

Materials For In-Vitro Diagnostics



Axiflow - Your Partner for High Performance Assay

Axiflow offers one of the widest range of IVD materials for lateral flow and flow-through analysis. At Axiflow, we understand your concerns and have developed an organization which ensures that each solution we provide enables optimal performance of your assays.

With our in-house design and research capabilities, we have developed proprietary technology & processes to deliver uniform and consistent materials. Along with our published product range, we work with make customized solutions and provide unparalleled assistance to optimize the components best suited for their application.

As you use our products for making critical diagnostic kits, we follow stringent process control and quality control standards throughout all manufacturing steps.

Our manufacturing and quality control procedures comply with ISO 13485 and GMP standards. Each step in the manufacturing process is documented, validated and controlled. We validate the quality with product testing standards that are more stringent than the requirement of our clients.

For your ease and assurance, we provide technical data sheets and Certificate of Analysis (COA) for every batch of production.

Organizational Capabilities

1 Focused Team

Axiflow at its core is an ecosystem of designers and scientists who leverage the latest technology and functional expertise to develop high-quality performance materials for pharmaceutical and immunodiagnostic industries.

We work with the problem-solving mindset to optimize the solution as per your requirement.



2 Process Innovation

We have developed strong in-house processes to provide best in class solutions to target industries across membranes, filtration and other performance materials.

A strong in-house team and ecosystem engagement with clients & technology experts enable us to continuously innovate and create higher performance benchmarks.



3 Application-Focused

Every IVD application require a different combination of components for test kit optimization.

We develop, recommend and manufacture solutions based on your application, often customized especially for you. Our application lab is well equipped with qualified personnel and instruments to design and test performance materials as per global best practices.



4 Infrastructure

We operate Class 5 clean-room in-house facilities as per GMP norms for entire production and testing process as providing contamination-free and controlled environment is critical to the quality and consistency of the performance material used for IVD.

Our production lines are custom-built based on our proprietary design which allows us to bring industry-leading solution to you.



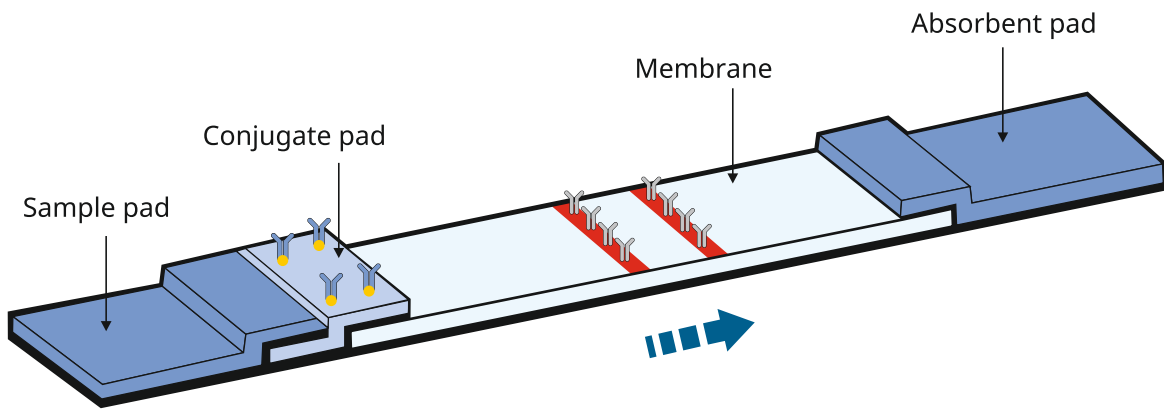
Product Suite

Axiflow offers strong solutions across all format of rapid point-of-care tests.

We are one of the largest producer of nitrocellulose membranes in the world, and a leading manufacturer of conjugate pad, absorbent pad and sample pad.

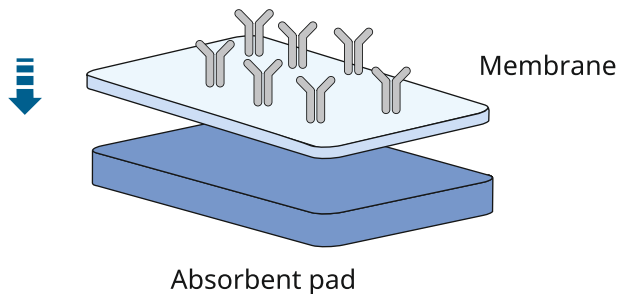
These components come in a wide range of thickness, wicking, absorption levels and composition. Each of these components is designed to ensure accurate and reproducible results.

Lateral Flow Assay



- | | |
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| 1. Nitrocellulose Membrane.....P-4 | 4. Conjugate Pad.....P-13 |
| 2. Sample Pad.....P-11 | 5. Absorbent Pad.....P-14 |
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Flow Through Assay



- | |
|-------------------------------------|
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| 2. Absorbent Pad.....P-16 |

Lateral Flow Assay

In a lateral-flow immunoassay, the sample flows horizontally through the device, comes in contact with a reagent and moves to a capture zone of membrane-immobilized antibody. Any unreacted antibody flows past the capture zone downstream in the test assay.

Lateral-flow immunoassay is the most widely used platform for rapid test kit development.



Axiflow is one of the largest global manufacturers of specialty materials for lateral flow immunoassays. With our wide range of solutions, you can be assured of test optimization and reproducibility of your assays throughout the product life-cycle.

Nitrocellulose Membrane for Lateral Flow Immunoassay

Nitrocellulose membrane is a very critical component of the assay. Along with high protein binding, surface quality and performance consistency are crucial parameters of substrate quality.



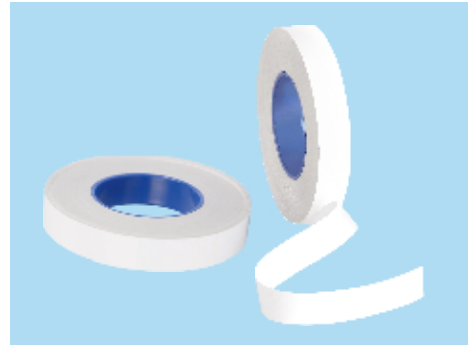
Variation in capillary flow rate and thickness across a strip will be detrimental to an assay's sensitivity, reproducibility and reagent consumption. In case of uneven fiber distribution or nitrocellulose powder settlement on the surface, the protein binding ability of the membrane will be compromised. Further, variation in the mentioned parameters across batches can create issues for manufacturing in-process approvals and final assay performance.

Axiflow provides consistent, reliable membrane with best surface quality and performance consistency to improve your assays.

Strong in-house capabilities including customized casting machines, large batch sizes, proprietary processes, strict process controls and stringent product testing standards enable us to provide you the membrane which is consistent in physical and chemical properties.

Key Properties

- **High protein binding:** Small pore size allows for higher protein binding capacity of the membrane
- **Consistent Thickness:** Allows homogeneous membrane structure and in-turn uniform protein binding
- **Surface Quality:** Smooth, powder-free surface with low background signal allows for sharp capture lines and clear results to maximize sensitivity and specificity of the test
- **Hydrophilic:** Surfactant is added for fast wetting
- **Consistent Properties:** Specially-designed & custom -built production lines to ensure intra and inter-lot consistency aiding test sensitivity throughout your product's life-cycle
- **Purity:** Constructed of 100% pure nitrocellulose polymer that contains no interfering contaminant or post-treatment chemicals that affect assay performance



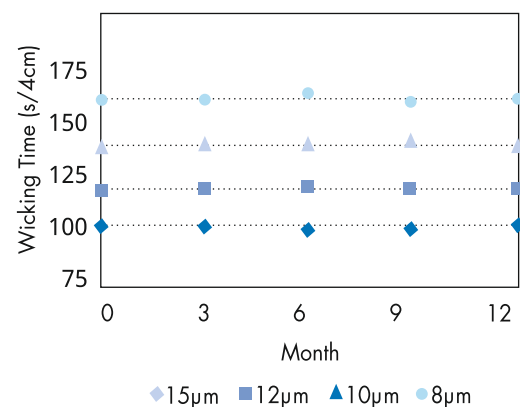
Testing Protocol

- **Capillary Wicking:** Multiple samples taken from each lot to ensure that wicking rate of water & saline solution is within the acceptable range
- **Calliper Consistency:** Calliper measurement across multiple samples in a batch to ensure intra-lot and inter-lot consistency
- **Dot Blot Test:** To ensure consistent chemical compatibility and antibody wicking
- **Bubble Point:** To ensure consistency in physical structure of the membrane
- **Line Printing Test:** To check that surface is smooth with low background signal, creating sharp lines
- **Tensile Strength:** To ensure membrane that the membrane will not tear or crack during transportation, storage and processing
- **Backlight Inspection:** To ensure excellent surface quality - white, smooth surface and absence of microscopic defects & foreign matter
- **Stability Test:** Accelerated study to ensure the shelf-life of membrane.

Consistent Performance across Shelf-life

The Axiflow nitrocellulose membrane is highly stable and provides consistent wicking rate across its shelf-life (upto 12 months).

This is achieved by developing our processes with high quality raw materials, enabling strong process control and environment control during the manufacturing process.



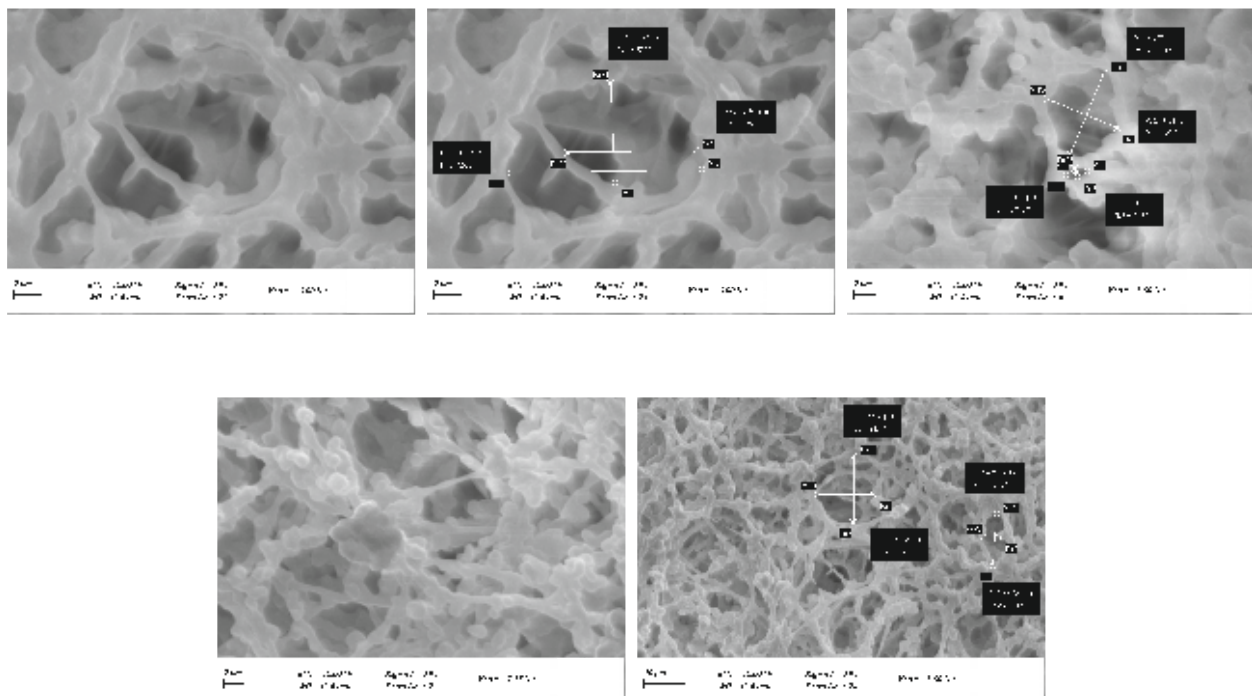
Technical Specification

Type	AXC90	AXC100	AXC115	AXC130	AXC160
Pore rating (μm)	15 $\mu\text{m}+$	15 μm	12 μm	10 μm	8 μm
Wicking rate (s/4cm)	80-100	85-115	100-130	115-145	135-195
Time to signal	Fast	Fast	Medium	Medium	Slow
Sensitivity	Good	Very Good	Very Good	High	Very High
Line Intensity	Sharp	Sharp	Very Sharp	Very Sharp	Very Sharp
Reel-to-reel manufacturing	Suitable	Suitable	Suitable	Suitable	Suitable
Membrane Thickness	105 μm ($\pm 15\mu\text{m}$)				
Polyester Backing	100 μm , clear				
Wetting	<_ 5 sec (10 μl volume 0.3% BAS in PBS 0.01M pH 7.4)				

Roll Specification

Roll Core	76.5 mm = 3" (inner Diameter)
Core Material	Plastic
Available Membrane width	As desired

The TEM Images of Axiflow Nitrocellulose Membrane



Selecting the right membrane for your application

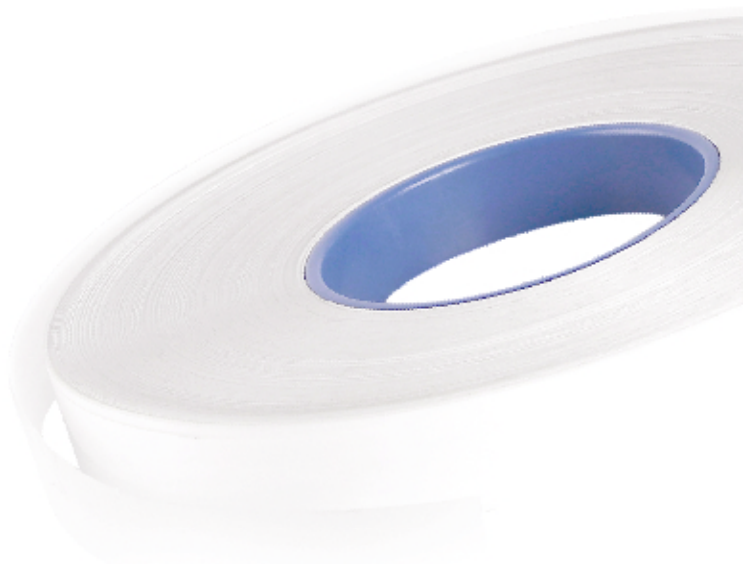
Choosing the membrane for your assay depends on the application's requirement regarding sensitivity and wicking rate.

A membrane with low micron rating (say 8 μm , 10 μm) has high sensitivity and low capillary flow rate. As a result, these membranes are typically used for critical applications such as infectious diseases.

On the other end, a membrane with higher micron rating (say 15 $\mu\text{m}+$) has lower sensitivity and higher capillary flow rate. Hence, these membranes are used for applications such as pregnancy & ovulation test, blood test among others.

Application Chart

Application Chart	AXC90	AXC100	AXC115	AXC130	AXC160
Pregnancy Test	●				
Infectious Disease		●	●	●	
Whole Blood Test		●			
Ovulation Monitoring		●			
Dengue		●		●	
Heart Disease Markers			●		
Drug Abuse			●		
Syphilis			●		
Food & Beverage			●		
Malaria				●	
Environmental analytes				●	
Agricultural analytes				●	
Milk Test					●
Urine Test					●
HbsAg serum test					●



Ordering Information

Cat. No.	Old Cat. No.	Rating (μm)	Wicking Time (s/4cm)	Width (mm)	Length (mtr)
AXC160 (Backed)					
AXC160-DE20	DE20/SX04	8 μm	135-195	20	100
AXC160-DE25	DE25/SX04	8 μm	135-195	25	100
AXC160-DE30	DE30/SX04	8 μm	135-195	30	100
AXC160-DE40	DE40/SX04	8 μm	135-195	40	100
AXC130 (Backed)					
AXC130-DF20	DF20/SX03	10 μm	115-145	20	100
AXC130-DF25	DF25/SX03	10 μm	115-145	25	100
AXC130-DF30	DF30/SX03	10 μm	115-145	30	100
AXC130-DF40	DF40/SX03	10 μm	115-145	40	100
AXC115 (Backed)					
AXC115-CG20	CG20/SX02	12 μm	100-130	20	100
AXC115-CG25	CG25/SX02	12 μm	100-130	25	100
AXC115-CG30	CG30/SX02	12 μm	100-130	30	100
AXC115-CG40	CG40/SX02	12 μm	100-130	40	100
AXC100 (Backed)					
AXC100-CH20	CH20/SX05	15 μm	85-115	20	100
AXC100-CH25	CH25/SX05	15 μm	85-115	25	100
AXC100-CH30	CH30/SX05	15 μm	85-115	30	100
AXC100-CH40	CH40/SX05	15 μm	85-115	40	100
AXC95 (Backed)					
AXC95-CHCG20	CHCG20/SX01	15 $\mu\text{m} +$	80-110	20	100
AXC95-CHCG25	CHCG25/SX01	15 $\mu\text{m} +$	80-110	25	100
AXC95-CHCG30	CHCG30/SX01	15 $\mu\text{m} +$	80-110	30	100
AXC95-CHCG40	CHCG40/SX01	15 $\mu\text{m} +$	80-110	40	100
AXC90 (Backed)					
AXC90-BQ20	BQ20/SB01	15 $\mu\text{m} +$	80-100	20	100
AXC90-BQ25	BQ25/SB01	15 $\mu\text{m} +$	80-100	25	100
AXC90-BQ30	BQ30/SB01	15 $\mu\text{m} +$	80-100	30	100
AXC90-BQ40	BQ40/SB01	15 $\mu\text{m} +$	80-100	40	100

Custom-slit dimensions of the nitrocellulose membrane are available as per your requirement. For further information and customized dimensions, please write to us at jatin@axiflow.co.in

Customized & Innovative Capabilities

Axiflow offer especially designed Nitrocellulose Lateral Flow Membrane for highest protein binding to increase the signal intensity or sensitivity.

This is a different range of Nitrocellulose Lateral Flow Membrane made with different set of polymers & treated with different set of surfactant for high protein binding.

Ordering Information

Cat. No.	Old Cat. No.	Rating (μm)	Wicking Time (s/4cm)	Width (mm)	Length (mtr)
AXCHS90 (Backed)					
AXCHS90-LF20	LF20/HS01	15 μm +	80-100	20	100
AXCHS90-LF25	LF25/HS01	15 μm +	80-100	25	100
AXCHS90-LF30	LF30/HS01	15 μm +	80-100	30	100
AXCHS90-LF40	LF40/HS01	15 μm +	80-100	40	100
AXCHS120 (Backed)					
AXCHS120-LF20	LF20/HS02	12 μm	100-130	20	100
AXCHS120-LF25	LF25/HS02	12 μm	100-130	25	100
AXCHS120-LF30	LF30/HS02	12 μm	100-130	30	100
AXCHS120-LF40	LF40/HS02	12 μm	100-130	40	100
AXCHS140 (Backed)					
AXCHS140-LF20	LF20/HS03	10 μm	115-145	20	100
AXCHS140-LF25	LF25/HS03	10 μm	115-145	25	100
AXCHS140-LF30	LF30/HS03	10 μm	115-145	30	100
AXCHS140-LF40	LF40/HS03	10 μm	115-145	40	100

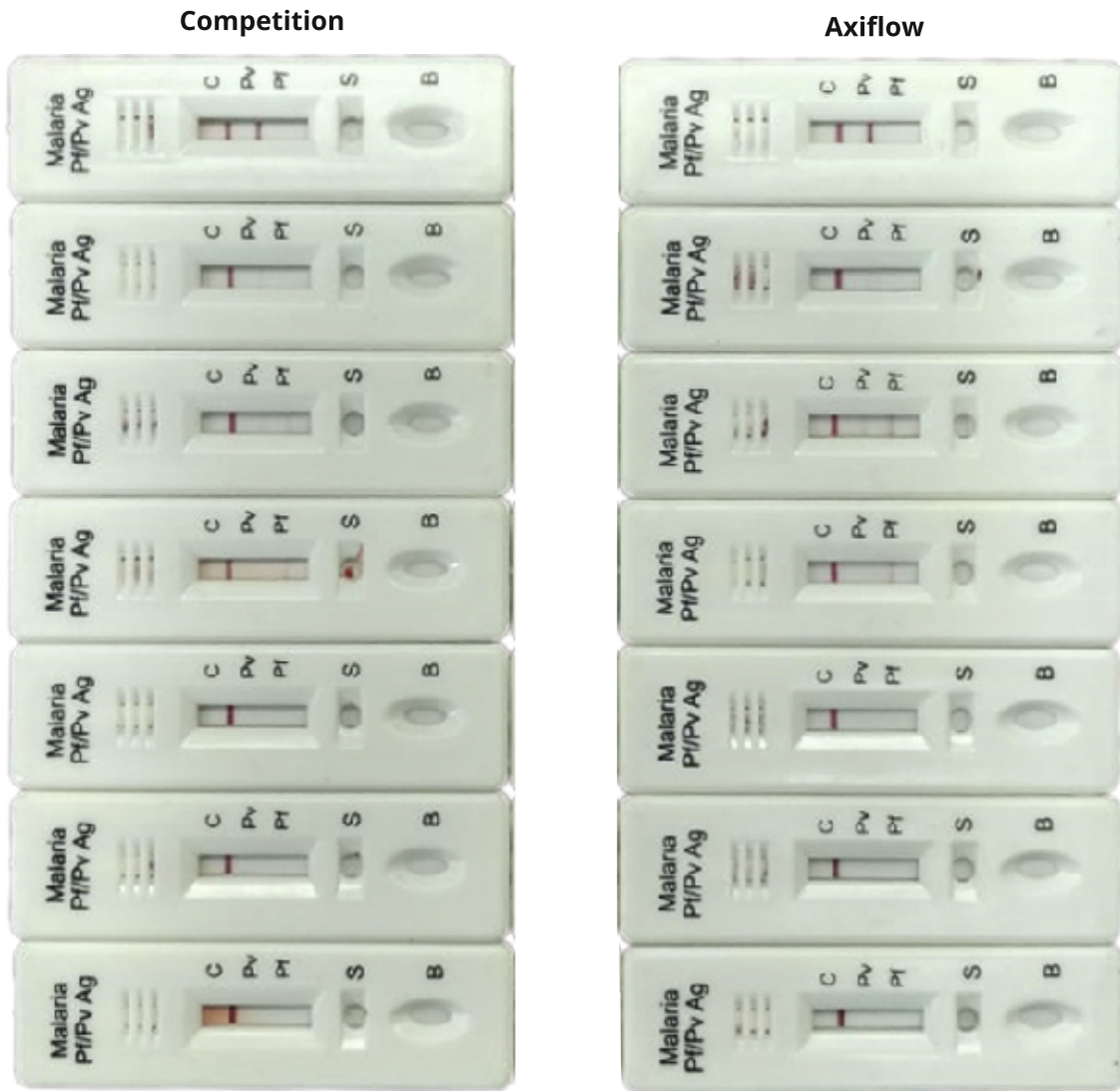
Custom-slit dimensions of the nitrocellulose membrane are available as per your requirement. For further information and customized dimensions, please write to us at jatin@axiflow.co.in

AxiFlow Membrane - Comparative Performance Study

An independent team of experts specializing in immunodiagnostic kits conducted the study for us, wherein they compared the performance of Axiflow nitrocellulose membrane with the membrane key competitor in the global market.

Key Inputs

- **Test:** Malaria Pf/Pv Ag
- **Temperature:** 45° C
- **Membrane Type:** 15 µm



Key Takeaways

Axiflow nitrocellulose membrane performance vs competitor

Technical Properties

- Better surface quality
- Stronger calliper consistency
- Consistent wicking
- Lower background

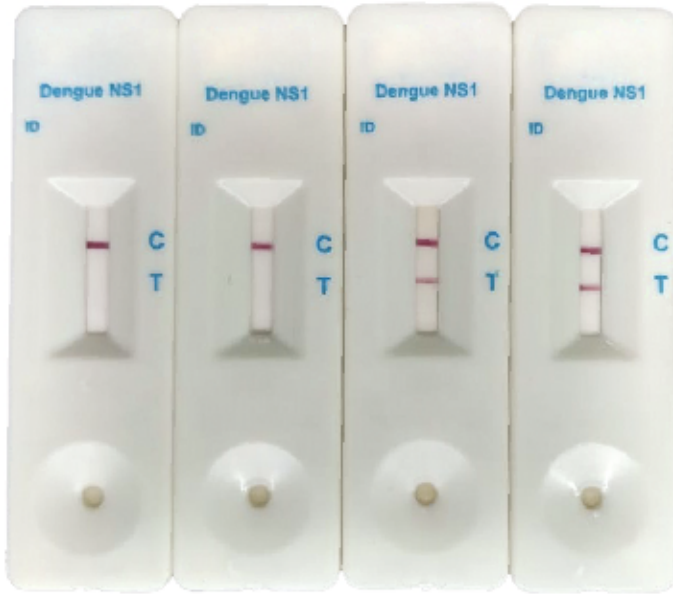
Performance

- Higher sensitivity
- Better specificity
- Clear results
- Lower reagent consumption

Performance of AxiFlow Nitrocellulose Membrane in Different Applications

Dengue

Dengue NS1

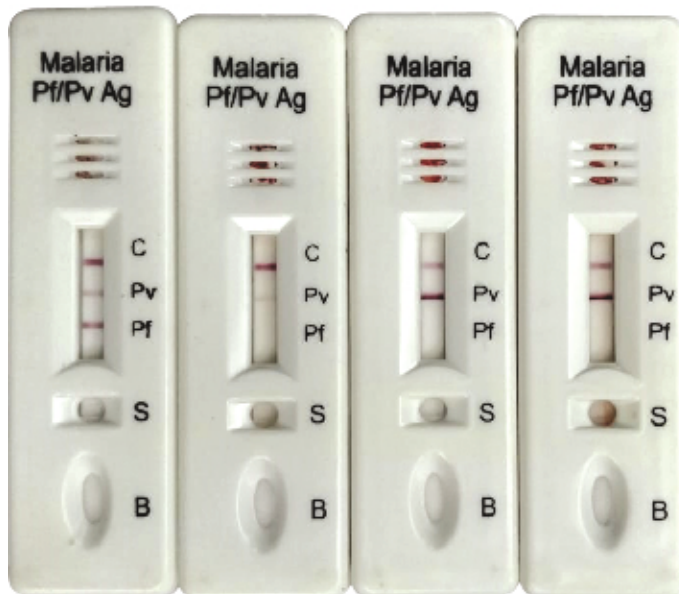


Dengue Combo



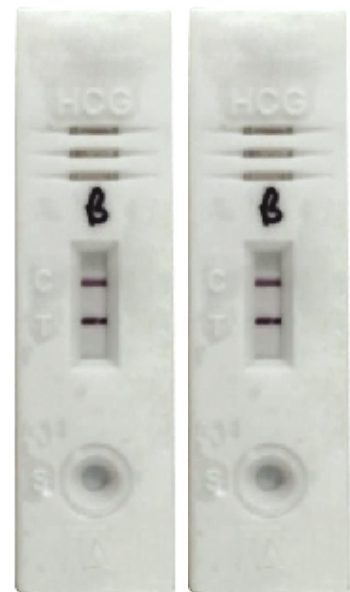
Malaria

Malaria Antigen



Pregnancy

hCG



Sample Pad

Sample pad is the starting point of the assay where the analyte is placed. The sample pad transports the analyte downstream on the test. The sample pad manages key properties of the sample such as pre-filtration, pH, distribution and flow of the sample on the conjugate release pad.

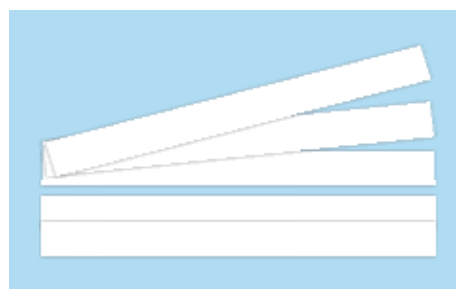


Axiflow range of sample pad is uniquely wide to cover all your product development requirement as per your application.

Axiflow sample pads provide consistent absorbency and wicking rate enabling reproducibility across the product life-cycle. Every sample pad is produced under strict quality-controlled process to provide you with the most reliable solution.

Key Properties

- **Low Protein Binding:** Maintains test sensitivity
- **Consistent Wicking:** Enables reproducibility
- **Hydrophilic:** Enables rapid wetting
- **High Tensile Strength:** Easy to manage during manufacturing process



Technical Properties

Cat No.	Material	Basis Weight (g/m ²)	Thickness (μm)	Wicking Rate (s/4cm)	Water Absorption (mg/cm ²)
SP02-03T	100% Glass Fiber	60	0.38	40 ± 15	37.0
SP02-06T	100% Glass Fiber	95	0.60	45 ± 15	46.0
SP02-12T	100% Glass Fiber	155	1.00	40 ± 15	100.0

Ordering information

Sample Pad is available in roll or sheet form. Dimensions are custom-slit based on your requirement. Order is to be placed in the following format:

Cat. No.	Sheet Length (mm)	Sheet Width (mm)	Quantity
SP00-00	Please specify desired length	Please specify desired width	Please specify desired quantity

Example: SP02-03T, 2 mm X 2 mm, 2,000 Nos.

Blood Separation Pad

Blood separation pad is critical to assay performance. It is important for the blood separator to ensure retention of red-blood cells with minimal binding of plasma, while ensuring fast and consistent flow.



Axiflow blood separator consists of proprietary blend of natural and synthetic fibers that retains blood cells while allowing plasma to follow. Our range of pads offers a near-universal compatibility, suiting all your applications.

Key Properties

- **Fast wick:** Rapid flow-rate allowing faster assays
- **No visible haemolysis**
- **Uniformity:** Strong in-process control for blend, environment and thickness allows consistent performance
- **High-purity material:** Near- universal chemical compatibility
- **Pre-treated options:** Suitable for higher volume of blood

Technical Properties

Cat No.	Material	Thickness (mm)	Wicking Rate (s/4cm)	Max Blood Volume ($\mu\text{L}/\text{cm}^2$)
PSP35	Proprietary Fibre Blend	0.35	—	25
PSP35+	Treated Proprietary Fibre Blend	0.35	60	50
PSP60	Proprietary Fibre Blend	0.60	—	40
PSP60+	Treated Proprietary Fibre Blend	0.60	90	60
PSP70	Proprietary Fibre Blend	0.70	—	45

Ordering information

Dimensions of the blood separation pad are custom-slit based on client's requirement. Order is to be placed in the following format:

Cat. No.	Sheet Length (mm)	Sheet Width (mm)	Quantity
PSP35	Please specify desired length	Please specify desired width	Please specify desired quantity

Example: PSP35, 300 mm X 25 mm , 500 Nos.

Conjugate Release Pad

Conjugate release pad is critical to assay performance. The synthetic pad must dry the conjugate without damage and release the conjugate rapidly when the analyte flows to the pad.



Axiflow Conjugate Pad wets rapidly and ensures high-level of conjugate release. The consistent thickness and wicking rate of our conjugate pad allows reproducibility of the assay across lots. Using our will help you maintain a low reagent cost throughout the product life-cycle.

Key Properties

- **Uniform Wicking:** Ensures uniform wetting & flow of gold conjugate
- **Uniform thickness:** Ensures reproducibility of test kit
- **High-purity polyester material:** Almost-universal chemical compatibility and no leaching
- **High conjugate release:** Reduction in reagent costs and higher control line intensity
- **Pre-treated options:** Cost-effective solution with consistent treatment for your process optimization
- **High tensile strength:** Compatible with reel-to-reel equipment



Technical Properties

Cat No.	Material	Basis Weight (g/m ²)	Thickness (mm)	Wicking Rate (s/4 cm)	Water Absorption (mg/cm ²)
16613	Untreated Polyester	100	0.42	—	—
16613T01	Treated Polyester	100	0.42	30	14.6
16615	Untreated Polyester	135	0.53	—	—
16615T01	Treated Polyester	135	0.53	30	27.6

Recent Innovation

16613N	Untreated Polyester	100	0.40	—	—
16613NT01	Treated Polyester	100	0.40	25	19.3
16613NT02	Treated Polyester	100	0.40	25	19.3

We continue to engage with clients & experts and develop improved solutions for you. Our new solution 16613N offers industry-best uniformity for critical applications.

Ordering information

Dimensions of the conjugate pad are custom-slit based on client's requirement. Order is to be placed in the following format:

Cat. No.	Sheet Length (mm)	Sheet Width (mm)	Quantity
16600	Please specify desired length	Please specify desired width	Please specify desired quantity

Example: 16613, 200 mm X 150 meter, 5 Nos.

Absorbent Pad

The absorbent pad wicks the analyte off the membrane and absorbs the residue. Absorbent pad with consistent absorbency and wicking rate is key to providing consistent flow of the analyte on the membrane.



In case of inadequate and inconsistent absorbency, the sample may flow back leading to false positives and impacts the specificity of the test kit.

Axiflow offers absorbent pads made with 100% cellulose that offer excellent absorbency and wicking. The wide range of options with different capacities allows us you to choose the best solution for your assay.

Key Properties

- **Consistent absorbency:** Maintains reproducibility of the test and protects test specificity
- **Hydrophilic in nature:** Minimal loss of analyte
- **100% cotton linter:** Purity of material prevents false results



Technical Properties

Cat No.	Material	Basis Weight g/m ²	Thickness (mm)	Wicking Rate s/4 cm	Water Absorption (mg/cm ²)
1222	100% Cotton Fiber	370	0.83	20	80
1110	100% Cotton Fiber	500	1.20	12	112
1140	100% Cotton Fiber	800	1.40	55	155

Ordering information

Absorbent pad is available in roll or sheet form. Dimensions are custom-slit based on client's requirement. Order is to be placed in the following format:

Cat. No.	Sheet Length (mm)	Sheet Width (mm)	Quantity
0000	Please specify desired length	Please specify desired width	Please specify desired quantity

Example: 1222, 10 mm X 10 mm, 500 Nos.

AxiFlow Developers Kit

Lateral Flow Test Developers' Kit is the starting point for the R&D team for product development. It provides you with multiple options of components, helping you in choosing the most suitable materials for performance optimization of your assay.

Product	Description	Size	Quantity
Sample Pad	SP02(06)T	300mm x 300mm	20 nos.
Conjugate Pad	16615	70mm x 260mm	6 nos.
Lateral Flow Membrane	AXC90, AXC100, AXC115, AXC130	25mm	25 mtr each
Absorbent Pad	1222, 1110	300mm x 300mm	20 nos. each

Flow-Through Assay

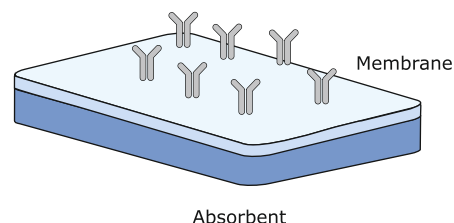
In a flow-through immunoassay, the sample flows vertically on a membrane surface and wicks through the membrane surface into an absorbent pad below.

Flow-through immunoassays are widely used in many regions across the world.

The wide range of Axiflow membranes and absorbents provides you the flexibility to optimize your flow-through assay.

Key components of the Flow-Through assay are:

1. Nitrocellulose Membrane
2. Absorbent Pad



Product Detail

Basic Information	
Membrane	Nitrocellulose Highly sensitive small-pore membranes with large surface area and high protein-binding capacity
Absorbent	100% cellulose based absorbent sheet with fast wick and high liquid absorption
Visual Appearance	White, smooth film on a thick absorbent
Wettability	Surfactant are added for fast wetting

Membrane

Axiflow Flow-Through Membrane is an unsupported, paper-backed membrane constructed of 100% nitrocellulose. The nitrocellulose membrane is casted on a thick cellulose absorbent and the two are encapsulated together. The membrane is extensively used for vertical-flow assays and eliminates the problems caused by capillary rise.

The small pore size and membrane purity of the flow-through membrane enables high protein-binding capacity and greater sensitivity of the assays.

Absorbent

The absorbent used for flow-through assays require high water absorption and fast wicking of as material flows vertically through a thin membrane onto the absorbent pad.

Axiflow absorbent pads are made with 100% cotton linter and have fast wicking to support the maximum sensitivity & specificity of the test.

Technical Properties

(a) Membrane

Cat. No.	Pore Size (µm)	Thickness (µm) *
AXF20	0.20	140
AXF30	0.30	140
AXF45	0.45	140
AXF80	0.80	140

**Thickness may vary upto 20 µm from the specification*

(b) Absorbent

Cat No.	Material	Basis Weight g/m ²	Thickness (mm)	Wicking Rate s/4 cm	Water Absorption (mg/cm ²)
1420	100% Cotton Linter	180	0.42	80	40

Absorbent with different thickness and absorption available on request.

Ordering information (Membrane + Absorbent)

Dimensions of the membrane are custom-slit based on client's requirement.

Order is to be placed in the following format:

Membrane Cat. No.	Absorbent Cat. No.	Sheet Length (mm)	Sheet Width (mm)	Quantity
AXF-00	1420	Please specify desired length	Please specify desired width	Please specify desired quantity

Example: AXF-45, 1420, 30 cm X 30 cm, 2000Nos.

For further discussion on other absorbent options please write to us at arvind@axivasichem.com

Cross Reference Guide

Nitrocellulose Lateral Flow Membrane

Axiflow	Millipore	Sartorius	Whatman	mdi
AXC90	HF090	CN 95	FF80HP	Q (90CNPH)
AXC95	HF075	-	-	HCG-1
AXC100	-	-	-	15 μ
AXC115	HF120	CN 110	-	12 μ
AXC130	HF135	CN 140	FF120HP	10 μ
AXC160	HF180	CN 180	FF170HP	8 μ

Sample Pad

Axiflow	Ahlstrom	mdi
SP02(03)T	141	GFB-R4(0.35)
SP02(06)T	121	GFB-R4(0.6)

Conjugate Release Matrix Pad

Axiflow	Ahlstrom	mdi
16613	6613	PT-R
16613T	6613H	PT-R5
16615	6615	-
16615T	-	-

Absorbent Pad

Axiflow	Ahlstrom	Millipore	Whatman	mdi
1222	222	C083	CF5	AP080
1110	440, 270	-	-	AP110

Flow Through Membrane

Axiflow	Whatman	mdi
AXF20	BA83	-
AXF30	-	CLW-030
AXF45	BA85	CLW-045
AXF80	-	CLW-080

Blood Separation Pad

Axiflow	Ahlstrom	Cytiva	mdi
PSP35	1660	LF1	FR1(0.35)
PSP35+	1662	—	—
PSP60+	1663	Fusion 5	FR1(0.6)
PSP70	HV Plus 1668	MF1	FR1(0.7)



Technical Support

For technical assistance, please write to us at jatin@axiflow.co.in
or visit our website www.axiflow.co.in



Order

For order & product enquiry
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or +91-9999218145
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For more information, visit us at www.axiflow.co.in

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