

Materials For In-Vitro Diagnostics



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.



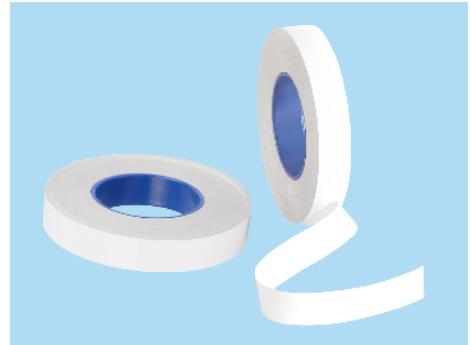
Variation in capillary flow rate and thickness across a strip will be detrimental to an assay's sensitivity, reproducibility and reagent consumption. In case of uneven fiber distribution or nitrocellulose powder settlement on the surface, the protein binding ability of the membrane will be compromised. 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



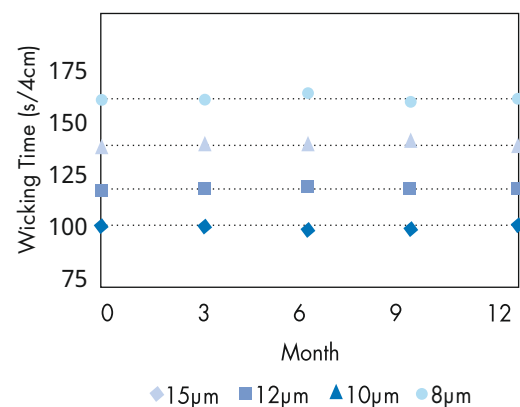
Testing Protocol

- **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.



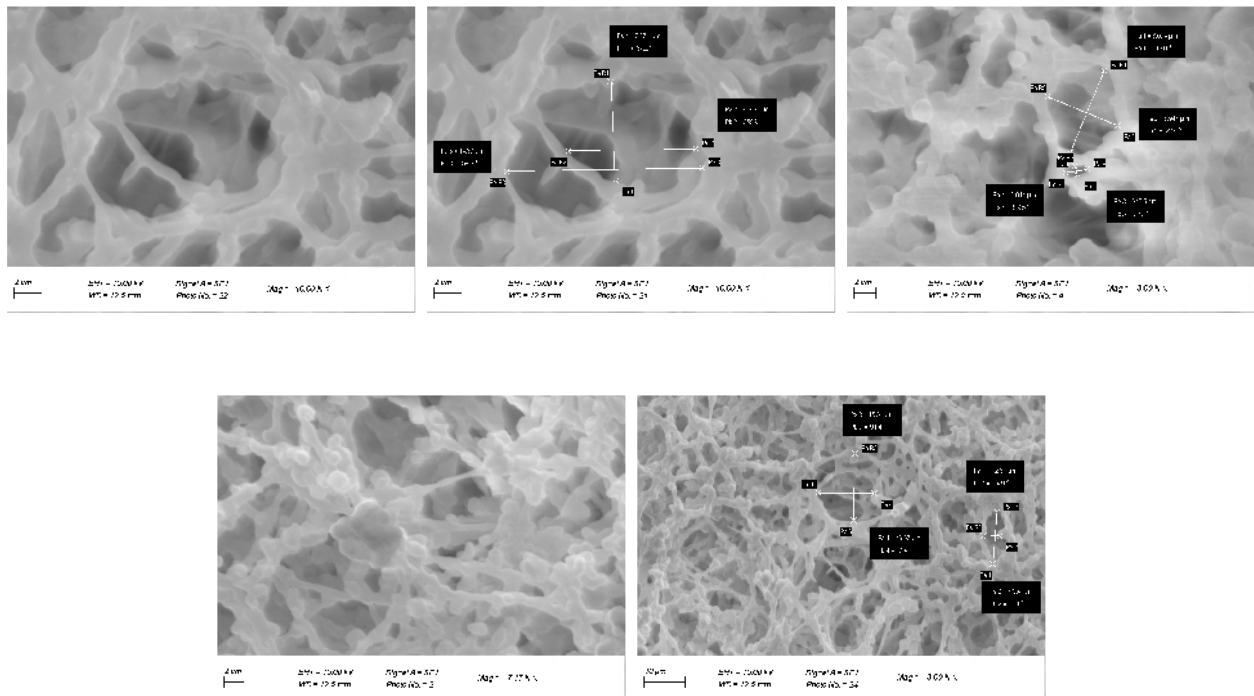
Technical Specification

Type	AXC90	AXC100	AXC115	AXC130	AXC160
Pore rating (μm)	15 μm +	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 μm)				
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

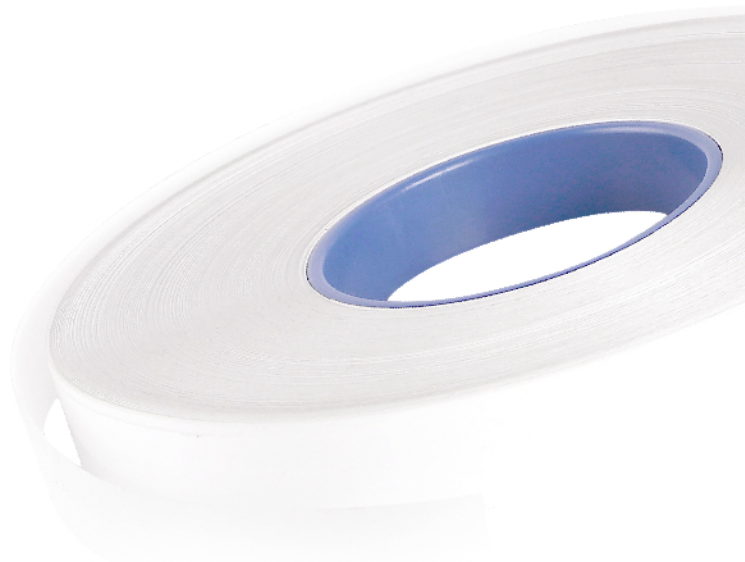
Choosing the membrane for your assay depends on the application's requirement regarding sensitivity and wicking rate.

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 μm +	80-110	20	100
AXC95-CHCG25	CHCG25/SX01	15 μm +	80-110	25	100
AXC95-CHCG30	CHCG30/SX01	15 μm +	80-110	30	100
AXC95-CHCG40	CHCG40/SX01	15 μm +	80-110	40	100
AXC90 (Backed)					
AXC90-BQ20	BQ20/SB01	15 μm +	80-100	20	100
AXC90-BQ25	BQ25/SB01	15 μm +	80-100	25	100
AXC90-BQ30	BQ30/SB01	15 μm +	80-100	30	100
AXC90-BQ40	BQ40/SB01	15 μm +	80-100	40	100

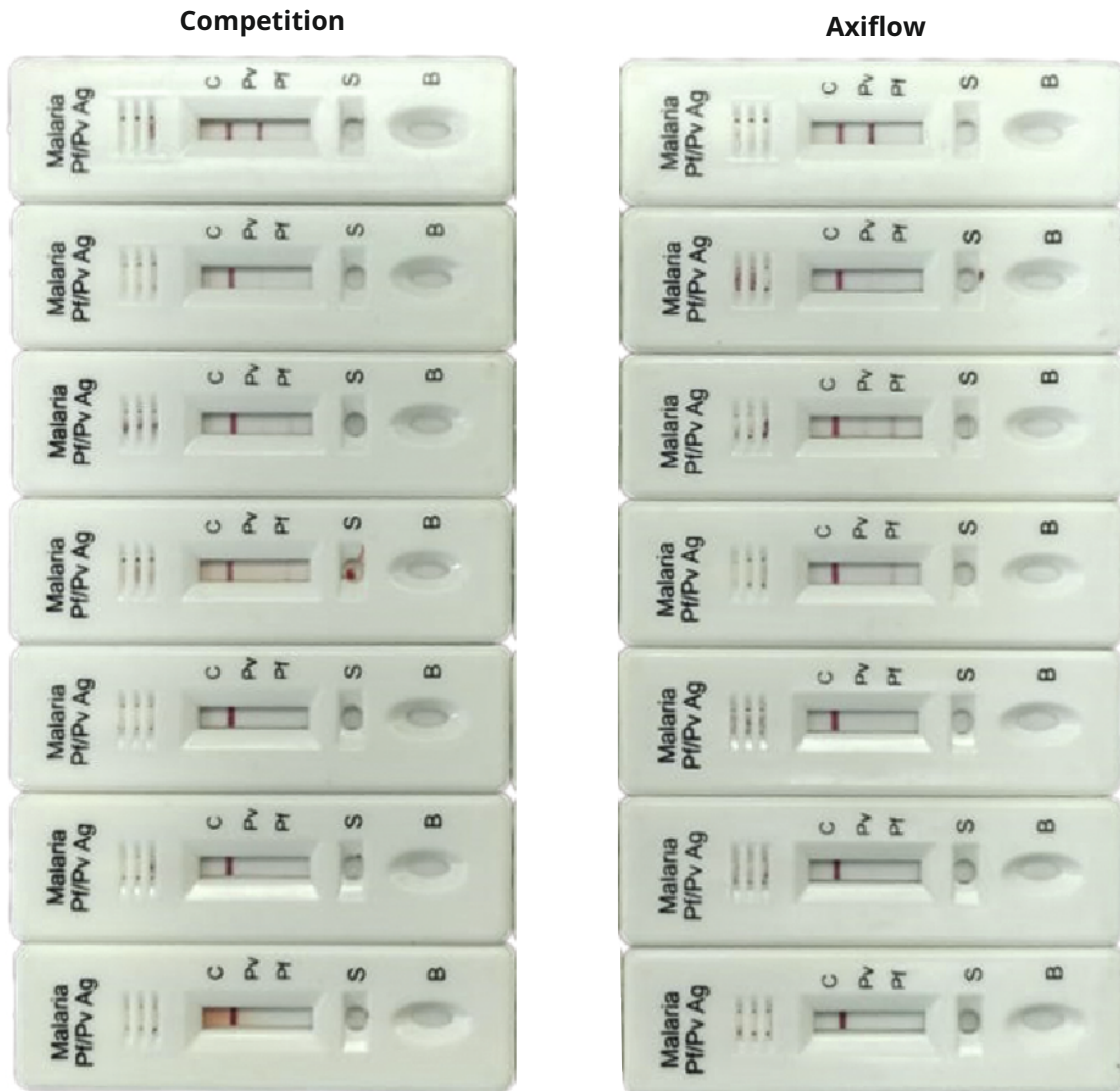
Custom-slit dimensions of the nitrocellulose membrane are available as per your requirement. For further information and customized dimensions, please write to us at jatin@axiflow.co.in

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

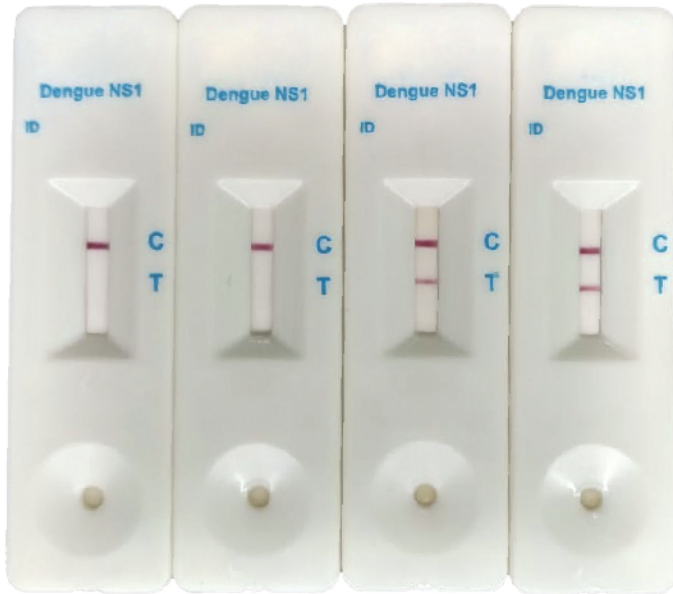
Performance

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

Performance of AxiFlow Nitrocellulose Membrane in Different Applications

Dengue

Dengue NS1

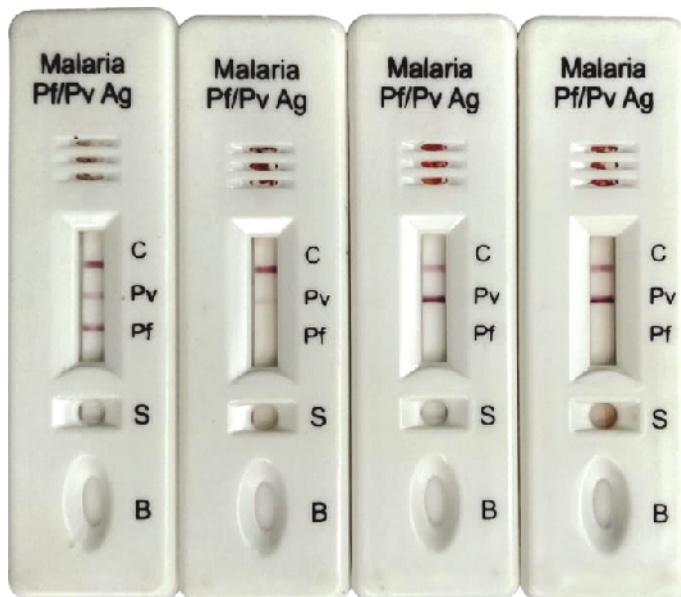


Dengue Combo



Malaria

Malaria Antigen



Pregnancy

hCG





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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