Memo

Leica Foil Membrane Slides for Laser Microdissection and Use with the Leica AS LMD, LMD6000 and LMD6500/7000 systems

This document is based on a 2009 Leica memo and was edited by Glen MacDonald on 12/14/2012, to consolidate information from other Leica documentation. Prices are subject to change every 6 months.

Leica offers different membrane materials and types of slides for use with the Leica LMD laser microdissection systems. A brief description of each membrane slide is given below.

Usage notes.

A. **All membrane foil slides should be handled with care as not to damage or perforate the membrane.**

B. **The lifespan of glass slides with foils is 1 year** due to breakdown of the glue anchoring the foil to the slide. Expired slides will continue to adhere sections and cut normally. However, the degraded glue may allow liquids to enter the gap between the foil and glass, which will prevent the laser from cutting. Expired slides may be still used for applications that do not involve immersion into liquids.

C. **Tissue placement.**

1. **Glass slides:** Sections are applied to the foil side of the slide (same side as the frosted label).
2. **Metal frames:** Sections are applied to the central rectangle of foil. The specimen is applied to the foil side of the slide (opposite the Leica logo).

Types of foil membrane slides.

1. 11505158 (50 per box) Glass slides with **PEN** foil membrane, 26 mm x 76 mm. PEN (poly ethylene napthalate) is 2.0 microns thick.
    a. $261/box.
    b. Specimen application: This type of slides is most commonly used for cryosections, paraffin sections and cell spreads. The slide is treated and handled almost like an ordinary glass slide. Care must be taken not to damage the foil otherwise liquid may penetrate behind the foil preventing the dissectate from dropping.
    c. PEN slides are not recommended for MALDI – TOF procedures since any foil residue may ionize and affect results.
    d. Best for tissue sections requiring low to medium laser intensity.

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e. Resistant to methanol, ethanol and acetone.
f. Xylene contact should be limited to 15 minutes per instance, with a DEPC water rinse after the xylene.
g. Limited suitability for microwave treatment.
h. Use with 5x, 6.3x, 10x, 20x 40x, 63x objectives.

2. Glass slides with **PEN** foil membrane, RNAse-free (50 per box). PEN (poly ethylene napthalate) is 2.0 microns.
   a. $448/box.
   b. RNAse-free version of item #1.
3. Petri Dishes with **PEN** membrane, sterile, 20/box.
   a. $254/box
   b. Use for sterile dissection of adherent cells. Dissected cells are usually directly analyzed and not recultured.
   c. 60 C maximum temperature.
   d. Suiitable for microwave treatment.
   e. Methanol, ethanol resistant.
   f. Avoid acetone and xylene (chamber material is incompatible).
   g. Use 5x to 20x objectives.
4. 18-well ibidi micro-slide with PEN membrane. 11505240 (15 pieces). Micro-slide with 2.0 micron **PEN** foil.
   a. $355/box.
   b. Use for sterile selection of adherent cells.
   c. 60 C maximum temperature.
   d. Suitable for microwave treatment, resistant to methanol and ethanol.
   e. Objectives: up to 20x, possibly 40x due to working distance.
   f. Allows 18 experiments on 1 slide with 30 µl/well medium volume
   g. Collection onto 8-well strip, 18-well ibidi or PCR tube.
   h. Dissection with 20x lens is possible with humidity chamber, replace the cover with a coverslip to use 40x.
5. Glass slides with **PEN** membranes, 50 x 76, 100/box.
   a. $1,014/box.
   b. For large specimens.

6. 11505151 (50 per box) Metal frame **PET** foil slides. PET (poly ethylene terephthalate) is 1.4 microns thick foil which is stretched over a stainless steel metal frame, which is ths same size as a glass slide.
   a. $284/box.

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b. These slides have little heat capacity, a gloved thumb must be held close behind the foil to provide enough heat to lift and melt cryosections onto the foil.
c. Low autofluorescence.
d. For tissue sections that require low to maximum laser intensity and a wide range of areas, hihghlt recommended for cutting large areas at low magnification.
e. PET foil does not ionize and is recommended for collection dissectate that will be used in MALDI – TOF analysis.
f. 130° C maximum temperature.
g. Suiitable for microwave treatment.
h. Resistant to methanol, ethanol and acetone.
i. Xylene contact should be limited to 15 minutes per instance, with a DEPC water rinse after the xylene.
j. Use with 5x, 6.3x, 10x, 20x 40x, 63x objectives.

7. 11505151 (50 per box) Metal frame **PET** foil slides, RNAse-free. PET (poly ethylene terephthalate) is 1.4 microns thick foil which is stretched over a stainless steel metal frame, which is ths same size as a glass slide.
    a. $460/box.
    b. RNAse-free version of the slide above.
8. Metal frame **POL** slides. 11505188 (50 per box) POL (polyesther) foil is 0.9 microns thick and is also streteched over a stainless steel metal frame.
    a. $322/box.
    b. Application: This slide was developed to be used with the 150X microdissection objective. The very thin nature of this foil works well with the small working distance of the 150X objective.
    c. Other considerations in handling this type of slide are similar to the PET metal frame slides.
    d. For sections requiring low to maximum laser intensity, very small (< 20 μm^2) and large (> 4 mm^2) areas.
    e. Non-adherent cells (such as blood cells, bacteria, fungi, moss, etc.) by sandwiching between 2 frame slides.
    f. 130° C maximum temperature.
    g. Used with 5x to 150X objectives.
9. Metal frame **POL** slides, RNAse-free. 11505188 (50 per box)
    a. $482/box
    b. Same as item above, except RNAse-free.
10. Metal frame **PPS** slides. 11505268 (50 per box). PPS (poly(p-phenylene sulfide) foil is 1.2 microns thick.

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a. $486/box
b. Specimen application: very low autofluorescence.
c. Easy to cut.
d. Low texture for better tissue adherence.
e. Suitable for all magnifications from 5x to 150x.
f. Not suitable for DIC

11. Glass slides with **PPS** foil**.** 11505273 (50 per box). PPS (poly(p-phenylene sulfide) foil is 1.2 microns thick.
    a. $410/box
    b. Specimen application: very low autofluorescence.
    c. Easy to cut.
    d. Low texture for better tissue adherence.
    e. Suitable for all magnifications from 5x to 150x.
    f. Not suitable for DIC
12. Micro-slide, 18 well ibiTreat (Plasma), 15/box.
    a. $137/Box.
    b. 18 well ibidi plasma treated sterile slide with foil
13. Stackable MembraneRings, sterile, 4/box. **PEN** foil, 2.0 microns.
    a. $209/box.
    b. 50 mm diameter Petri dish with 30 mm dia. Usable area.
    c. For sterile dissection of adherent cells, direct microdissection of live cells for recultivation or analysis.
    d. A double stack of rings builds a humidity chamber.
14. **FLUO** FrameSlide, glass-like, 5/box.
    a. $252/box.
    b. **Glass-like membrane** with no autofluorescence.
    c. Recommended for fluorescence applications, single cell dissections, chromosomes, sperm spreads.
    d. 130° C maximum temperature.
    e. Suiitable for microwave treatment.
    f. Resistant to methanol, ethanol and acetone.
    g. Xylene contact should be limited to 15 minutes per instance, with a DEPC water rinse after the xylene.

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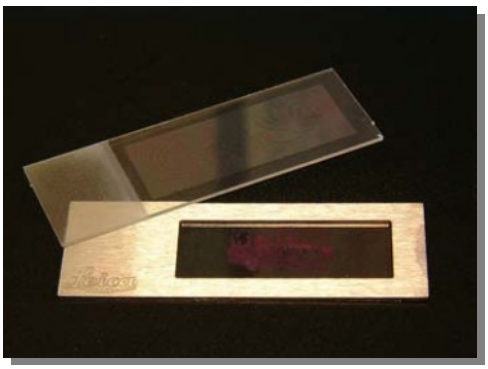
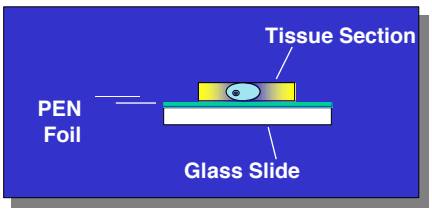
Non-Contact Method
Laser Microdissection (LMD)





Tissue Sections placed directly on to the PEN/PET/POL (polyethylene or polyester) foil anchored to slide.

Glass foiled PEN (2.0 u) slides

Frame foiled PET (1.4 u) slides

Frame foiled POL (0.9 u) slides

4. Making the slides RNase free:

The foil slides can be treated to remove RNases by dipping them into a bath of pure RNase Zap (Ambion Corp) for 15 seconds. Follow this with two rinses in DEPC water to remove all of the RNase Zap. The slides then should be completely dried by placing them in a heater at 37 deg C for as long as is required to dry. Then one may follow with UV treatment as described below.

Note: Heating in an autoclave may not always ensure that all RNases are destroyed. If this method is performed the heating must ba at 180 deg C for up to 4 hours.

5. Preparing the slide with UV Irradiation:

Prior to placing specimens on the membrane slides, it is advisable to prepare the membrane by placing the blank slides to be used, into a UV Cross-linker device. The slides should be irradiated at 220nm to 260nm at full power for 30 minutes. This will usually destroy RNases, improve the laser cutting of the foil (reducing static), and help make the foil more hydrophilic to improve adherence of the specimen.

6. Poly-L-lysine treatment:

For poorly adhering tissues, the slides may be treated with a microlayer of Poly-L-lysine. See the Leica LMD Protocol Guide for procedure.

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