

# Pierce™ 48-Well Microdialysis Plate, 1 mL

Catalog Numbers A50466, A50468, A50470, and A50473

Pub. No. MAN0025494 Rev. A.0



**WARNING!** Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are available from [thermofisher.com/support](https://www.thermofisher.com/support).

## Product description

The Thermo Scientific™ Pierce™ 48-Well Microdialysis Plate is a convenient, disposable, and rapid dialysis device for processing up to 48 samples of 150–1000 µL each. Each device has low-binding regenerated cellulose membranes with molecular weight cut-offs (MWCO) of 2K, 3.5, 10, or 20K. The low-binding regenerated cellulose membranes are rated to retain proteins and other macromolecules larger than the MWCO, while allowing removal of buffer salts and small contaminants. The short diffusion distance and large surface area allow for rapid dialysis to remove salts and small molecules in 2–4 hours. In addition, the surface tension and the space between the membranes enable easy and highly efficient sample recovery using only standard laboratory pipettes. The dialysis chambers provided are strips of eight attached units that can be separated. As a result, waste is eliminated by only using the needed number of chambers. Dialysis can be efficiently performed in a standard 48 deep-well plate that uses a minimal buffer while still providing >95% removal of small molecules (see “Procedure for Pierce™ 48-Well Microdialysis Plate” on page 3 and “Additional Information” on page 4). The assembled device is ideal for high-throughput applications as it is compatible with standard 96-well laboratory equipment and automated liquid-handling systems.

## Contents and storage

Cat. No.	Description	Storage
A50466	Pierce™ 48-Well Microdialysis Plate 1000 µL, 2K MWCO	Upon receipt store at room temperature. Product is shipped at room temperature.
A50468	Pierce™ 48-Well Microdialysis Plate 1000 µL, 3.5K MWCO	
A50470	Pierce™ 48-Well Microdialysis Plate 1000 µL, 10K MWCO	
A50473	Pierce™ 48-Well Microdialysis Plate 1000 µL, 20K MWCO	

## Important product information

- To prevent contamination, do not touch the membrane with ungloved hands.
- Once wet, do not let the membrane become dry.
- (Optional) The microdialysis devices can be used individually in 50 mL centrifuge tubes.
- If the sample density is  $\geq 1.150$  g/mL, such as protein in saturated 4.1 M  $(\text{NH}_4)_2\text{SO}_4$ , 45% sucrose or 8 M GuHCl, use  $\leq 50\%$  of the maximum sample volume, which allows for the influx of water during dialysis and ensures the device does not over fill. Performing serial dialysis using buffers with decreasing concentrations of solutes (salt) will prevent the osmotic pressure from overfilling the device (e.g., dialyze a 5 M NaCl sample against a buffer with 0.5 M NaCl).
- For high-throughput drug-binding experiments using equilibrium dialysis, we recommend using the Thermo Scientific™ Single-Use RED Plate with Inserts, 8K MWCO, 1 each (Product No. 90006).
- If using automation/liquid handling, see the product page on the web for detailed instructions.

## Additional materials required

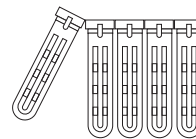
- Pipette for sample recovery
- Plate shaker (optional)
- 50 mL centrifuge tubes (optional)

## Procedure Summary

### Pierce™ 48-well Microdialysis Workflow

#### Remove one or more devices

Remove one or more devices. If only one device is needed, break it carefully from the 8-segmented cartridge.



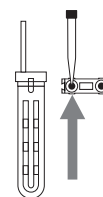
#### Add dialysis buffer

Add dialysis buffer to a deep-well plate or a 50 mL centrifuge tube and set aside.



#### Load sample

To load each device, insert an upright pipette tip filled with sample into the round opening (see arrow). Slowly add the sample.



#### Place device into buffer

Place device into the deep-well plate or 50 mL centrifuge tube containing buffer.



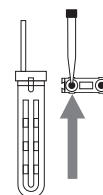
#### Dialyze

Dialyze to remove low molecular weight compounds (15–30 minutes). Change dialysis buffer as needed. *(Optional)* Shake plate gently on a plate shaker.

1 hour

#### Recover sample

Remove device from plate or tube and recover sample. Insert pipette tip into round opening and slowly withdraw sample.



## Procedure for Pierce™ 48-Well Microdialysis Plate

1. Remove the required number of microdialysis devices from the plate. Individual devices can be detached from the eight-segmented cartridges.

**Note:** Handle the device from the top or sides with gloves to prevent membrane contamination.

2. Add  $\leq 2950 \mu\text{L}$  of dialysis buffer to the appropriate number of wells in a 48 deep-well plate or  $< 10 \text{ mL}$  of dialysis buffer to a 50 mL centrifuge tube and set aside.

3. Add  $1000 \mu\text{L}$  of dialysis buffer to each microdialysis device slowly through the round opening of the device.

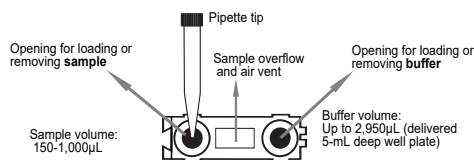


Figure 1 Load sample, top view

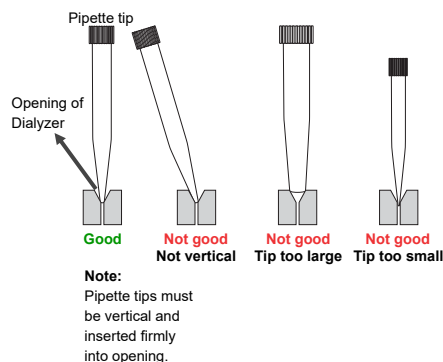


Figure 2 Load sample, side view

4. Remove the buffer from the device by setting the pipette volume to  $1030 \mu\text{L}$ , inserting the pipette tip into the round opening and slowly aspirating the buffer.

**Note:** Do not let the membrane dry out.

5. Slowly load the sample ( $150\text{--}1000 \mu\text{L}$ ) as described in step 3. Ensure that the sample is settled at the bottom of the device.

**Note:** When loading a small volume (for example,  $150 \mu\text{L}$ ) carefully push down with air through the pipette.

6. Place the device into the deep-well plate or 50 mL centrifuge tube containing the buffer (step 2). Cover the sample loading portion of the device with laboratory film.

7. (Optional) Shake the plate gently on a plate shaker.

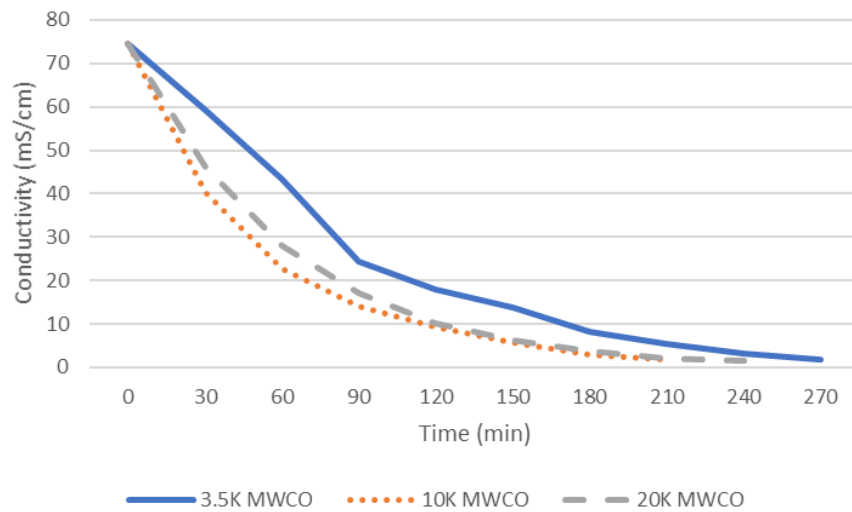
8. Dialyze for approximately 2–3 hours, with periodic buffer changes (15- to 30-minute intervals). Dialysis time will vary depending on the salt and small molecule concentrations. To change the buffer, move the microdialysis device into a new deep-well plate channel or use a new centrifuge tube.

9. Remove the device from the plate and recover the sample as described in step 4.

## Troubleshooting

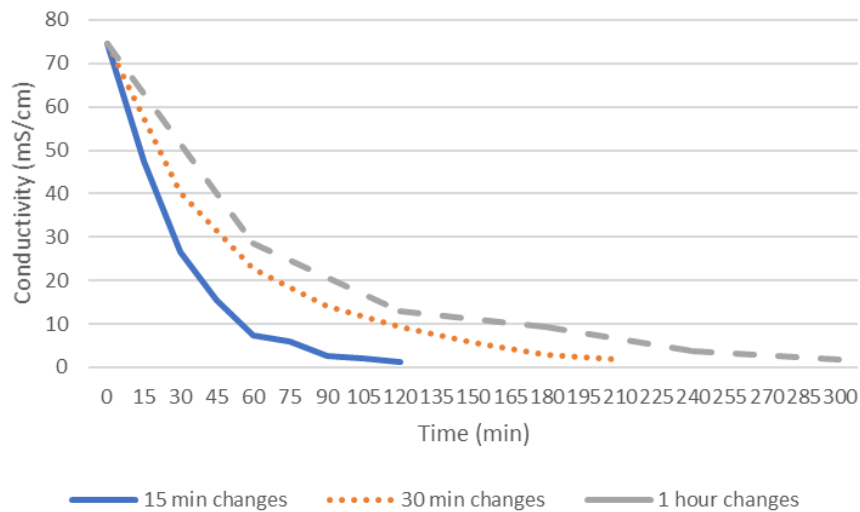
Observation	Possible cause	Recommended action
Sample volume was significantly increased.	Sample density was $\geq 1.150 \text{ g/mL}$ , such as protein in saturated $4.1 \text{ M } (\text{NH}_4)_2\text{SO}_4$ , 45% sucrose or $8 \text{ M GuHCl}$ .	Use $\leq 50\%$ of the maximum sample volume.
Small molecule was not completely removed.	Buffer was not changed.	Dialyze for 15–30 minutes at room temperature or $4^\circ\text{C}$ ; change the dialysis buffer and dialyze with repeated changes until desired levels are achieved.

## Additional Information



**Figure 3 Rate of removal of NaCl in the Thermo Scientific™ Pierce™ 48-well Microdialysis Device.**

Samples of 1.0 mL (0.5 mg/mL Human IgG containing 1 M NaCl) were dialyzed against 2.95 mL of water in a 48 deep-well plate at room temperature. The water was changed at 30-minute intervals over a 4.5-hour period. The rate of NaCl removal was determined by measuring the conductivity of the sample at the indicated time intervals.



**Figure 4 Comparing the efficiency of timed dialysis changes of NaCl in the Thermo Scientific Pierce 48-well Microdialysis Device.**

Samples of 1.0 mL (0.5 mg/mL Human IgG containing 1 M NaCl) were dialyzed against 2.95 mL of water in a 48 deep-well plate at room temperature. The water was changed at 15-min, 30-min, and 1-hour intervals over a 5-hour period. The rate of NaCl removal was determined by measuring the conductivity of the sample at the indicated time intervals.

## Thermo Scientific™ Pierce™ Microdialysis Plate chemical compatibility list

Compatibility	Chemical
Good chemical resistance	Acetic acid, 96% Acetonitrile Acetone Chloroform Dimethyl Sulfoxide Ethanol, 98% Ethylacetate Ethylene glycol Acetic Acid, 25% Formic acid, 25% Glycerol Methanol, 98% Methylene chloride n-Hexane Hydrogen Peroxide 30% Isopropanol 1-Propanol Tetrahydrofuran Toluene
Limited chemical resistance (pore size not guaranteed)	Ammonium Hydroxide (1N) Ammonium Hydroxide, 25% Hydrochloric acid, 10% Phosphoric acid, 25% Potassium hydroxide (1N) Sodium hydroxide (1N)
No chemical resistance, not recommended	Formic acid, 100% Hydrochloric acid, 25% Hydrofluoric acid, 50% Nitric acid, 25% Phosphoric acid, 85% Potassium hydroxide, 32% Sodium hydroxide, 32% Sulfuric acid, 98%

## Related Thermo Scientific™ products

Product	Cat. No.
48-well Deep-Well Plate, 5.5 mL, 1/pkg	<a href="#">AB0988</a>
Sealing sheet for 96-well Microdialysis Plate, 1/pkg	<a href="#">88269</a>
Pierce™ 96-Well Microdialysis Plate	<a href="http://www.thermofisher.com">www.thermofisher.com</a>
Thermo Scientific™ Single-Use RED Plate with Inserts, 8K MWCO, 1 each	<a href="#">90006</a>
Slide-A-Lyzer™ MINI Dialysis Unit, 2K MWCO, 0.1 mL	<a href="#">69580</a>
Slide-A-Lyzer™ MINI Dialysis Unit, 3K MWCO, 0.1 mL	<a href="#">69550</a>
Slide-A-Lyzer™ MINI Dialysis Unit, 7K MWCO, 0.1 mL	<a href="#">69560</a>
Slide-A-Lyzer™ MINI Dialysis Unit, 10K MWCO, 0.1 mL	<a href="#">69570</a>
Slide-A-Lyzer™ MINI Dialysis Unit, 20K MWCO, 0.1 mL	<a href="#">69590</a>
BupH™ Phosphate Buffered Saline Packs	<a href="#">28372</a>
BupH™ Tris Buffered Saline Packs	<a href="#">28376</a>

### Limited product warranty

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and Conditions of Sale at [www.thermofisher.com/us/en/home/global/terms-and-conditions.html](http://www.thermofisher.com/us/en/home/global/terms-and-conditions.html). If you have any questions, please contact Life Technologies at [www.thermofisher.com/support](http://www.thermofisher.com/support).



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For descriptions of symbols on product labels or product documents, go to [thermofisher.com/symbols-definition](http://thermofisher.com/symbols-definition).

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**Revision history:** Pub. No. MAN0025494

Revision	Date	Description
A.0	14 June 2021	New manual.

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