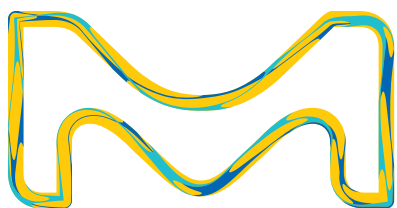


Hi-Flow™ Plus Membranes and SureWick® Pad Materials

Quality materials for use in
rapid diagnostic lateral flow tests



The life science business
of Merck operates as
MilliporeSigma in the
U.S. and Canada.

Millipore®

Preparation, Separation,
Filtration & Monitoring Products

Quality Hi-Flow™ Plus Membranes sealed in an easy-to-use card format

As an industry leader and partner to global diagnostic manufacturers, we offer materials, components and custom services including membrane cards for rapid diagnostic test applications. The preassembled membrane cards reduce prep time and simplify your manufacturing design process and production. The precise assembly of our membrane cards results in exceptional consistency in performance for your test.

Key Features of Hi-Flow™ Plus Membrane Cards

Convenience

Buying membrane cards increases efficiency, providing you with a single source for high quality, lateral flow membranes on a plastic card support. The membrane cards also ensure optimal performance by eliminating the need to manually assemble cards for development or production of rapid diagnostic kits and tests.

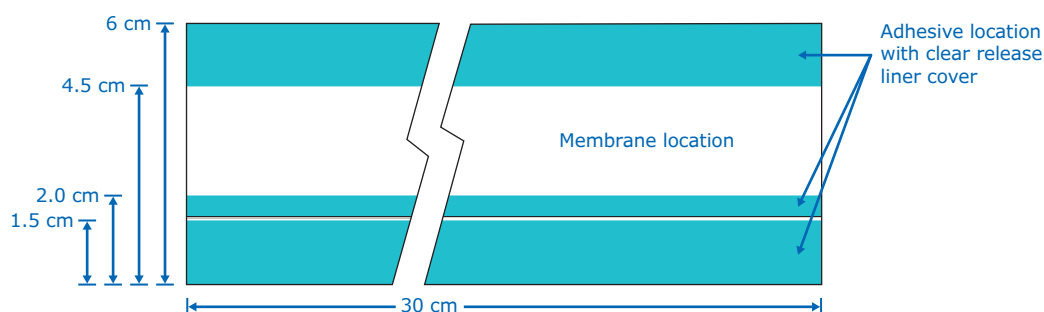
Choose a Lateral Flow Membrane Card That Works to Your Advantage

We offer laminated membrane cards in both standard and custom sizes, with five Hi-Flow™ Plus membrane choices.

Hi-Flow™ Plus membrane card type has a distinctive flow range.

Speed	Sensitivity	Membrane Type	Description
Fast	Low	HF075, HF090	For assays where sample and analyte are abundant and sensitivity is not a major concern
Medium	Moderate	HF120, HF135	For assays that require moderate speed and sensitivity
Slow	High	HF180	For assays where sample is limited or high sensitivity is needed

Standard Hi-Flow™ Plus membrane card dimensions



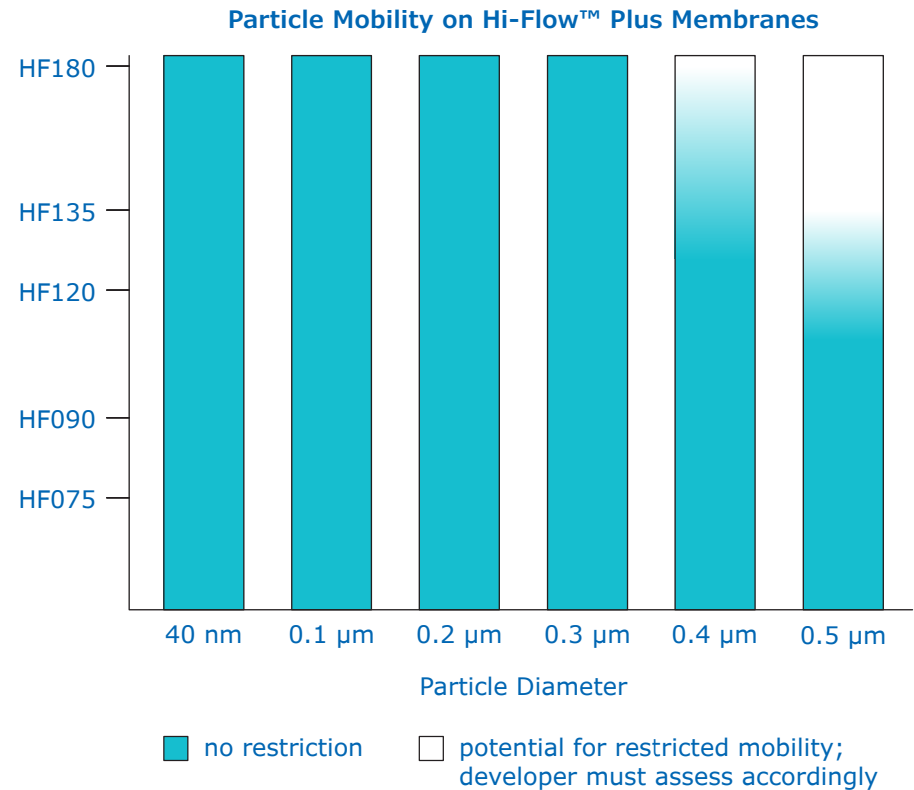
Hi-Flow™ Plus Membranes

For diagnostic tests and kits that require superior consistency and performance.

Hi-Flow™ Plus membranes are manufactured to the tightest specifications of any lateral flow membrane, and each membrane type has a characterized particle mobility for a given particle size. This membrane consistency results in reliable, lot-to-lot performance of your rapid diagnostic test strip or device.

Particle Mobility

It is important to test mobility on the membranes which indicate a transition from blue to white, as these areas may show variability. The chart below illustrates which membranes allow for the greatest particle mobility.



With colloidal gold there is little or no restriction on the flow of particles as they pass through the membrane. With larger beads, mobility may be restricted depending on the size of your particles and the viscosity of the sample.

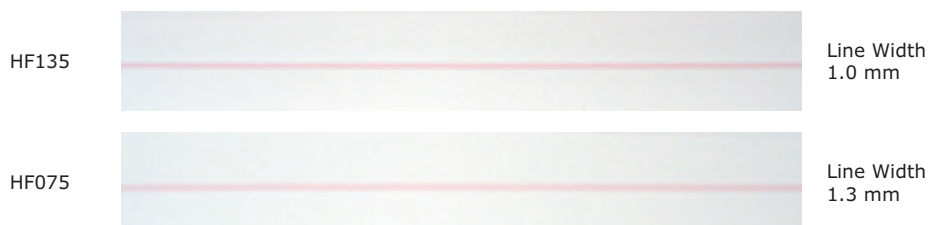
In summary, it is important the assay developer understands the inherent mechanical structures throughout the lateral flow membrane which can pose physical barriers to particle flow. As a result, it is important to optimize particle/bead size with the desired speed and sensitivity of the chosen membrane.



Key Features of Hi-Flow™ Plus Membranes

Consistent Flow and Thickness

Hi-Flow™ Plus membrane's consistent capillary flow time keeps the effective analyte concentration in your assay consistent. As a result, you can accurately determine the appropriate membrane for your application and develop assays with greater precision.



Available Flow Rates*

The capillary flow rate is the speed at which a sample material moves along a membrane strip in a rapid diagnostic test strip or application. Moreover, there is a direct correlation between the flow rate and sensitivity of the membrane. Understanding these requirements for your application will enable you to select the appropriate membrane. For example, you can use fast-flowing Hi-Flow™ Plus 75 for tests where speed is critical, sample is plentiful, and sensitivity is not a concern. On the other extreme, use slow-flowing Hi-Flow™ Plus 180 for tests where speed is less important, sample is limited, or high sensitivity is needed.

Use Hi-Flow™ Plus membranes for assays that balance speed and sensitivity.

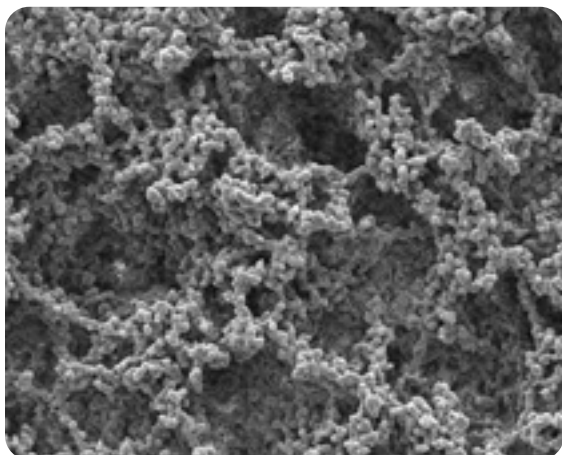
Membrane	Capillary Flow Time Specification** (sec/4 cm)	Flow Rate	Sensitivity
HF180	180 ± 45	Slowest	Most sensitive
HF135	135 ± 34	↓	↓
HF120	120 ± 30		
HF090	90 ± 23		
HF075	75 ± 19	Fastest	Least sensitive

* For additional details, visit the website to review the development guide for lateral flow strips: <https://www.sigmaaldrich.com/technical-documents/articles>

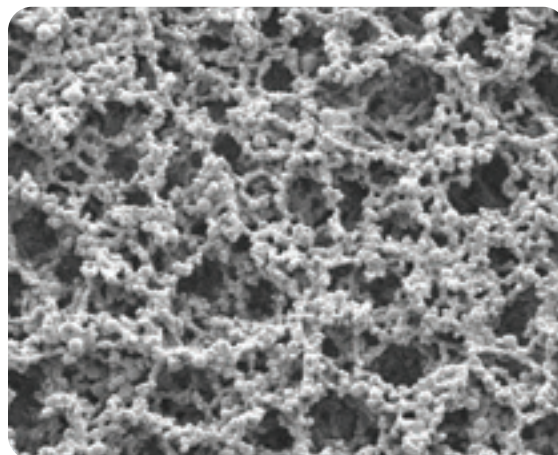
** The range is for all measured values on a roll and represents ± 3 sec; the acceptable range for the mean is ± 10% of the target.

Superior Surface Quality

Hi-Flow™ Plus membranes are manufactured to have a superior surface morphology that allows for consistent and even flow distribution of reagents across the membrane surface. This excellent surface quality improves reagent addition and clarity of the test results.



HF075 Air side view



HF180 Air side view

Membrane Backing Options

Membrane	Capillary Flow Time	Available Backing Material
HF075	75	2 mil and 4 mil
HF090	90	2 mil and 4 mil
HF120	120	2 mil and 4 mil
HF135	135	2 mil and 4 mil
HF180	180	UB*, 2 mil and 4 mil

Backing	Overall Thickness (μm)
UB*	135
2 mil	185
4 mil	235

* unbacked

Also available are sample, absorbent and diagnostic pads needed for rapid diagnostic test strip applications and kits. These pad materials are standards in the industry and are available in multiple formats to suit your specific needs.

*Only HF180 is available unbacked (UB).

SureWick® Pad Material for use as Sample, Absorbent and Diagnostic Pads

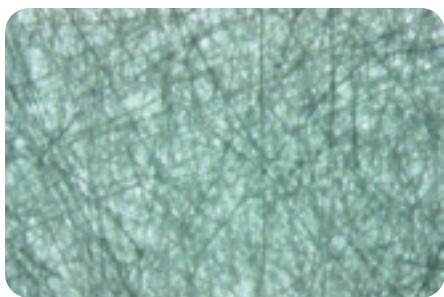
We offer glass fiber diagnostic pads as well as nonwoven sample and absorbent pads. Both products are available in a variety of widths and formats (i.e. sheets or rolls) as a complement to a variety of manufacturing and development processes.

Glass Fiber Diagnostic Pads

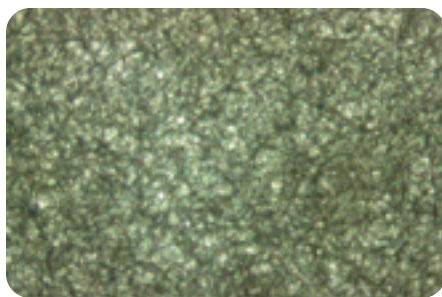
Our glass fiber pads have low extractables and excellent consistency. These glass fiber pads are typically used as diagnostic pads in lateral flow test strip configurations. Advances in the production of these glass fiber substrates ensure uniform surfaces and low cost.

Sample and Absorbent Pads

Made from nonwoven, 100% pure cellulose fiber, these pads can be used as sample or absorbent pads. As with the diagnostic pads, these pads are manufactured to ensure consistency in your assay. These pads do not contain binders or glues that can interfere with assay performance.



Glass Fiber Diagnostic Pad (6.3x)



Cellulose Absorbent Sample Pad (6.3x)

Ordering Information

Hi-Flow™ Plus Membrane Cards

Standard cards are available in the following specifications, however custom cards may also be ordered. Contact your local account manager to discuss the options.

Membrane Cards

Description	Card Dimension	Qty/Pack	Catalogue No.
Hi-Flow™ Plus 75 Membrane Cards	6 cm x 30 cm	100 cards	HF075MC100
Hi-Flow™ Plus 90 Membrane Cards	6 cm x 30 cm	100 cards	HF090MC100
Hi-Flow™ Plus 120 Membrane Cards	6 cm x 30 cm	100 cards	HF120MC100
Hi-Flow™ Plus 135 Membrane Cards	6 cm x 30 cm	100 cards	HF135MC100
Hi-Flow™ Plus 180 Membrane Cards	6 cm x 30 cm	100 cards	HF180MC100

Sample Packs

Description	Card Dimension	Qty/Pack	Catalogue No.
Hi-Flow™ Plus 75 Sample Pack	6 cm x 30 cm	5 cards	HF075MC5PK
Hi-Flow™ Plus 90 Sample Pack	6 cm x 30 cm	5 cards	HF090MC5PK
Hi-Flow™ Plus 120 Sample Pack	6 cm x 30 cm	5 cards	HF120MC5PK
Hi-Flow™ Plus 135 Sample Pack	6 cm x 30 cm	5 cards	HF135MC5PK
Hi-Flow™ Plus 180 Sample Pack	6 cm x 30 cm	5 cards	HF180MC5PK

Hi-Flow™ Plus Membranes

Standard membranes are available in the following formats, however custom slits and sheet sizes are also available. Contact your local account manager to discuss the options.

Variety Pack	Backing	Dimensions	Qty	Catalogue No.
Hi-Flow™ Plus 75, 90, 120, 135, 180	2 mil	25 cm x 30.5 cm sheets	10 sh/pk (2 sheets of each speed)	HFSAMPLE02
Hi-Flow™ Plus 75, 90, 120, 135, 180	4 mil	25 cm x 30.5 cm sheets	10 sh/pk (2 sheets of each speed)	HFSAMPLE04

Sheets: 25 cm x 30.5 cm

Description	Backing Thickness	Dimensions	Qty/Pack	Catalogue No.
Hi-Flow™ Plus 075	2 mil	25 cm x 30.5 cm sheets	5	HF07502XSS
Hi-Flow™ Plus 075	4 mil	25 cm x 30.5 cm sheets	5	HF07504XSS
Hi-Flow™ Plus 090	2 mil	25 cm x 30.5 cm sheets	5	HF09002XSS
Hi-Flow™ Plus 090	4 mil	25 cm x 30.5 cm sheets	5	HF09004XSS
Hi-Flow™ Plus 120	2 mil	25 cm x 30.5 cm sheets	5	HF12002XSS
Hi-Flow™ Plus 120	4 mil	25 cm x 30.5 cm sheets	5	HF12004XSS
Hi-Flow™ Plus 135	2 mil	25 cm x 30.5 cm sheets	5	HF13502XSS
Hi-Flow™ Plus 135	4 mil	25 cm x 30.5 cm sheets	5	HF13504XSS
Hi-Flow™ Plus 180	UB	25 cm x 30.5 cm sheets	5	HF180UBXSS
Hi-Flow™ Plus 180	2 mil	25 cm x 30.5 cm sheets	5	HF18002XSS
Hi-Flow™ Plus 180	4 mil	25 cm x 30.5 cm sheets	5	HF18004XSS

Rolls: 2.5 cm x 100 m

Description	Backing Thickness	Dimensions	Qty/Roll	Catalogue No.
Hi-Flow™ Plus 075	2 mil	2.5 cm W roll	100 m	SHF0750225
Hi-Flow™ Plus 075	4 mil	2.5 cm W roll	100 m	SHF0750425
Hi-Flow™ Plus 090	2 mil	2.5 cm W roll	100 m	SHF0900225
Hi-Flow™ Plus 090	4 mil	2.5 cm W roll	100 m	SHF0900425
Hi-Flow™ Plus 120	2 mil	2.5 cm W roll	100 m	SHF1200225
Hi-Flow™ Plus 120	4 mil	2.5 cm W roll	100 m	SHF1200425
Hi-Flow™ Plus 135	2 mil	2.5 cm W roll	100 m	SHF1350225
Hi-Flow™ Plus 135	4 mil	2.5 cm W roll	100 m	SHF1350425
Hi-Flow™ Plus 180	2 mil	2.5 cm W roll	100 m	SHF1800225
Hi-Flow™ Plus 180	4 mil	2.5 cm W roll	100 m	SHF1800425
Hi-Flow™ Plus 180	UB	2.5 cm W roll	100 m	SHF180UB25

Master Rolls: Slit to Order*

Description	Backing	Length
Hi-Flow™ Plus 075	2 mil	100 m
Hi-Flow™ Plus 075	4 mil	100 m
Hi-Flow™ Plus 090	2 mil	100 m
Hi-Flow™ Plus 090	4 mil	100 m
Hi-Flow™ Plus 120	2 mil	100 m
Hi-Flow™ Plus 120	4 mil	100 m
Hi-Flow™ Plus 135	2 mil	100 m
Hi-Flow™ Plus 135	4 mil	100 m
Hi-Flow™ Plus 180	2 mil	100 m
Hi-Flow™ Plus 180	4 mil	100 m
Hi-Flow™ Plus 180	UB	100 m

* A master roll is 30 cm wide x 100 meters long, and can be slit to a width that meets your design requirements. Contact your local account manager to obtain the catalog number.

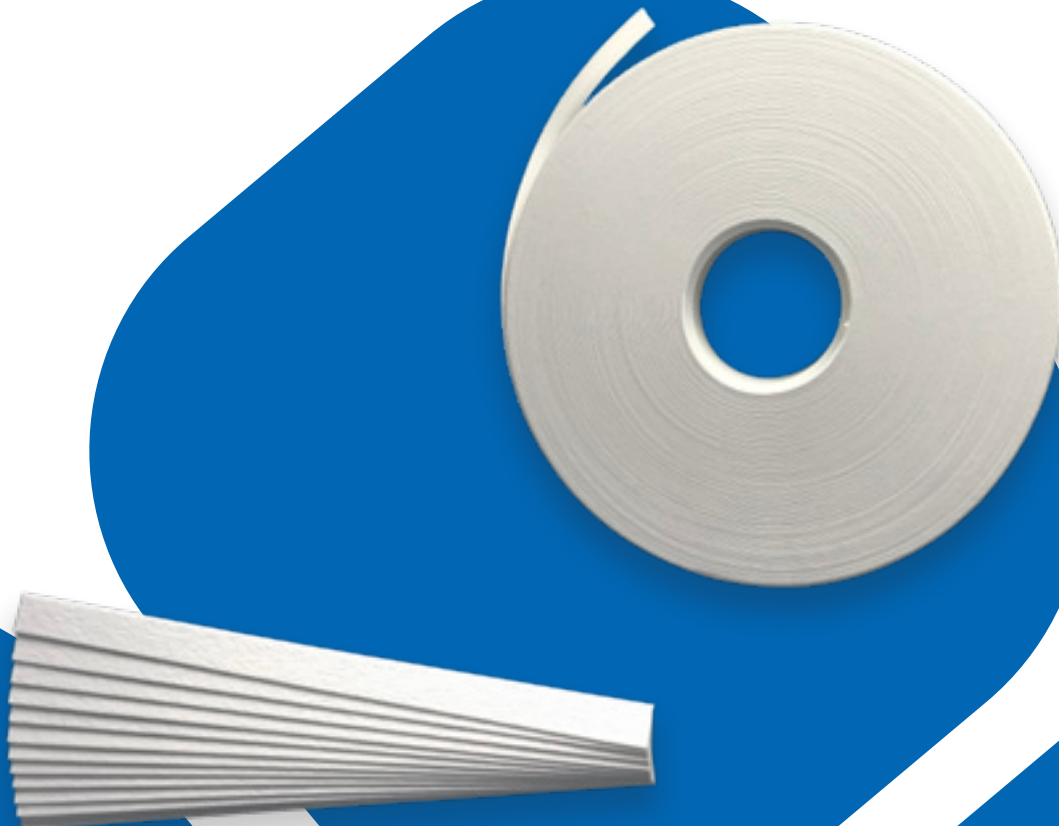
A minimum order quantity is one full master roll (100 meters).

Custom Products

In addition to our standard products, we also have the ability to customize our membranes to improve assay performance in rapid diagnostic tests and applications. Contact your local account manager to discuss your assay optimization and product customization requirements.

SureWick® Diagnostic Pads and Absorbent Pads — Standard Products

Description	Dimensions	Qty/Pk	Cat. No.
GFDX Glass Fiber Diagnostic Pads			
Strips	10 mm x 300 mm	100	GFDX103000
	8 mm x 300 mm	100	GFDX083000
Sheets	20 cm x 30 cm	5	GFDX20305PK
	20 cm x 30 cm	100	GFDX203000
	20.32 cm x 25.4 cm	100	GFDX202500
Rolls	8 mm x 50 m	1	GFDX000850
	8 mm x 100 m	1	GFDX000800
	10 mm x 50 m	1	GFDX001050
	10 mm x 100 m	1	GFDX001000
C083 Cellulose Absorbent Sample Pads			
Strips	17 mm x 300 mm	100	CFSP173000
	20 mm x 300 mm	100	CFSP203000
Sheets	20 cm x 30 cm	5	CFSP22305PK
	20 cm x 30 cm	100	CFSP223000
Rolls	17 mm x 100 meters	1	CFSP001700
	20 mm x 100 meters	1	CFSP002000



Quality Assurance You Can Trust

All Hi-Flow™ Plus membrane materials are manufactured in our state-of-the-art manufacturing facility. We recommend storing these membranes and pad component materials in ambient humidity and temperature conditions. Store out of direct light while not in use during normal production.

Tighter Tolerances Reduce Your Incoming Quality Control (QC)

Our tight release criteria ensure that your membrane will perform consistently between different product supply lots, which means minimal incoming QC testing on each new supply you receive.

Detailed Certificate of Analysis

Every lot of Hi-Flow™ Plus membrane includes a certificate of analysis to provide details ensuring that:

- The lot complies with all test specifications
- There have been no changes in critical raw materials (membrane polymers)
- The membrane was produced in compliance with validated and documented manufacturing processes and material specifications

On each quality certificate, you will find the recommended storage temperature of 10-25 °C and 30-70% RH as well as specific lot information and QC test data for your product.

ISO, GMP Manufacturing

Our manufacturing sites are ISO® 9001:2000 certified and GMP compliant. Customer plant audits are available upon request.

We provide the precision, compliant components and expert services you need to manufacture and optimize your diagnostic products. In the development and production of your lateral flow assay, we are your global partner from concept to clinic.

quality.
consistency.
reliability.

Millipore®

Preparation, Separation,
Filtration & Monitoring Products

Merck KGaA
Frankfurter Strasse 250
64293 Darmstadt, Germany

MerckMillipore.com

To place an order or receive technical assistance in Europe, please call Customer Service:

France: 0825 045 645

Spain: 901 516 645 Option 1

Germany: 069 86798021

Switzerland: 0848 645 645

Italy: 848 845 645

United Kingdom: 0870 900 4645

For other countries across Europe, please call: +44 (0) 115 943 0840

Or visit: **MerckMillipore.com/offices**

For Technical Service visit: **MerckMillipore.com/techservice**

© 2019 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved. Merck, the vibrant M, Millipore, SureWick and Hi-Flow Plus are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources.

Lit. No. MK_BR5344EN
30338
04/2020