

# SARTORIUS

## Simplifying Progress

### Lab Ultrafiltration Products

From Centrifuge to Crossflow:  
Experience Unmatched  
Versatility and Performance

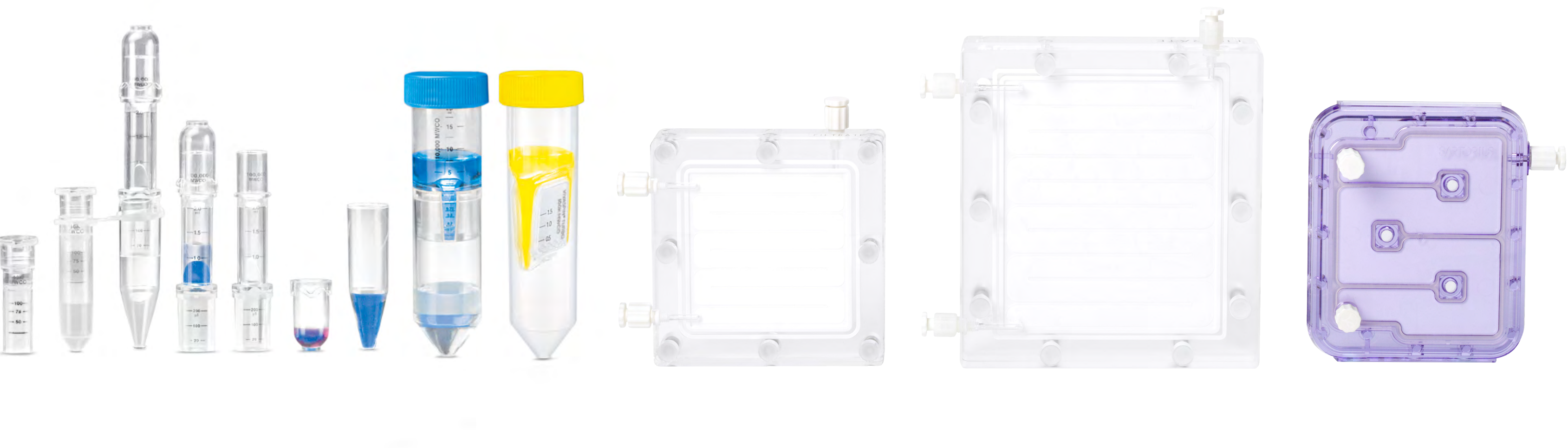


# Solutions for Any UF and DF Application

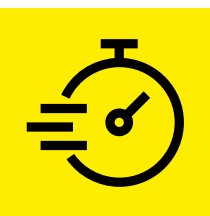
From the laboratory to the field, ultrafilters are fundamental tools in many molecule isolation and purification workflows.

To meet their diverse applications, from research and discovery to development and analysis, Sartorius stands at the forefront of this technology. We offer the most comprehensive range of spin filters, tangential flow filtration (TFF) cassettes, and unique pressure cell and solvent absorption ultrafilters. Our cutting-edge ultrafilter designs are combined with an extensive selection of membranes to provide optimum ultrafiltration (UF) and diafiltration (DF) process efficiency for virtually any macromolecule.

With Sartorius, you can always find the perfect ultrafilter for your specific needs, streamlining your workflow and maximizing the recovery of your protein, virus, nucleic acid, or other molecule.

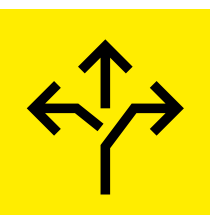


## Benefits of Sartorius Laboratory Ultrafilters



### Superior Speed

Reduce handling time, eliminate membrane blocking, and forget process optimization.



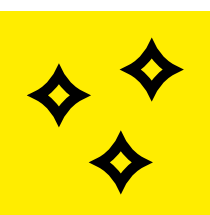
### Unrivalled Flexibility

Process one sample or many, quickly or gently, from feed volumes of 0.1 mL to 5 L.



### Maximum Efficiency

Avoid transfer steps, simplify retentate collection, and prevent sample loss.



### Sample Integrity

Collapse your workflow, improve laboratory safety, and eliminate carryover.

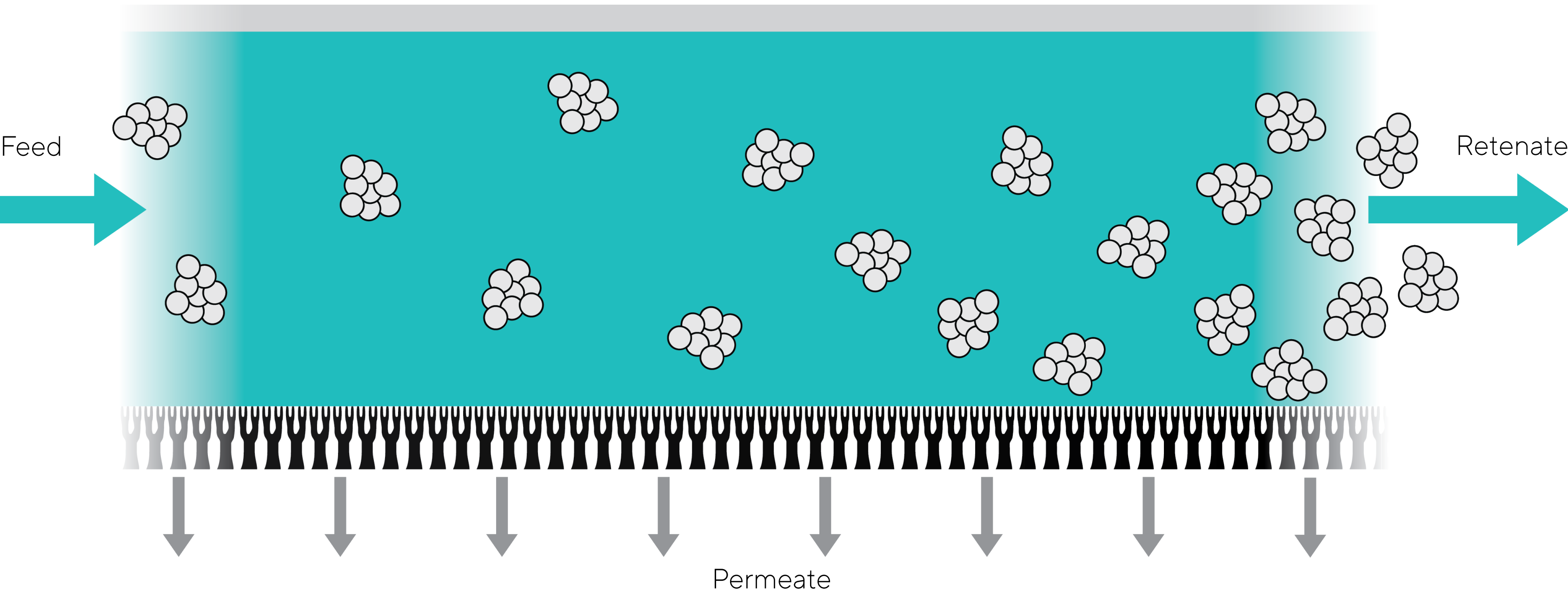


### Application Support

Over 150 years of filtration expertise and an extensive library of technical guides.

# Operating Principle and Ultrafilter Formats

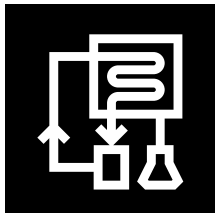
Ultrafilters use semipermeable membranes to separate suspended particles or macromolecules from the liquid in a sample (feed). The membranes are anisotropic (asymmetric), consisting of a thin skin layer and a thicker substructure. When a pressure differential is applied across the membrane, pores in the skin layer function to retain molecules above a certain molecular weight or size (retentate), while liquid is forced through the membrane (permeate). During this process, the substructure provides mechanical strength and contributes to the rate of filtration.



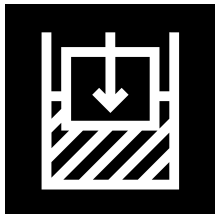
**Figure 1:** Sartorius pioneered the use of TFF in centrifugal ultrafilters over thirty years ago, significantly improving process efficiency for smaller feed volumes.



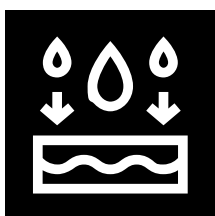
**Centrifugal**  
12 spin filters for 0.1 to 90 mL feeds, including options with TFF, normal flow and counterflow.



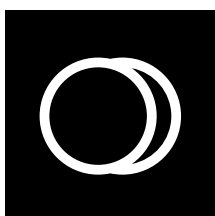
**Crossflow**  
Three modular TFF cassettes designed for single- or multi-use and rapid UF | DF of up to 5 L feeds.



**Pressure**  
Two spin filters are easily converted to pressure cells for gentler processing of 5 to 100 mL feeds.



**Static**  
Two solvent absorption ultrafilters for concentrating 1 to 20 mL feeds equipment-free.



**Disc**  
Three chemistries in various diameters | MWCOs, for legacy stirred cells and custom applications.

# Ultrafiltration Membrane Selection

When choosing an ultrafilter, there are two key membrane characteristics to consider – chemistry and molecular weight cut-off (MWCO).

Polyethersulfone (PES) and regenerated cellulose (RC) are the most common chemistries and are suitable for many research applications. Sartorius offers both materials, as well as cellulose (tri)acetate (CA/CTA) options for more specialized processes.

MWCO is a measure of the nominal pore size, expressed in kilo Daltons (kDa). It is a convenient way to understand the ability of a UF membrane to retain a protein of known molecular weight. For optimal performance, select a MWCO up to half the size of the molecule to be retained.

When working with other molecules such as nanoparticles, nucleic acids and viral vectors, use our Selection Guide to easily match the target diameter or length to the recommended MWCO.

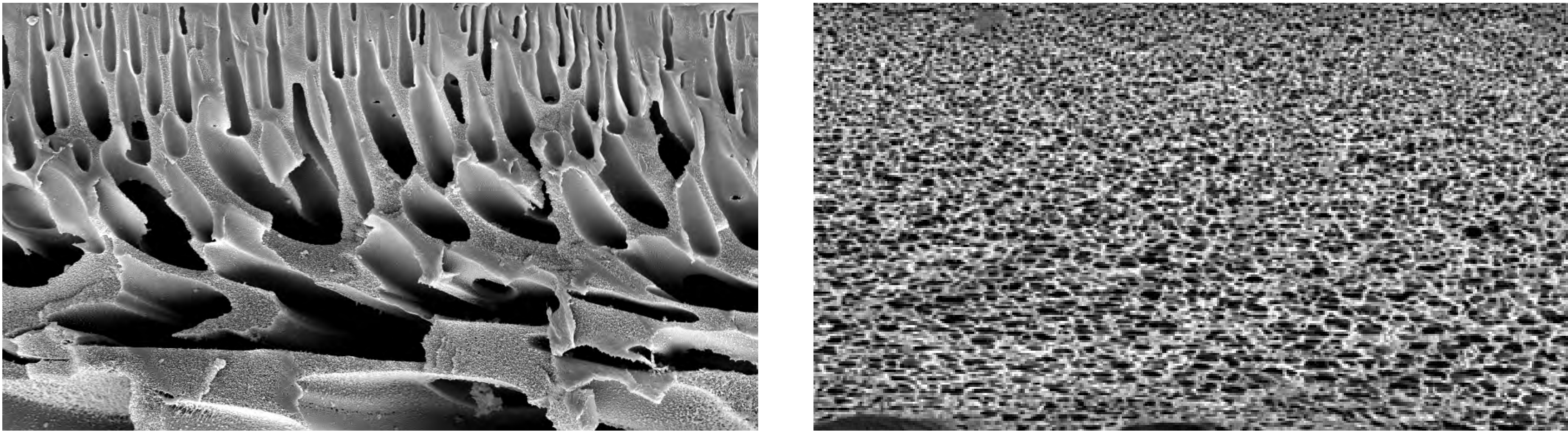


Figure 2: Sartorius is your single source supplier for both PES, left, and Hydrosart® RC, right, membranes, ensuring optimal performance in any UF | DF application.

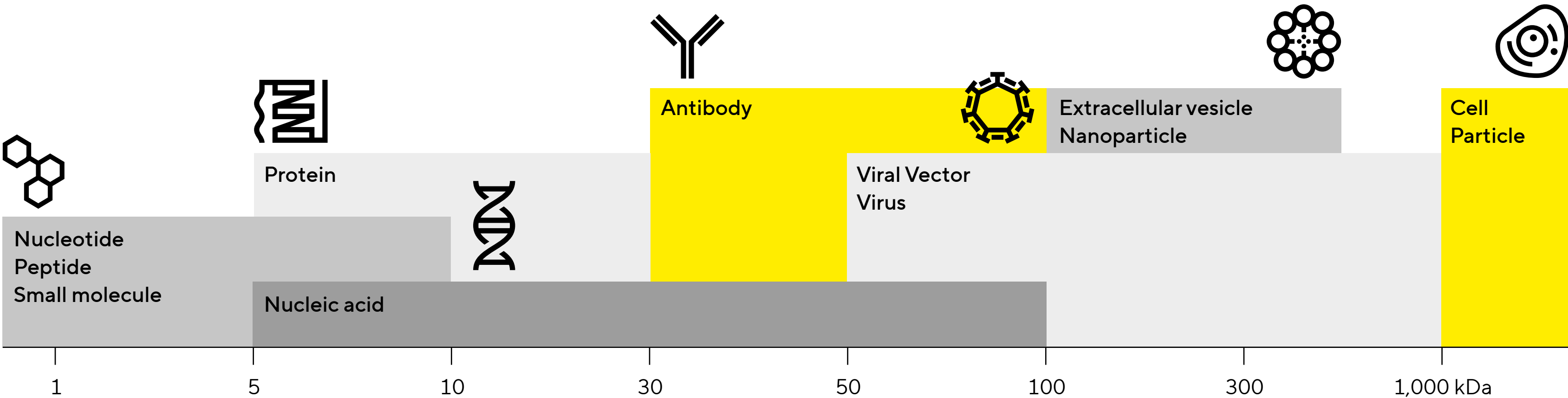
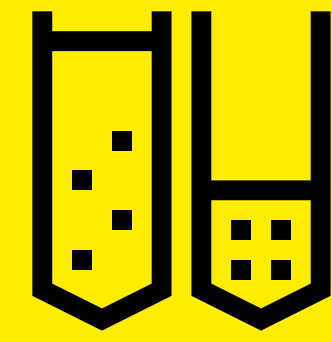


Figure 3: The wide MWCO selection in Sartorius ultrafilters ensures maximum recovery of virtually any molecule.

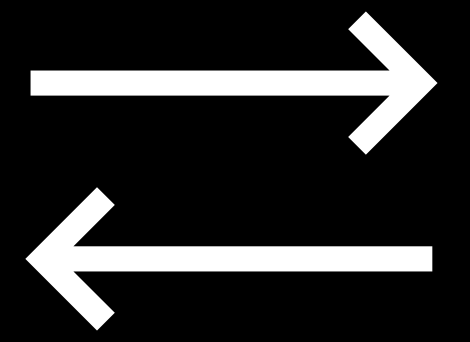
# Ultrafiltration Applications



Retaining, removing or separating particles and macromolecules in processes including:

- Cell culture and process fluid clarification
- Protein, nucleic acid and virus concentration
- Nanoparticle separation and enrichment
- Pathogen isolation from water samples
- Deproteinization (protein removal)
- Crude fractionation of HMW and LMW substances
- Sample volume reduction

# Diafiltration Applications

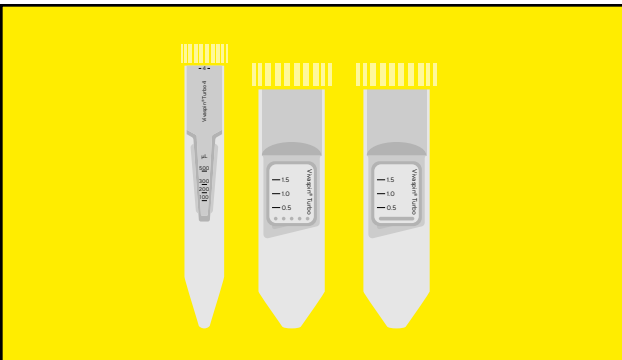


Combining ultrafiltration with the continuous or discontinuous addition of fresh solvent for:

- Cell washing
- Buffer exchange and desalting
- Protein solubilization and refolding
- Chromatography sample preparation
- Biologics formulation development
- Polishing and contaminant removal
- Protein-ligand binding studies

# Vivaspin®

Take Crossflow for a Spin: Revolutionary Ultrafilters for Rapid Processing and Maximum Recovery of Any Molecule



- Vivaspin® Turbo**
- Enhanced design delivers the fastest speeds
  - PES and RC ensure maximum target recovery
  - Added chemical resistance for more sample types
  - Effortless, pipette-friendly retentate collection

**Membrane Availability**

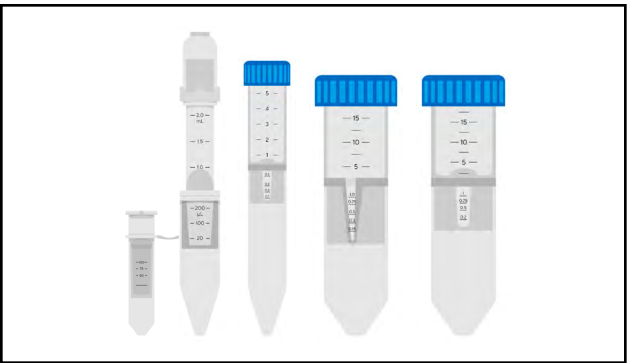
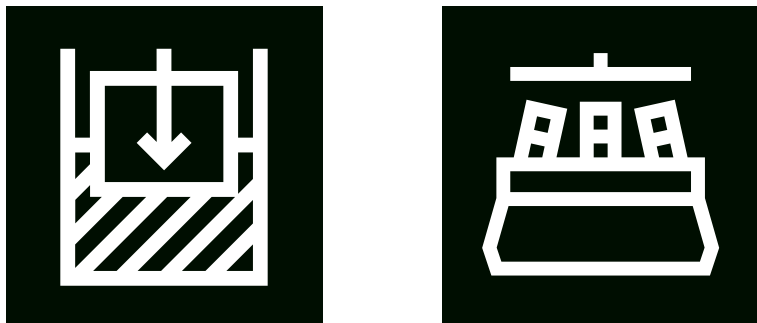
| Recommended<br>Feed Volume      | MWCO (kDa) |        |        |        |        |        |
|---------------------------------|------------|--------|--------|--------|--------|--------|
|                                 | 3          | 5      | 10     | 30     | 50     | 100    |
| Vivaspin® Turbo 4<br>1 – 4 mL   | ■          | ■      | ■      | ■      | ■      | ■      |
| Vivaspin® Turbo 15<br>4 – 15 mL | ■          | ■<br>■ | ■<br>■ | ■<br>■ | ■<br>■ | ■<br>■ |

Membrane chemistries:  
■ PES      ■ RC

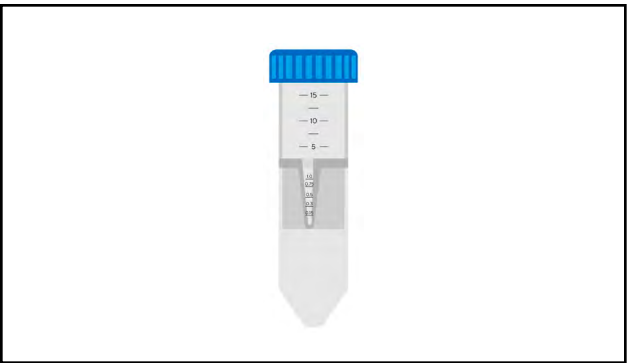


# Vivaspin®

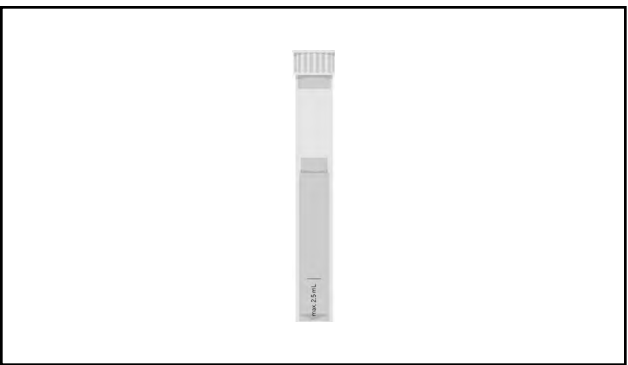
Take Crossflow for a Spin: Revolutionary Ultrafilters for Rapid Processing and Maximum Recovery of Any Molecule



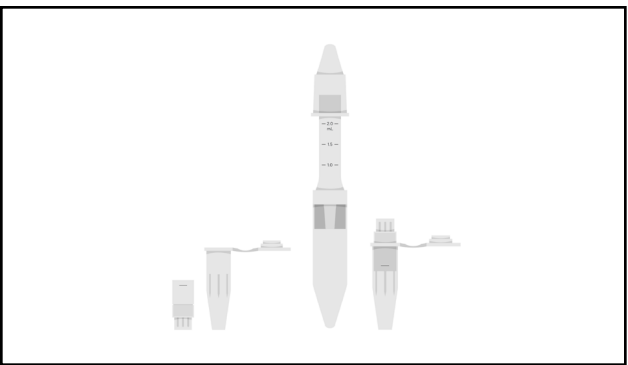
- Vivaspin®**
- The original crossflow spin filters for fast UF | DF
  - PES, Hydrosart® RC and CTA for high recovery
  - Pressure-ready options for se/nsitive samples
  - Continuous DF enables gentle buffer exchange



- Vivaspin® Endotest**
- Simple sample preparation for LAL testing
  - Pyrogen-free centrifugal ultrafilter
  - 20 kDa CTA maximizes endotoxin retention
  - Efficient removal of interfering substances



- Vivaspin® Filtrate**
- Easily isolate small molecules for analysis
  - Counterflow removes proteins without blocking
  - Unsupported membranes prevent analyte trapping
  - Direct collection of filtered samples



- Vivacon®**
- Improve recovery of linear and dilute molecules
  - Recommended for primer removal and FASP
  - Available DNA-free for forensics applications
  - Pipette-free retentate collection

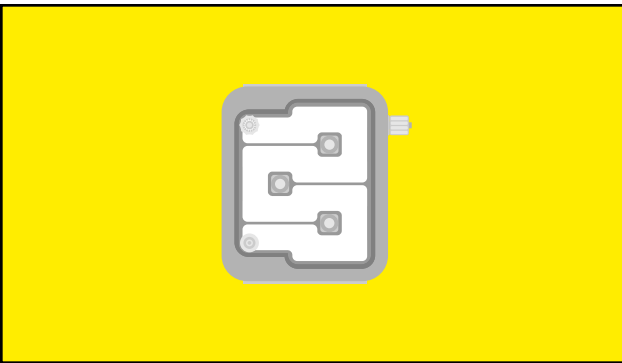
## Membrane Availability

| Recommended Feed Volume            | 3              | 5 | 10 | 30             | 50 | 100            | 300            | 1,000 | 0.2 µm |
|------------------------------------|----------------|---|----|----------------|----|----------------|----------------|-------|--------|
| Vivaspin® 500<br>0.1 – 0.5 mL      | ■              | ■ | ■  | ■              | ■  | ■              | ■              | ■     | ■      |
| Vivaspin® 2<br>0.4 – 3 mL          | ■ <sup>1</sup> | ■ | ■  | ■              | ■  | ■              |                |       |        |
|                                    |                |   | ■  | ■ <sup>2</sup> |    |                |                |       |        |
| Vivaspin® 6<br>2 – 6 mL            | ■              | ■ | ■  | ■              | ■  | ■              | ■              | ■     | ■      |
| Vivaspin® 15R<br>2 – 15 mL         | ■ <sup>1</sup> | ■ | ■  | ■              |    |                |                |       |        |
| Vivaspin® 20<br>5 – 20 mL          | ■              | ■ | ■  | ■              | ■  | ■              | ■              | ■     | ■      |
| Vivaspin® 100<br>20 – 98 mL        |                | ■ | ■  | ■              | ■  | ■              | ■              | ■     | ■      |
| Vivaspin® Endotest<br>2 – 15 mL    |                |   |    | ■ <sup>2</sup> |    |                |                |       |        |
| Vivaspin® Filtrate<br>0.5 – 2.5 mL |                | ■ | ■  | ■ <sup>2</sup> |    | ■              | ■              |       |        |
| Vivacon® 500<br>0.1 – 0.5 mL       | ■ <sup>1</sup> |   | ■  | ■ <sup>3</sup> | ■  | ■ <sup>3</sup> | ■ <sup>4</sup> |       |        |
| Vivacon® 2<br>0.4 – 2 mL           | ■ <sup>1</sup> |   | ■  | ■              | ■  | ■ <sup>3</sup> | ■ <sup>4</sup> |       | ■      |

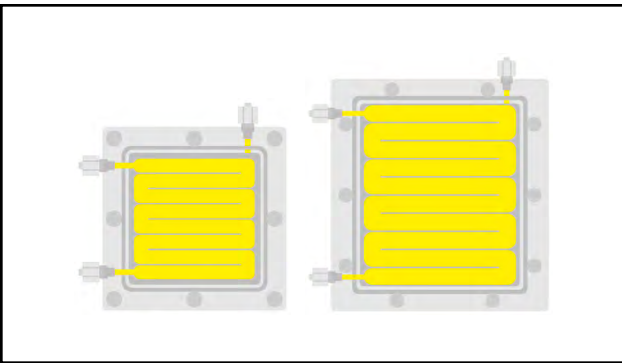
Membrane chemistries:  
■ PES    ■ Hydrosart® RC    ■ CA | CTA  
<sup>1</sup> 2 kDa Hydrosart® RC    <sup>2</sup> 20 kDa CTA    <sup>3</sup> Membrane also available in DNA-free, PCR grade Vivacon®    <sup>4</sup> 125 kDa CA

# Vivaflow<sup>®</sup>

Go Against the Flow: Intuitive, Effortless and Sustainable Tangential Flow Filtration (TFF) for the Lab



- Vivaflow<sup>®</sup> SU**
- Easier setup with a lower environmental impact<sup>5</sup>
  - All-in-one design runs on a standard laboratory pump
  - Advanced flow path delivers optimization-free UF | DF
  - More flexibility to handle any sample without carryover



- Vivaflow<sup>®</sup>**
- Budget-friendly TFF cassettes that are easy to use
  - Hydrosart<sup>®</sup> RC and PES provide high recoveries
  - Cleaning process reduces contamination risk
  - Modular format ensures scalability from 0.1 to 5 L

**Membrane Availability**

| Recommended Feed Volume <sup>6</sup>     | MWCO (kDa)     |   |    |    |    |     |     |       |        |
|------------------------------------------|----------------|---|----|----|----|-----|-----|-------|--------|
|                                          | 3              | 5 | 10 | 30 | 50 | 100 | 300 | 1,000 | 0.2 µm |
| Vivaflow <sup>®</sup> SU<br>0.1 – 0.5 L  | ■ <sup>1</sup> | ■ | ■  | ■  | ■  | ■   | ■   | ■     | ■      |
| Vivaflow <sup>®</sup> 50R<br>0.1 – 0.5 L |                | ■ | ■  | ■  |    | ■   |     |       |        |
| Vivaflow <sup>®</sup> 200<br>0.5 – 2.5 L | ■ <sup>1</sup> | ■ | ■  | ■  | ■  | ■   |     |       | ■      |

Membrane chemistries:  
■ PES      ■ Hydrosart<sup>®</sup> RC

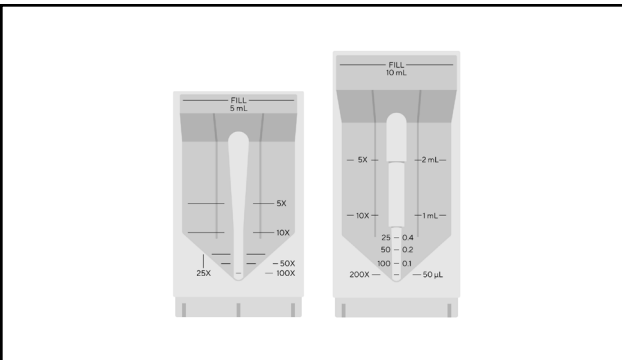
<sup>1</sup> 2 kDa Hydrosart<sup>®</sup> RC.  
<sup>5</sup> We support the bioeconomy. An amount of bio-circular material equivalent to 79.2% of each Vivaflow<sup>®</sup> SU cassette is sourced and allocated to Vivaflow<sup>®</sup> SU cassettes through the ISCC mass balance approach.  
<sup>6</sup> All Vivaflow<sup>®</sup> SU and Vivaflow<sup>®</sup> cassettes are modular, allowing the feed volume to be doubled to 1 or 5 L.

For more information, visit [sartorius.com](https://sartorius.com)



# Vivapore<sup>®</sup>

Sit Still and Concentrate: Solvent Absorption Ultrafilters for High Throughput, Equipment-Free Handling

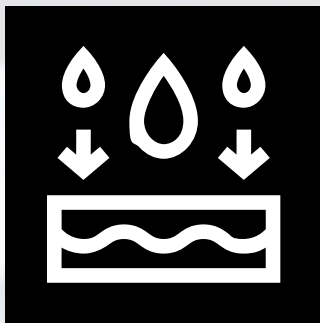


- Vivapore<sup>®</sup>**
- Benchtop protein concentration for research
  - No risk of sample loss or cross contamination
  - Optional reservoir for doubled capacity or combined UF | DF
  - Easily check retentate volume and concentration factor

**Membrane Availability**

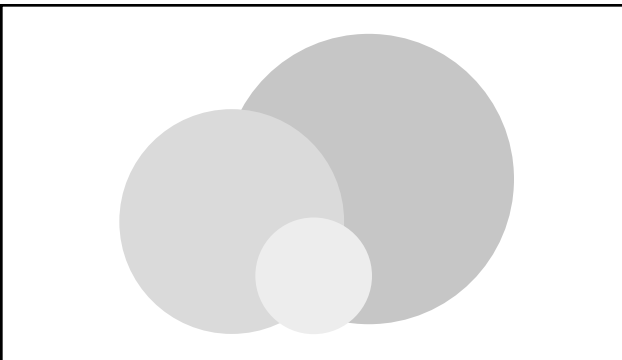
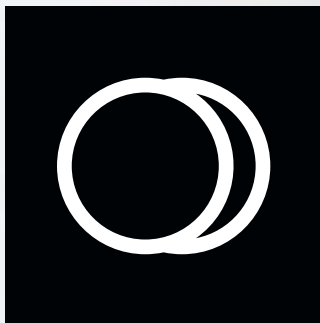
| Recommended Feed Volume                            | MWCO (kDa) |
|----------------------------------------------------|------------|
| Vivapore <sup>®</sup> 5<br>1 - 5 mL                | ■          |
| Vivapore <sup>®</sup> 10<br>2 - 10 mL <sup>7</sup> | ■          |

Membrane chemistries:  
■ PES  
<sup>7</sup> 20 mL with optional expansion reservoir.



# Ultrafiltration Membranes

Tailor Your Process: Comprehensive Chemistries, Cut-Offs and Diameters for Custom UF | DF Applications



- Ultrafiltration Membranes**
- Disc format for customized UF | DF applications
  - Recommended for use with legacy stirred cells
  - PES, Hydrosart® RC and CTA to suit any process
  - Wide range of MWCOs and diameters

**Membrane Availability**

| Disc Diameter | MWCO (kDa)          |             |                |                          |    |     |     |
|---------------|---------------------|-------------|----------------|--------------------------|----|-----|-----|
|               | 1                   | 5           | 10             | 30                       | 50 | 100 | 300 |
| 25 mm         |                     | ■<br>■<br>■ | ■<br>■         | ■<br>■<br>■ <sup>2</sup> |    |     |     |
| 44 mm         |                     | ■           | ■ <sup>8</sup> |                          |    |     |     |
| 47 mm         | ■                   | ■<br>■<br>■ | ■<br>■<br>■    | ■<br>■<br>■ <sup>2</sup> | ■  | ■   | ■   |
| 63 mm         | ■<br>■ <sup>1</sup> | ■<br>■      | ■<br>■         | ■<br>■<br>■ <sup>2</sup> |    | ■   |     |
| 76 mm         | ■                   | ■<br>■      | ■<br>■         | ■<br>■                   | ■  |     | ■   |
| 150 mm        |                     |             | ■              |                          |    |     |     |

Membrane chemistries:  
■ PES      ■ Hydrosart® RC      ■ CTA  
<sup>1</sup> 2 kDa Hydrosart® RC      <sup>2</sup> 20 kDa CTA      <sup>8</sup> 43 mm diameter

For more information, visit [sartorius.com](https://www.sartorius.com)



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**For further information, visit**  
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