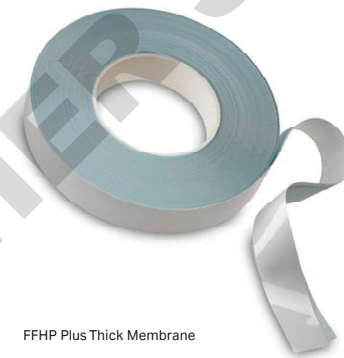## Membrane selection for lateral flow

A nitrocellulose membrane is a key part of any lateral flow immunoassay, vital to the sensitivity and specificity of your test. This guide highlights the benefits and differences of each Whatman product family to help simplify your selection process.

The Whatman Faster Flow, Higher Performance Membrane (FFHP)

Description	A thinner membrane (200 μm thick including backing) with reduced surfactant content.
When to use	Quantificative assays or where you can reduce reagent dispensing to save cost on reagents. Designed for lateral flow assays.
Grade variants	FF80HP — 60-100 second flow FF120HP — 90-150 second flow FF170HP — 140-200 second flow

FFHP Plus Thick Membrane

The Whatman Higher Surfactant Membrane (FFHP Plus)

Description	Higher surfactant membrane to overcome hydrophobic issues. 200 μm thick membrane incl. backing.
When to use	When using viscous samples and you wish to reduce reagent dispensing rates to save cost.
Grade variants	FF80HP PLUS — 60-100 second flow FF120HP PLUS — 90-150 second flow FF170HP PLUS — 140-200 second flow

The Whatman Thicker Membrane (FFHP Plus Thick)

Description	Thicker membrane (235 μm thick including backing) and higher surfactant content
When to use	Optimised for when looking for easy swap-out of competitor grades.
Grade variants	FF80HP PLUS THICK — 60-100 second flow; FF120HP PLUS THICK — 90-150 second flow; FF170HP PLUS THICK — 140-200 second flow;

The Whatman Post-Treatment Membrane (Immunopore™)

Description	Structurally different membrane as treated with surfactant post-drying. 200 μm thick membrane.
When to use	When looking for more consistent membrane performance than wet-treated surfactant products.
Grade variants	Immunopore™ RP — 90-150 second flow Immunopore™ FP — 110-150 second flow Immunopore™ SP — 160-220 second flow

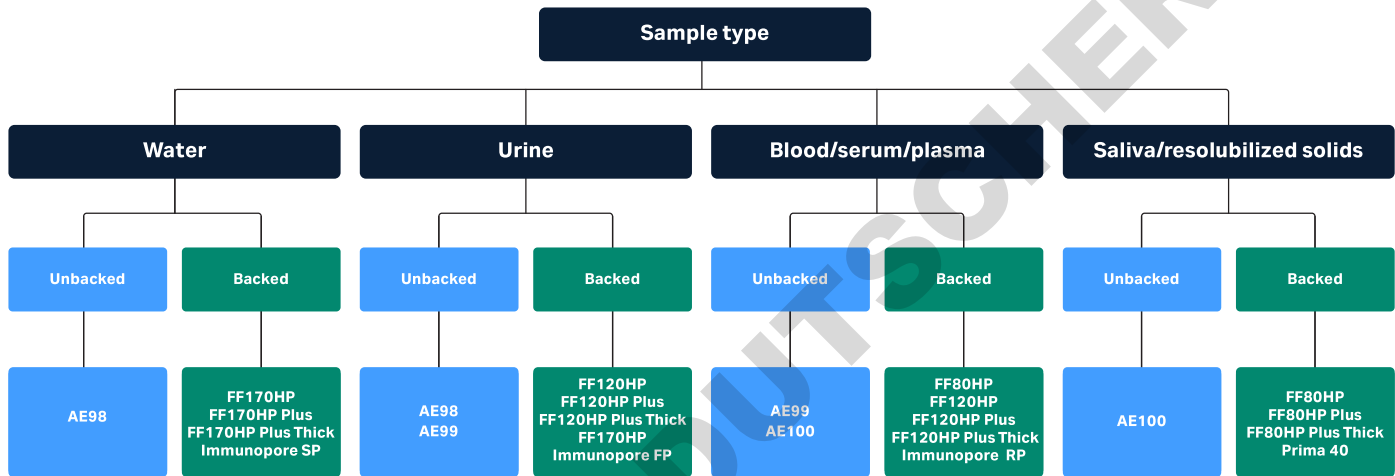## The Whatman High-Surfactant Membrane (Prima)

|	
Description	High concentration surfactant nitrocellulose membrane. Note: Product may contain some surface dust, due to manufacturing process.
When to use	When you need a very quick flow membrane. Works very well with dairy.
Grade variants	Prima40 — 40 second flow Prima80 — 80 second flow Prima120 — 120 second flow

The Whatman Unbacked Membrane (AE)

Description	Unbacked nitrocellulose, 120 μm thick
When to use	For experienced users as trickier to handle, typically available at lower cost.
Grade variants	AE100 — 90-120 second flow AE99 — 120-160 second flow AE98 — 160-210 second flow

Note: Flow time is measured by timing how long water takes to flow cross-web to completely fill 4 centimetres of membrane.
This is an indication of how a sample will flow in your assay, but times with serum or other liquids will differ.

Membrane selector according to sample type

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                          ┌─────────────────────┐
                          │     Sample type     │
                          └─────────────────────┘
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Water	Urine	Blood/serum/plasma	Saliva/resolubilized solids

Unbacked	Backed	Unbacked	Backed	Unbacked	Backed	Unbacked	Backed

| AE98 | FF170HP
FF170HP Plus
FF170HP Plus Thick
Immunopore SP | AE98
AE99 | FF120HP
FF120HP Plus
FF120HP Plus Thick
FF170HP
Immunopore FP | AE99
AE100 | FF80HP
FF120HP
FF120HP Plus
FF120HP Plus Thick
Immunopore RP | AE100 | FF80HP
FF80HP Plus
FF80HP Plus Thick
Prima 40 |

- Test material side by side
- Note that unbacked membranes are more difficult to use for reel-to-reel applications
- This is only an example based on past experience, we encourage you to screen as many membranes as possible during development
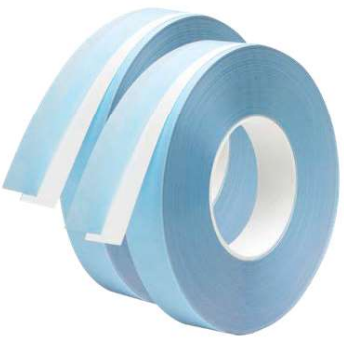
FF120HP membranes

Unbacked membranes

AE nitrocellulose membranes

Constructed of 100% nitrocellulose, the AE membrane offers a higher level of purity and performance than that seen in post-treated materials. AE membranes have been used extensively since the development of the original lateral flow tests and have become a standard for manufacturers worldwide. There is a long history of success and experience for assay optimization using these products.

AE membranes are unbacked, which means either belt or air side of the membrane can be used.

Technical specifications

AE nitrocellulose membranes

Grade	Capillary rise (s/4 cm)	Total caliper (µm)	Properties
AE98	160–210	120	An unsupported membrane that gives good line intensity for use with low-viscosity samples
AE99	120–160	120	A general-purpose membrane for use with most sample types giving a good combination of sensitivity with fast wicking
AE100	90–120	120	A very fast wicking membrane for use with highly viscous samples (e.g. undiluted serum)

Ordering information

AE nitrocellulose membranes

Grade	Description	Catalog number	Quantity/pack
AE99	25 mm × 50 m	10548081	1
AE98	25 mm × 50 m	10549916	1
AE100	25 mm × 50 m	10549867	1

Other widths are available: please contact your Cytiva representative for more information.