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Instruction for Use
TPP Vacuum Filtration «rapid»-Filtermax

The filtration system «rapid»-Filtermax is suitable for sterile filtration of cell culture media, sera, and aqueous solutions. Its 0.22 µm polyethersulfone (PES) membrane provides high flow rates while minimizing protein binding and foam formation. The «rapid»-Filtermax is available as a complete filtration unit, including a bottle-top filter and reservoir flask, or as individual components – either the bottle-top filter or the flask – all featuring a DIN GL45 thread for easy and secure connections.

The filtration system is available in volume sizes 150, 250, 500 and 1000 mL. Each system component is identical in construction, available separately, and can be combined with each other.

The square foot of the reservoir ensures a safe stand during sterile filtration.

The TPP «rapid»-Filtermax is for single use only. Re-use disclaims all warranties.

Safety instructions

- Handling and Safety
  Handling of biological materials shall be performed in full compliance with all applicable national and international regulations. Activities must conform to the laboratory's assigned biological safety level, the relevant Safety Data Sheets (SDS), and the manufacturer's Instructions for Use (IFU).
  Appropriate personal protective equipment (PPE) shall be always worn during handling.
- Risk of Contamination
  All operations shall be conducted in accordance with aseptic techniques and established Good Laboratory Practices (GLP). Packaging shall be opened immediately prior to use. Only products that are visually intact and free from defects shall be utilized. Products exhibiting visible damage, contamination, or any other irregularities shall be disposed of in accordance with applicable regulations.
- Storage
  TPP products shall be stored under the following conditions:
  - Temperature: 10 °C to 30 °C (50 °F to 86 °F).
  - Light exposure: Products shall be protected from direct ultraviolet (UV) radiation.
  - Relative humidity: ≤ 60 %, with a recommended control range of 50 – 60 %.

  Storage conditions shall be monitored and recorded to ensure compliance with these requirements. Any deviations shall be documented, evaluated, and managed in accordance with the applicable quality.

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Instructions

- Check the expiration date (EXP) on the label and packaging. Use only products that are within their valid shelf life.
- Before use, verify that the packaging is intact. The consumable is only guaranteed sterile if the packaging is undamaged.
- Before starting filtration, verify the compatibility of the liquids with the membrane by referring to the TechDoc: *Chemical Resistance of Filter Membrane*.
- Open the packaging and remove the product within a sterile environment. Only open the packaging of the screw cap immediately before use.
- Ensure the bottle-top filter is firmly connected to the reservoir. Re-tighten, if necessary, but avoid overtightening the thread. If using the TPP bottle-top filter only: screw it tightly onto a sterile bottle without damaging the thread.
- Attach the hose of the regulated vacuum source to the hose adapter. Connect it to the bottle-top filter.
- Place the filtration system securely to prevent tipping during filtration.
- Remove the bottle-top filter lid. Carefully pour the solution to be filtered into the filter.
- Apply vacuum and filter until the bottle-top filter is empty or the reservoir bottle is full.
- Switch off the vacuum. Place the lid back on the bottle-top filter and remove the hose. Unscrew the bottle-top filter, unpack the individually packed sterile screw cap, and close the bottle.
- Test relevant parameters in advance under routine conditions to ensure optimal filtration results.

Vacuum Safety and Performance

- A differential vacuum of 700 mm Hg at 25 °C must not be exceeded. Be aware that material failure can occur due to inappropriate temperature.
- Use only sterile plastic or glass bottles that are explicitly approved for vacuum filtration. Do not use bottles with surface damage (scratches, chips, cracks). Never use plastic roller bottles as substitute receiving vessels.
- Do not use on laboratory bottles over 2 liters or on square bottles. The risk of implosion increases with large bottles; the corners of square bottles generate stress → risk of breakage.
- Always wear eye protection to prevent injury from potential implosions. Conduct filtration in specialized safety units. Bottles must never be held in the hand during filtration. Also ensure that bottles are not clamped too tightly, which could create mechanical stress. Conditions may vary, so there is no guarantee against breakage under vacuum. Compliance with general laboratory safety standards is assumed.
- Provide a suitable vacuum source and vacuum-resistant tubing
- Solutions containing a high number of particles should preferably be centrifuged or pre-filtered. This prevents premature clogging of the filter membrane.
- Build up the vacuum gradually. A sudden pressure surge or exceeding the maximum differential pressure can cause the membrane to rupture. If an excessively powerful pump is switched on abruptly, the sudden suction can tear the membrane
- Avoid touching the membrane surface with tweezers or pipette tips, as this can cause localized pre-damage to the structure.

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Sub-Zero Storage

- The TPP Filtermax reservoir flask is not suited for sub-zero storage. Polystyrene (PS) exhibits significantly increased brittleness at temperatures below 0 °C (32 °F). Storage of PS products below this temperature shall not be performed, as the material is prone to spontaneous cracking and shattering, which may result in product failure and potential safety hazards.

General Handling and Limitations

- Graduations are for reference only and serve as approximate guidelines for fill volume. For precise measurements, use calibrated pipettes or volumetric instruments.
- Avoid exposing the white labeling area to 90% alcohol in combination with mechanical stress (e.g., rubbing or wiping), as this may cause the ink to dissolve or smear.
- Verify the compatibility of the liquids with the membrane by referring to the TechDoc: *Chemical Resistance of Filter Membrane*.

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Technical Data

Component	Material
Filter-Membrane	Polyethersulfone (PES), type TPP fast flow
Flask and top	Polystyrene (PS)
Screw cap	Polyethylene (PE)
Vacuum connector	Polypropylene (PP)

Technical Data	Values
Maximum operating temperature °C	max. 45
Vacuum mm Hg at 25 °C	700
Dead volume mL	2.3
Vacuum connection mm	6 – 10
Water flow rate at 25 °C	22 mL/min/cm^2 0.07 MPa (0.7 bar)
Protein binding µg/cm^2	< 20

Measurement	99150 System	99155 Bottle Top Filter	99157 Flask
Height mm	103	57	63
Width x Length mm	93 x 93	90 x 89	93 x 93
Filter size cm^2	49	49	---
Pore size µm	0.22	0.22	---
Volume mL	150	150	150

Measurement	99250 System	99255 Bottle Top Filter	99257 Flask
Height mm	143	75	87
Width x Length mm	93 x 93	90 x 89	93 x 93
Filter size cm^2	49	49	----
Pore size µm	0.22	0.22	---
Volume mL	250	250	250

Measurement	99500 System	99505 Bottle Top Filter	99507 Flask
Height mm	213	111	121
Width x Length mm	93 x 93	90 x 89	93 x 93
Filter size cm^2	49	49	---
Pore size µm	0.22	0.22	---
Volume mL	500	500	500

Measurement	99950 System	99955 Bottle Top Filter	99957 Flask
Height mm	285	143	160
Width x Length mm	111 x 111	108 x 108	111 x 111
Filter size cm^2	69	69	---
Pore size µm	0.22	0.22	---
Volume mL	1000	1000	1000

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Additional Information

Instructions for use, chemical resistance lists, and quality certificates for individual products can be downloaded from the TPP website at www.tpp.ch.

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Disclaimer

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