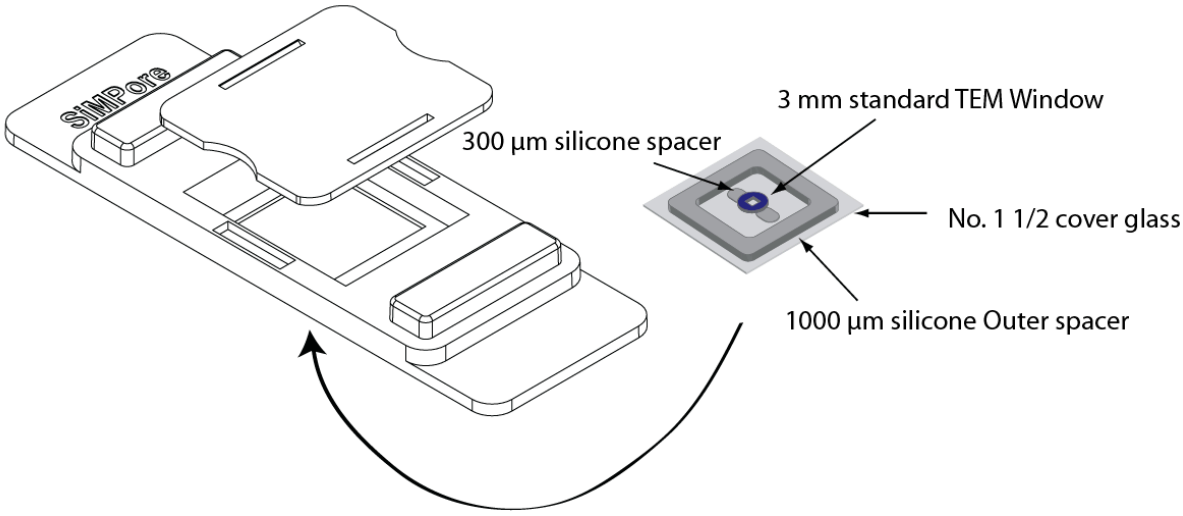
TEMVu™

Electron Microscopy Meets Light Microscopy



Ultrathin Membranes for Light, Fluorescent and Electron Microscopy

TEMVu™ is for research use only
and not for use in diagnostic or clinical applications.

OPERATIONS

Required Equipment

- Pipette (2-200 μL tip)
- Autoclave for sterilization (for sterility)
- Standard cell culture media and incubation equipment (for cell culture on TEMVu™)
- Standard fixatives/preferred stains.

Instructions

Please read all instructions and notes before proceeding

Cell Culture Instructions

1. Remove slide carrier from plastic bags and remove inspection label. Do NOT press glass window. The glass is thin for imaging purposes and therefore delicate.
2. Sterilize TEMVu slide and cap by autoclaving for cell culture applications
3. To improve cell adhesion, incubate TEMVu grid with 10 μL cell media for at least two hours prior to introducing cells. Gently aspirate off this incubation media just prior to seeding cells. Membranes can also be exposed to ECM proteins in solution prior to cell seeding.
4. To wet the bottom of the TEMwindow grid, pipette ~10 μL of cell culture fluid using a fine pipette tip, under the TEMwindow grid. This will enable both sides of the membrane to stay wet and will help cell growth and imaging quality.
5. To seed cells on the TEMwindow grids, pipette 10 μL of suspended cells (4-8 x 10^5 cells/mL) onto the top of TEMwindow grid to allow cells to settle on to the membrane surface.
6. After two (or more) hours of incubation, the cells should have attached to the membrane surface. Gently aspirate off media to remove any unattached cells. Load fresh culture media (~150μL) into the chamber.
7. Replace the TEMVu cap and place directly in the incubator or within a petri dish. TEMVu is designed to be stackable to preserve space.

Staining/Imaging Instructions

1. Cells/Materials deposited on the grids can be visualized at any point using upright or inverted microscopes. The grids do not show autofluorescence and will not interfere with imaging.
2. Staining and fixing of cells can be performed directly on TEMVu slide if needed. The silicone gasket has limited compatibility with organic solvents.
3. Once staining/fixing is complete, the TEMwindow grids can be removed using the included K6 plastic tweezers (cat no. K6TWZR).

NOTE:

- Due to the extreme thinness of TEMVu™ membranes it is important to aspirate as gently as possible. Do not directly touch the membrane with a pipette tip. Vacuum aspiration may be too harsh in some laboratory environments. In these cases, gently use a hand pipette.

- If you have trouble wetting the underside of the TEMwindow grid, tilt the slide away from the pipette tip before introducing the fluid. A fine tip pipette such as gel loading tip can also be used. If this approach is not working, very gently lift the grid with the plastic tweezers to help wet the underside.
- It is important to keep the both sides of membranes wet for cell culture, as cells tend to grow differently if one side of the membrane is dry.
- To achieve optimum image quality, make sure underside of TEMwindow grid is wet and free from air bubbles.
- If silicone gasket/plastic incompatible solvents have to be used, the TEMwindow grids can be gently removed from the TEMVu slide using the included K6 plastic tweezers and processed further.

If you have any additional question please do not hesitate to contact us.

SPECIFICATIONS

Sterilization

TEMVu™ slides can be sterilized by autoclaving after removing from plastic bag and discarding the inspection label.

Chemical Stability

Devices are incompatible with strong bases. Silicon based nanoporous membranes degrade over a period of 3 days in physiological buffers (pH 7 or greater). Non-degradable nanoporous membranes (available upon request) are stable for at least 2 weeks, while nitride based membranes are stable for at least 4 weeks in physiological buffers. The dissolution of the membrane is non-toxic and has not been shown to adversely affect cell viability. If using solvents, please verify chemical compatibility against silicone gasket and polycarbonate slide.

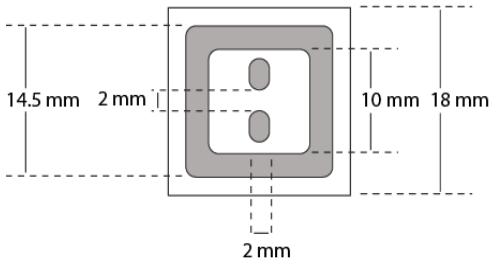
Device Storage

Store in a clean and dry environment. Exposure to UV can damage polycarbonate slide carrier.

Physical Properties

Product Number	TEMVU-(Individual Grid Product Number)
Membrane Compositions Available:	Porous Nanocrystalline Silicon (pnc-Si), Non Porous Silicon, Silicon Dioxide or Silicon Nitride
Stability in Culture:	3 days for Porous Nanocrystalline Silicon (pnc-Si), Non Porous Silicon, Silicon Dioxide ~ 2 weeks for Non-degradable Porous Silicon ~4 weeks for Silicon Nitride
Dimension of TEM Grid:	3 mm Standard Window
Chamber Volume:	150 μL
Glass Support:	No. 1 ½
Slide Composition:	Polycarbonate
Gasket Composition:	Medical Grade Silicone
Gasket Thickness:	100/300 μm

SCHEMATICS



Cross Sectional View