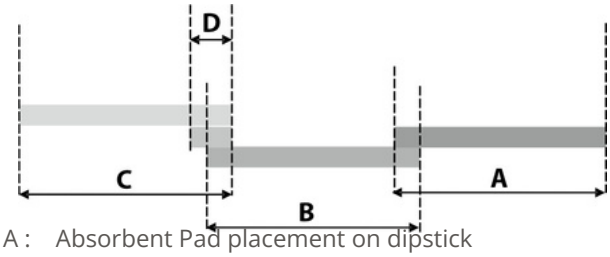
Typical Design of FR1/FR2 Test

Blood Volume Requirement (µl)		Type (Mode 1)	
		FR1	FR2
With Buffer	Min.	5 µl	5 µl
	Max.	30 µl	50 µl

Blood volume Capacity of FR1 /FR2



Typical Design of WFR1 Test



A : Absorbent Pad placement on dipstick
B : NC Membrane placement on dipstick
C : Polyester Matrix of WFR 1 placement
D : White Matrix of WFR 1 placement between B and C

Placement of WFR1 on Dipstick

Blood Separation

> ANIMAL WHOLE BLOOD SEPARATORS

Types Available

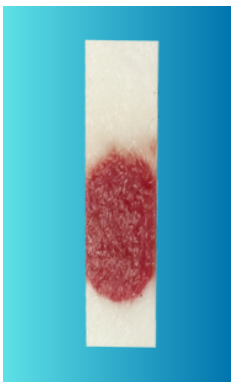
Type FRB (Bovine) Blood Separator for Cattle

Property	FRB (0.35mm)	FRB (0.6mm)
Appearance	White	White
Tare weight (mg/cm^2)	7.2 + 2	10.5 + 3
Thickness	385 + 65 µm	570 + 80 µm

Type FRE (Equine) Blood Separator for Horse

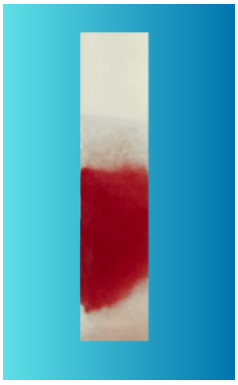
Property	FRE (0.35mm)	FRE (0.6mm)
Appearance	White	White
Tare weight (mg/cm^2)	7.2 + 2	10.5 + 3
Thickness	385 + 65 µm	570 + 80 µm

Type FRC (Canine) Blood Separator for Dogs



Property	FRC (0.35mm)	FRC (0.6mm)
Appearance	White	White
Tare weight (mg/cm^2)	7.2 + 2	10.5 + 3
Thickness	385 + 65 µm	570 + 80 µm

Type FRP (Porcine) Blood Separator for Pigs



Property	FRP (0.35mm)	FRP (0.6mm)
Appearance	White	White
Tare weight (mg/cm^2)	7.2 + 2	10.5 + 3
Thickness	385 + 65 µm	570 + 80 µm

Blood Separation

> Rapid Plasma Separation Device

Many Point of Care (POC) instruments require free plasma for the diagnostic tests to be conducted. This necessitates the removal of red blood cells from whole blood sample. Although centrifugation technique is commonly used, it requires sample to be sent to the lab. Some devices separate RBC from the whole blood but do not provide free plasma as it remains in the separation matrix only.

mdi Plasma Drop Kit overcomes this problem and makes available a **fixed volume plasma from whole blood in a few minutes** for Biochemical, Immunological as well as Molecular Biology assays.

Guaranteed Performance even with 50% Hematocrit Level

Type	Blood Applied	Fixed Plasma Collected
PD-02	1 drop (~ 30-40 µl)	2 µl
PD-05	70-90 µl	5 µl
PD-10	140-150 µl	10 µl
PD-25	420-450 µl	25 µl

THE KIT

The kit consists of a device with RBC retentive medium, a squeeze bulb and a fixed volume dropper for collection and delivery of a fixed volume of free plasma. These are available in different sizes to deliver 2µl and 5µl plasma from finger prick. Larger devices are also available for 10µl and 25µl free plasma.

APPLICATIONS

The Plasma Separation Kit finds application in:

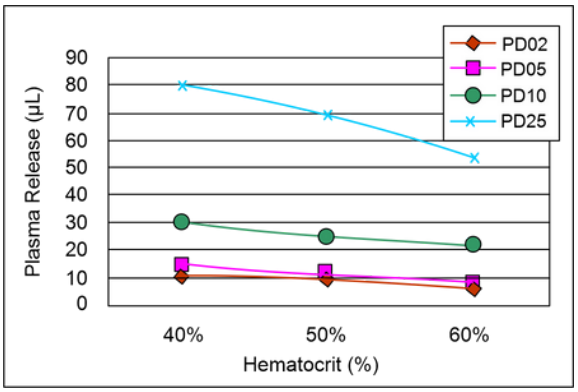
- Patient bed side testing where liquid plasma is required for qualitative and quantitative assays
- POC instruments and ambulances
- Acute care medical ward testing of patients for admission in ICU and critical care
- Remote areas where lab facilities are not available
- Resource limited settings when centrifuge and electricity are not easily available

> Rapid Plasma Separation Device

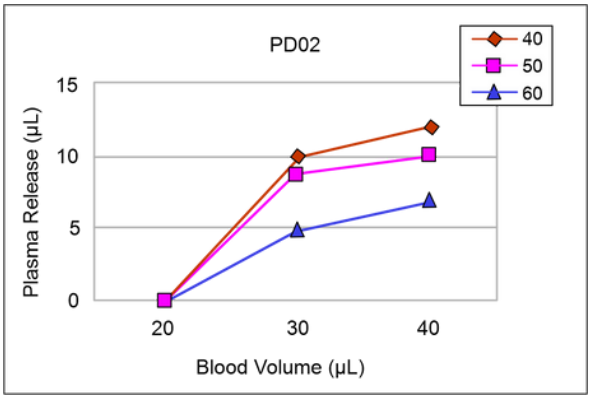
PERFORMANCE DATA

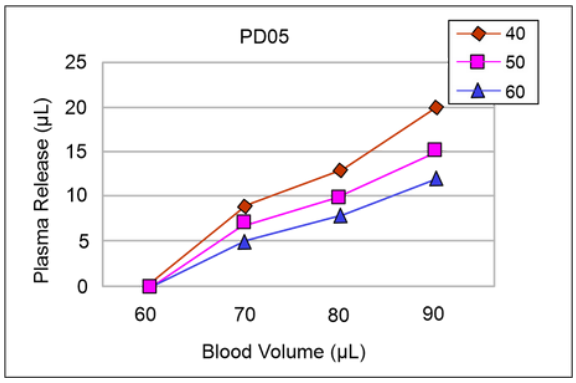
Effect of Blood Volume on Liquid Plasma Recovery

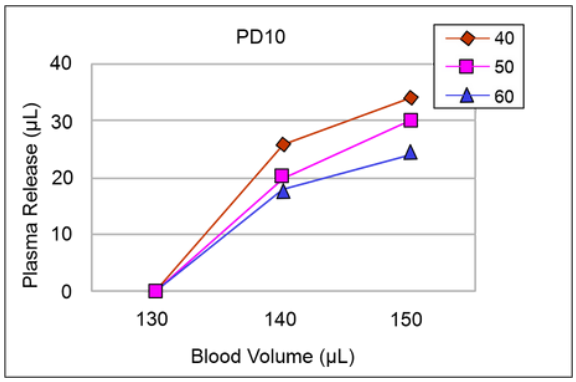
Plasma Recovery using Blood Samples at 40%, 50% and 60% Hematocrit levels

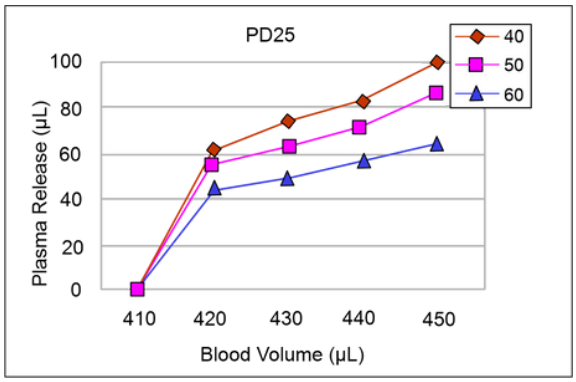


Effect of fixed blood volume on liquid plasma recovery with different Hematocrit levels









ORDERING INFORMATION

PD-02: BP02XXXXXXXXXX
PD-05: BP05XXXXXXXXXX
PD-10: BP10XXXXXXXXXX
PD-25: BP25XXXXXXXXXX

Please contact for customized kits.

mdi Membrane Technologies

Immunofiltration

> Immunofiltration Membranes

MDI immunofiltration membranes are specially useful for making antibody detection tests and also for quantitative detection of proteins.

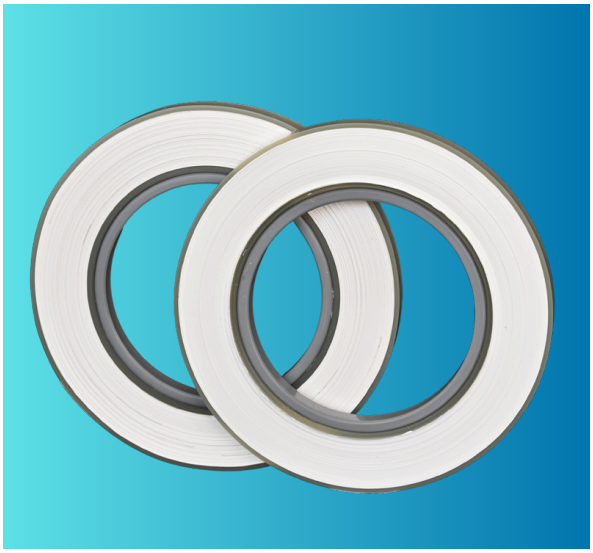
TYPES AVAILABLE

Type CLW-040 is cast on cellulose paper. It is very sturdy to handle and the paper makes good contact with the absorbent. Available in sheets and strips of desired size.
Type CNJ is internally reinforced NC with an extremely uniform plain surface, and good for quantitative reflectance measurement by instruments. Available in reels slit to desired width.

Type	Typical Application
CLW-040, 0.3 µm/0.45µm/0.8 µm	HIV 1 and 2, HCV, other antibody tests, Microbial detection kits
CNJ, 0.45µm	Quantitative protein detection systems

What makes MDI Immunofiltration Membranes Special?

As with other membranes used in diagnostic assays, point-to-point uniformity and reproducibility are key requirements. This is important when membranes act as support for quantitative assays. mdi membrane type CNJ exhibits extraordinary point to point uniformity and reproducibility allowing production of high quality tests with a low coefficient of variation (CV) of the measured readings.



Technical Data

The reaction kinetics of Ag/Ab is governed by the flow rate of the membrane and its pore size. Bigger pore size will show faster flow rate. Membrane with slower flow exhibits higher sensitivity of the assay whereas fast flow membrane will have less non-specific binding and results in a quicker test.

CLW-040, 0.45 µm is an optimised membrane for visual assays whereas for quantitative assays, 0.45 µm CNJ membrane is offered.

ORDERING INFORMATION

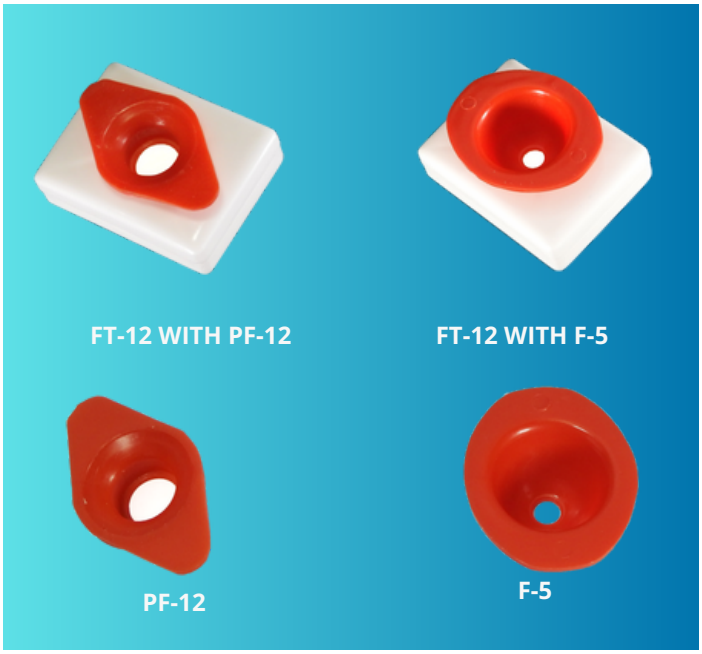
Please specify the membrane type, pore size, size of sheet/strips, and/or reels along with the quantity required.

Immunofiltration

> *Plastic Housing*

Well designed snap-fit housing FT-12 with absorbent AP080 are available to make a complete immunofiltration system. The device uses eight (8) AP080 pads and can hold sample volume upto 4 ml.

Prefilter funnel (PF-12) and flow director funnels (F5) to fit the housing are also available. Prefilter funnel (PF-12) can also be used with a RBC filter to directly run whole blood tests.



ORDERING INFORMATION

Kindly specify the number of plastic housings required.

Additionally, the type of funnel if required should also be mentioned.

Immunodiffusion

> Dipsticks

mdi dipsticks for dot blot tests are convenient devices for conducting rapid enzyme immunoassays. These are particularly suited for semi-quantitative analysis. These dipsticks have one or more membrane pads mounted on an inert plastic tab and are used for dot ELISA based on diffusion principle.

TYPES AVAILABLE

Type DCN uses NC membrane and is most commonly used for protein spots. DCN can have one or more pads in the same dipstick.

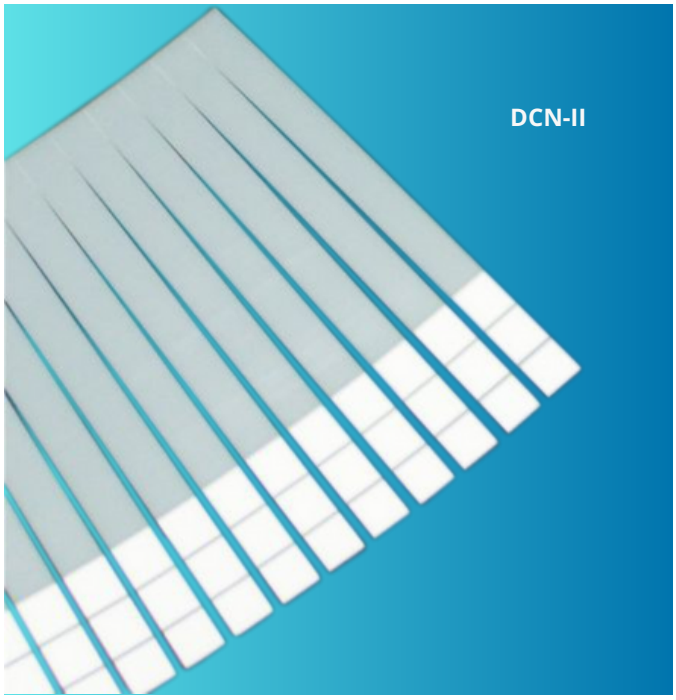
Type	Pad Size (mm)	Dipstick Length	No. of Pads
DCN-II	4	Normally 75 mm, Maximum 100 mm	Maximum 5
	5		
	6		

APPLICATION

The dipsticks find application in analysis of serum for diseases where multiple parameters in the patient serum have to be analysed at the same time.

SIZES AVAILABLE

Normally 6 mm x 75 mm dipsticks with 6 mm square membrane pads are used. However, other size can be produced as specified.



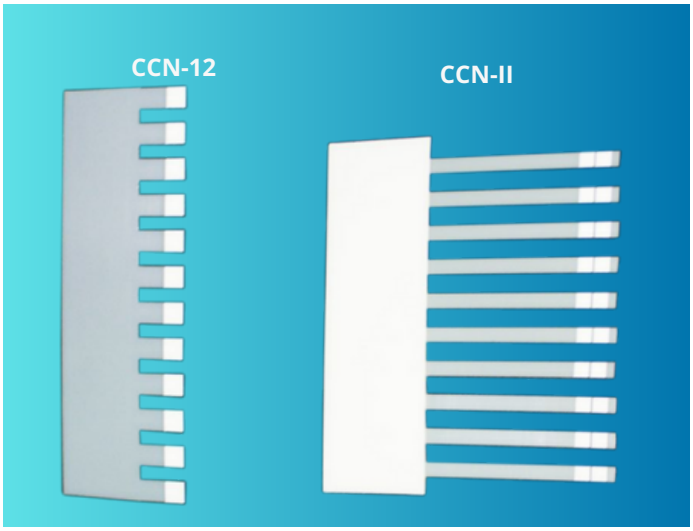
ORDERING INFORMATION

To order specify the length, width, and number of membrane pads required in the dipsticks.

Immunodiffusion

> Combs

Type CCN is a comb with 8 or 12 legs which fits into a normal ELISA plate. It allows 8 or 12 samples to be tested at the same time.

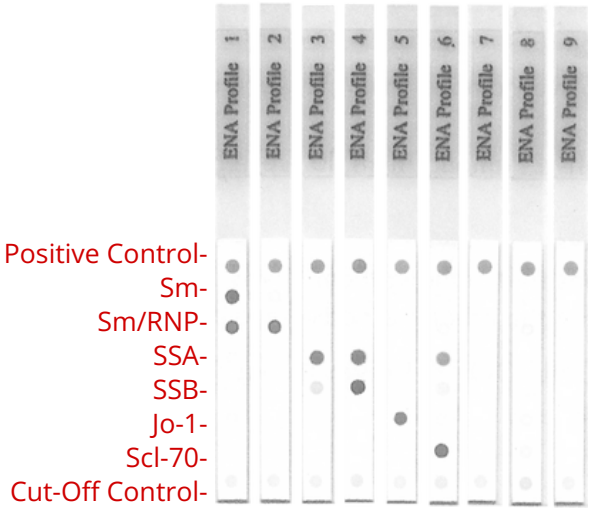


TYPES AVAILABLE

Type	Pad Size (mm)	Comb Size	Leg Spacing	No. of Pads
CCN-12 12 Leg	5 mm	104 x 35 mm	3.7 mm	1
CCN-8 8 Leg	5 mm	69 x 35 mm	3.7 mm	1
CCN-II, 10 Leg	4 mm	95 x 82 mm	5 mm	Max. 8

ORDERING INFORMATION

To order specify the length, width, and number of membrane pads required in the combs.



Easypack Developer's Kits

> Easypack Membrane Kit

mdi Easypack Developer's Kit is the starting point for those new to immunodiagnostic tests (lateral flow tests, flow through tests, immunodiffusion tests, whole blood rapid tests) as well as for the skilled in the art who want to select the best materials for the assay under development.

EASYPACK MEMBRANE KIT

This kit consists of all materials necessary to make more than 3000 tests. Laminates of different pore size membranes, absorbent pads, sample pads, and release matrices are provided (details tabulated below) so that trials may be conducted for optimum results.

The Easypack Membrane Kit is offered in two variants:

1. Easypack Membrane Kit – Dipstick
   Kit for Dipstick Development
2. Easypack Membrane Kit – Device
   Kit for Device Development

SPECIFICATIONS

Component	Easypack Membrane Kit (Dipstick)	Easypack Membrane Kit (Device)
Membrane Laminates	8 laminates each of 8 different types of NC membranes	
Plastic Backing	500 µm HIPS Backing	250 µm PVC Backing
Absorbent Pads	Ap-045 and AP-080, 27 x 260mm - 32 nos. each	Ap-080 and AP-110, 21 x 260mm - 32 nos. each
Release Matrix	PT-R5 and PT-R7 70 x 260 mm - 3 nos. each	PT-R5 and PT-R7 70 x 260 mm - 3 nos. each
Sample Pads	GFB-R4 and GFB-R7L 24 x 260 mm - 32 nos. each	GFB-R4 and GFB-R7L 13 x 260 mm - 32 nos. each
Cover Tapes	64 nos. sets	_____
Plastic Devices	_____	Device-3 - 100 nos.

ORDERING INFORMATION

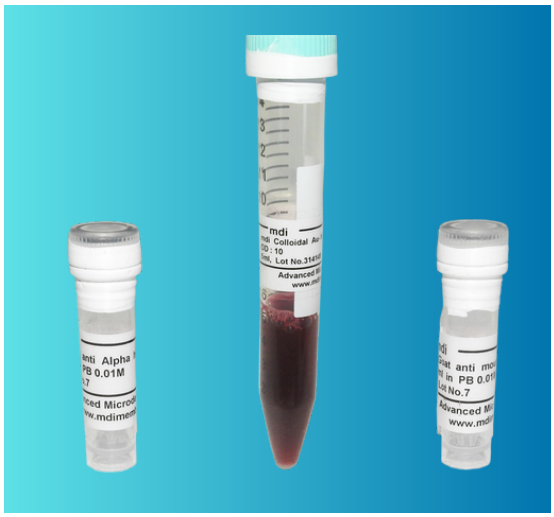
To order Easypack kits, specify the name of kit and the quantity.

Easypack Developer's Kits

> Easypack Reagent Kit

Easypack Reagent Kit consists of standard reagents to make more than 1000 complete hCG tests. It is useful for putting together working lateral flow immunoassays and for getting familiar with the techniques.

1. Anti-hCG Antibody - 1ml (3 mg/ml)
2. Anti-βhCG Conjugate - 5 ml
3. Goat anti-mouse Ab - 1ml (1mg/ml) (for control line)



> Easypack Packaging Kit

Once the developments are nearing completion, packaging materials for the test kit such as aluminium pouches, plastic droppers, plastic cassettes etc. can be ordered separately.

The kit consists of the following:

Aluminium pouches	1000 nos.
Plastic Droppers	1000 nos.
Plastic cassettes	1000 nos.
Dessicant (Silica Gel)	1000 nos.

ORDERING INFORMATION

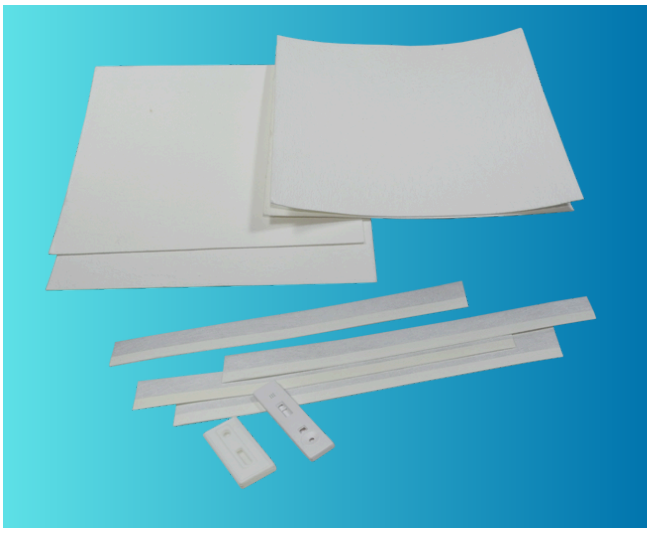
To order Easypack kits, specify the name of kit and the quantity.

Easypack Developer's Kits

> Easypack Blood Separation Membrane Kit

The kit has been designed to help select the best format suitable for your whole blood rapid test. The constituents of the kit are:

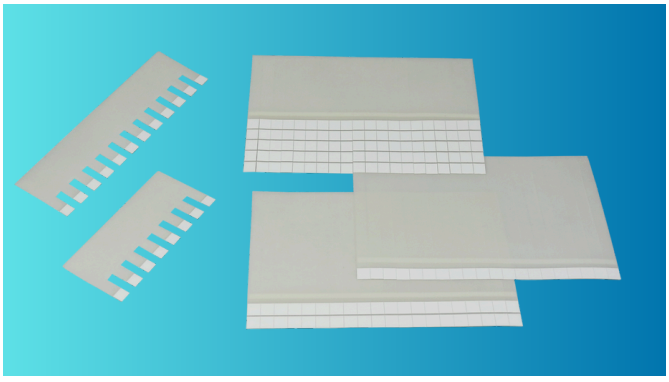
Type FR1(0.35), 15x15cm	10 sheets
Type FR1(0.6), 15x15cm	10 sheets
Type FR2 (0.7), 15x15cm	10 sheets
Type WFR1, 3x30cm	20 strips
Plastic Device-2 (two hole)	100 Nos.
Plastic Device - 9	100 Nos.



> Easypack Immunodiffusion Kit

The immunodiffusion kit has been designed for the developers/manufacturers of rapid enzyme immunoassay. The kit has following components

6 mm Dipstick Type DCN-II, 1 Pad	50 Nos.
6 mm Dipstick Type DCN-II, 2 Pad	50 Nos.
6 mm Dipstick Type DCN-II, 5 Pad	50 Nos.
8 leg Combs Type CCN-8	25 Nos.
12 leg Combs Type CCN-12	25 Nos.



ORDERING INFORMATION

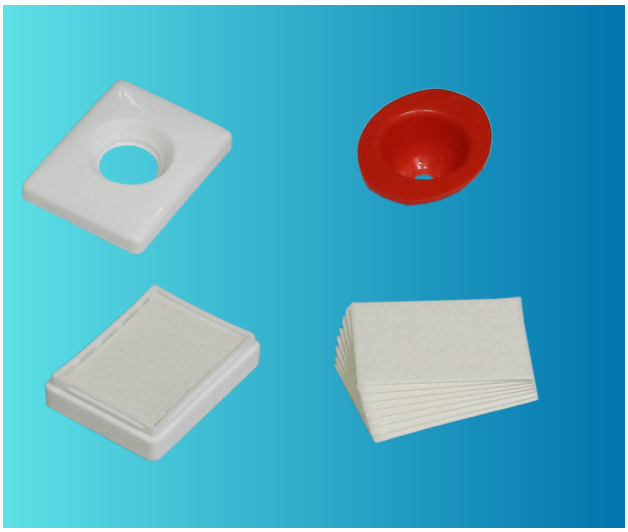
To order Easypack kits, specify the name of kit and the quantity.

Easypack Developer's Kits

> Easypack Immunofiltration Kit

mdi also offers new developers a kit for flow through tests. The kit consists of membranes and devices for developing/making antibody detection tests and also for quantitative detection of protein. The kit components are:

Flow Through Device Type FT12/AP080,with absorbents	250 Devices
Flow Director Funnel Type F5	250 Nos.
Membrane Type CLW-040-SH34, 0.3µ,15x15cm	4 Nos.
Membrane Type CLW-040-SH34, 0.45µ,15x15cm	4 Nos.
Membrane Type CLW-040-SH34, 0.8µ,15x15cm	4 Nos.
Absorbent Pad AP080, 20x30cm	8 Nos.



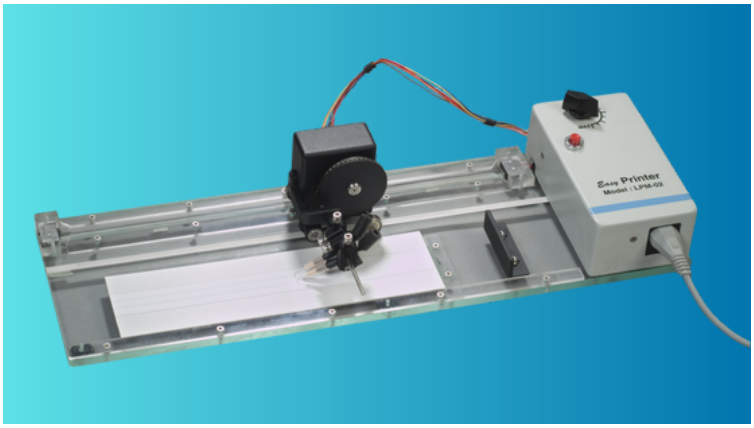
ORDERING INFORMATION

To order Easypack kits, specify the name of kit and the quantity.

Lab Equipment

> Easy Printer

The dispensing of reagents has never been so simple and cost-effective. The Easy Printer Model LPM-02 is the printer of choice for laboratory development of rapid assays. It is convenient not only for printing occasional lines with minimal reagent loss but due to in-built automation, can also be used for small pilot production.



TYPES AVAILABLE

Type	Print Needle Type
A1	Drawn with needle Type A at a slower speed
A2	Drawn with needle Type A at relatively faster speed than A1
B	220 V, Drawn with needle Type B at same speed as of A1Hz / 110 V, 60 Hz

SPECIFICATIONS

Maximum Print Length	30 cm
No. of Printing Heads	2
Min. Working Volume	50 µl
Voltage	220 V, 50 Hz / 110 V, 60 Hz
Power	10 W
Weight	3.0 Kg
Dimension	47 x 16.5 x 11.5 cm
Shipping Carton	51 x 21 x 20 cm

FEATURES

- Uniform dispensing of reagents results in good line quality.
- Two lines can be printed simultaneously
- Provision of variable speed for controlled dispensing of reagents.
- A bigger and a smaller print needle for wider and thinner line width.
- Auto-reverse facility makes the operation automatic.
- Pressure on the membrane is adjustable by a screw in the tip holder.
- Upto 300µl in holding tank allows printing of 10 laminates before refilling.
- Total recovery of unused reagents.

ORDERING INFORMATION

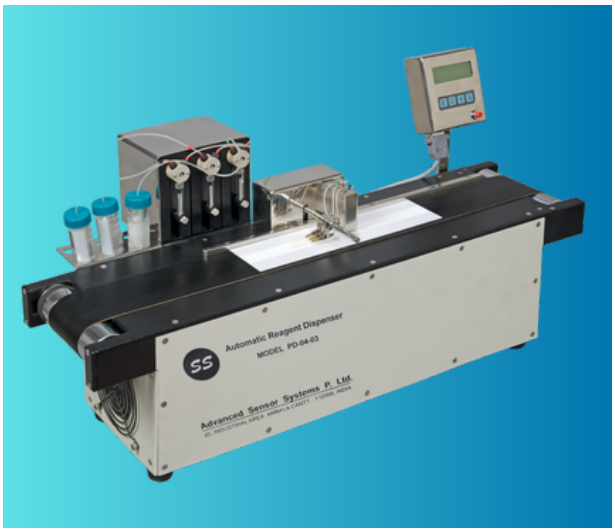
To order specify: Easy Printer Model LPM-02. Please indicate the operating voltage.

mdi Membrane Technologies

Lab Equipment

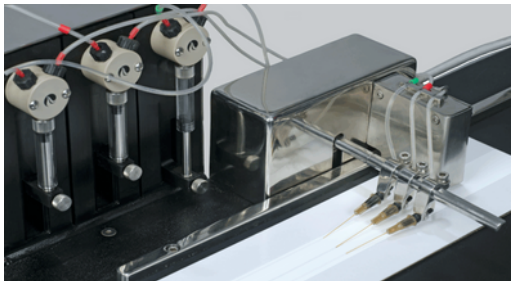
> Automatic Reagent Dispenser

SS Automatic Reagent Dispenser Model PD-04-03 is a unique machine which will dispense precisely controlled reagent lines for one step rapid tests on membrane laminates for high volume production.



FEATURES

- Fully automatic, user friendly operation
- Three delivery heads for printing one, two or three lines
- Digitally programmable belt speed
- Precise per cm reagent dispensing with positive displacement syringe pump
- Very high throughputs
- Blank laminates are detected photoelectrically
- Printed laminates are removed from the other end of belt
- Self priming to eliminate entrapped air
- Extremely uniform, reproducible, and sharp printed lines
- Big nozzle eliminates shear to avoid damage to proteins
- No indentation even on softest membrane



Close View of Line Printing Process

SPECIFICATIONS

Belt Speed	150 – 450 cm/min
Dispense Rate	0.4 – 4.0 µl/cm
Min. Working Volume	800 µl
Size	81 cm x 40 cm x 42 cm
Weight	33 Kg
Power	220 V, 0.6A, 50 Hz 110 V, 1.2A, 60 Hz
Maximum Line Width	3 mm
Minimum Line Width	0.3 mm

ORDERING INFORMATION

To order specify: Automatic Reagent Dispenser Model PD-04-03.
Please specify the operating voltage.

mdi Membrane Technologies

Lab Equipment

> Programmable Strip Cutter

mdi's Programmable Strip Cutter is a high precision laboratory instrument designed to cut cards or web stock into strips of precise and customizable width.

It features a guillotine-type programmable shear operated by an in-built microcomputer, and settings can be adjusted easily through the keypad and LCD display

TYPES AVAILABLE

Programmable Strip Cutter is available in two models M-70 and M-100.

Type	M-70	M-100
Cutting Speed	Fixed	Variable
Cuts per Minute	80 strips	upto 200 strips
Key Pad	16 Key Touch Pad	16 Key Touch Pad
Size (LxBxH)	49cm x 34cm x 43cm	49cm x 34cm x 43cm
Voltage	220 V, 50 Hz or other	220 V, 50 Hz or other
Card Width	120 mm (Maximum)	120 mm (Maximum)
Width Range	2mm to 12mm	2mm to 12mm
Weight	38 Kg	38 Kg

ORDERING INFORMATION

To order specify:
SS Programmable Strip Cutter Model (M-70 or M-100).
Please indicate the operating voltage.

mdi Membrane Technologies

Lab Filtration Devices

> mdi Filters for Antibody and Gold Conjugate Filtration

mdi offers in-line filters and syringe filters for the filtration of small volume and expensive products such as gold conjugate and antibodies. These are ideal for filtration of high value antibodies and reagents due to its very low protein binding.

mdi IKT in-line filters are compact devices and offer 'Zero' filtration losses as a unique built-in PTFE air vent allows passage of even the last milliliter of fluid through the filter as well as downstream tubing. Specially designed for relatively low volume, high value immunoreagents.

> mdi Filters for Buffer Clarification

mdi offers a wide range of Polypropylene Capsule filters for clarification applications. These capsule filters employ polypropylene filter media for wide chemical compatibility and high heat resistance.

These are available in a range of pore size, sizes and end connections to suit different process needs .

Lab Filtration Devices

> mdi Capsule Filters for Serum and Buffer Filtration

These specially designed, ready to use, polyethersulfone membrane compact serial filtration capsule filters offer very low hold-up volumes to help minimize filtration losses. These offer enhanced throughput for difficult to filter biological solutions such as pure sera, serum solutions, as well as buffers.

mdi capsuringe offers an innovative capsule filter that can be used manually for small volume filtration directly with syringe.

> mdi Cartridge Filters for Haematology and Other Reagent Filtration

High flow rates, high throughput polyethersulfone membrane cartridge filters validated for bacterial retention. These are ideal for large volume filtration of biological solutions and reagents.

For detailed information on Filter products please ask for Filter Catalogs or visit our website: www.mdimembrane.com

Other Products

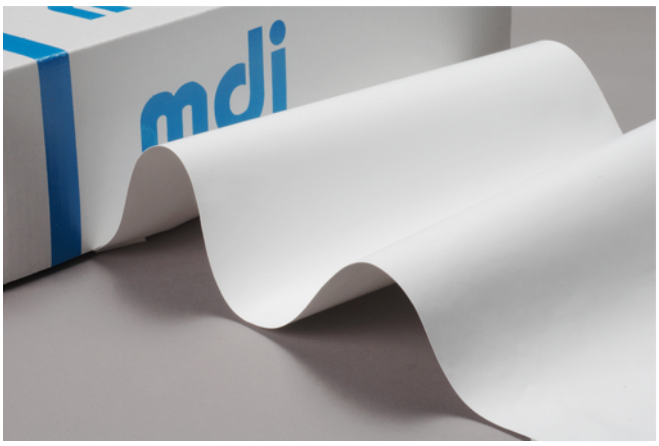
> Nucleic Acid Purification Kits

mdi offers innovative break through technologies for nucleic acid purification for research applications.

A wide range of validated kits are available for plasmid DNA, genomic DNA and RNA purification from a wide variety of samples such as mammalian cells and tissue (blood tissue, plant tissue, bacteria and stools).

> Transfer Membranes

mdi offers a wide range of binding membranes for western blots (Nitrocellulose and PVDF membranes), northern and southern blots (Nylon and positively charged Nylon membranes).



SPECIAL FEATURES

- High Signal-to-Noise ratio
- Minimal blow through
- Minimal background fluorescence
- High binding capacity
- Superior handleability

ORDERING INFORMATION

Please contact: info@mdimembrane.com

mdi Assurance of Quality

Quality is at the core of mdi's products and services. We not only adhere to well-designed quality systems to consistently deliver high-quality, internationally compliant products, but we also strive to integrate superior performance features into everything we offer, giving our customers a distinct advantage in their applications.

Our quality policy reflects this commitment:

"***mdi is dedicated to providing its customers with products and services of the highest possible standards—consistently superior, more satisfying than competing alternatives, and fully compliant with established quality management systems."***

Stride Towards Excellence

At mdi, our mission is to constantly strive to achieve excellence in all our endeavors by establishing systems to create excellent products and services to fulfil the needs of our customers.

To achieve this we

- Frequently compare our products with competing brands
- Simulate tests for functional use
- Develop easy-to-use innovative products

We are constantly working on improvements and welcome suggestions from our customers.

Guarantee

All mdi products are guaranteed and are backed by our

- Technical expertise and experience of 50 years
- 'Special mdi processes' for consistency and repeatability
- Strict quality control and quality assurance regimen
- Certificate of Analysis accompanying all shipments

State-of-the-Art Facilities

Company Headquarters in Ambala, India

ISO 9001 Certified Production facility

mdi's modern GMP facilities, featuring expansive **ISO-7 Cleanrooms** exceed regulatory standards. All production takes place in an **ISO 9001:2015 Certified Facility**, staffed by highly trained personnel whose expertise meets or surpasses industry requirements.

This commitment to quality ensures that many mdi products are recognized as among the best in the world.

Innovative R&D

mdi maintains a vigorous product development pipeline in its well-equipped R&D laboratories. We specialize in tailoring solutions across the full production spectrum —supporting research labs, startups, and small, medium, and large-scale production houses.

WE ARE THE WORLD'S LARGEST MANUFACTURER OF IMMUNODIAGNOSTIC MEMBRANES.

CORPORATE OFFICE
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Camp Hill, Pennsylvania 17011, USA

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MDI Membrane Technologies Pvt Ltd
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Walkinstown Ave, Dublin, D12 E265

E-mail: info@mdimembrane.com
Website: www.mdimembrane.com

50 years
mdi
Membrane Technologies

#INNOVATEWITHMDI