Pierce™ 96–Well Microdialysis Plate, 100 µL

Catalog Numbers A50462, 88260, 88262, and A50471

Pub. No. MAN0011812 Rev. B.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**.

Product description

The Thermo Scientific™ Pierce™ 96–Well Microdialysis Plate is a rapid dialysis device for processing up to 96 samples of 10–100µL each. Each device has low-binding regenerated cellulose membranes with molecular weight cut-offs (MWCO) of 2K, 3.5, 10 or 20K separated by <2mm. The membranes are rated to retain proteins and other macromolecules larger than the MWCO, while removing buffer salts and small contaminants. The short diffusion distance and large surface area allow for rapid dialysis to remove salts and small molecules ≤3 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 96 deep-well plate that uses a minimal buffer while still providing >95% removal of small molecules 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
A50462	Pierce™ 96–Well Microdialysis Plate 100 µL, 2K MWCO	Upon receipt store at room temperature. Product is shipped at room temperature.
88260	Pierce™ 96–Well Microdialysis Plate 100 µL, 3.5K MWCO	
88262	Pierce™ 96–Well Microdialysis Plate 100 µL, 3.5K MWCO	
A50471	Pierce™ 96–Well Microdialysis Plate 100 µL, 3.5K 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 2 mL microcentrifuge tubes.
- If the sample density is ≥ 1.150 g/mL, such as protein in saturated 4.1 M $(NH_4)_2SO_4$, 45% sucrose or 8 M GuHCl, use ≤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

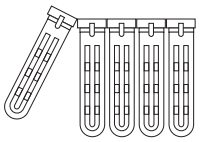
- 96-well deep-well plate, 2.2 mL (Cat. No. 88261)
- Pipette for sample recovery
- Plate shaker (optional)
- 50 mL centrifuge tubes (optional)

Procedure Summary

Pierce™ 96–Well Microdialysis Plate Workflow

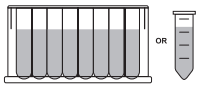
Remove one or more devices

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



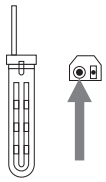
Add dialysis buffer

Add dialysis buffer to a deep-well plate or a 2 mL microcentrifuge tube and set aside.



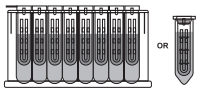
Load sample

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 2 mL microcentrifuge tube containing buffer.

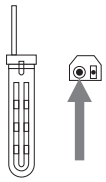


Dialyze

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

Recover sample

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



Procedure for Pierce™ 96–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 ≤2000 µL of dialysis buffer to the appropriate number of wells in a 96 deep-well plate or ≤1400 µL of dialysis buffer to a 2 mL microcentrifuge tube and set aside.

3. Add 100 µL of dialysis buffer to each microdialysis slowly through the round opening of the device. See Figure 1 and Figure 2 for proper pipette placement.

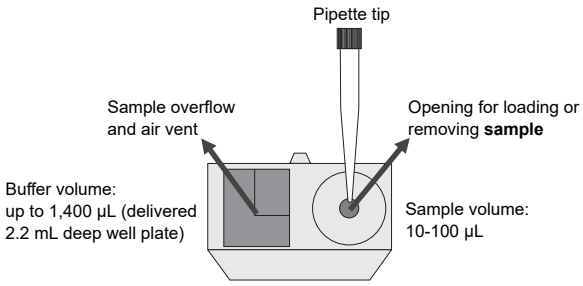


Figure 1 Load sample, top view

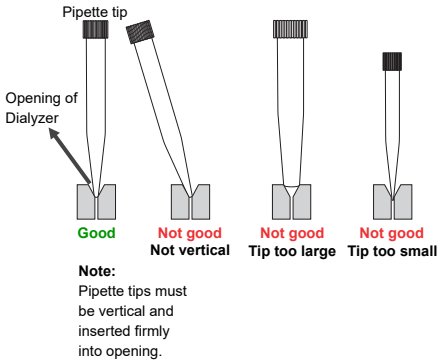


Figure 2 Load sample, side view

4. Remove buffer from the device.
   a. Set the pipette volume to 130 µL.
   b. Insert the pipette tip into the round opening and aspirate buffer.

   Note: Do not let the membrane dry out.

5. Slowly load the sample (10–100 µL) 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, 10 µL) carefully push down with air through the pipette.

6. Place the device into the deep-well plate or 2 mL microcentrifuge 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 hours, with periodic buffer changes (15–30 minute intervals). Dialysis time can vary depending on the salt and small molecule concentrations. To change the buffer, move the microdialysis device inot a new deep-well plate channel or use a new microcentrifuge 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 ≥1.150 g/mL, such as protein in saturated 4.1 M $(NH_4)_2SO_4$, 45% sucrose or 8 M GuHCl.	Use ≤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°C; change the dialysis buffer and dialyze with repeated changes until desired levels are achieved.

Additional Information

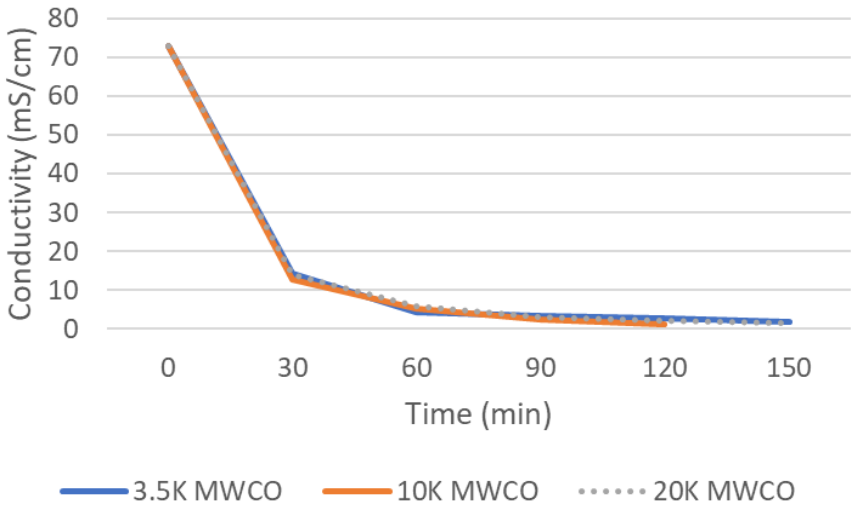


Figure 3 Rate of dialysis is similar for the 100 µL microdialysis devices across the various MWCOs offered

Samples of 0.1 mL (0.5 mg/mL Human IgG containing 1 M NaCl) were dialyzed against 1.8 mL of water in a 96 deep-well plate at room temperature. The water was changed at 30-minute intervals over a 2.5-hour period. The rate of NaCl removal was determined by measuring the conductivity of the sample at the indicated time intervals.

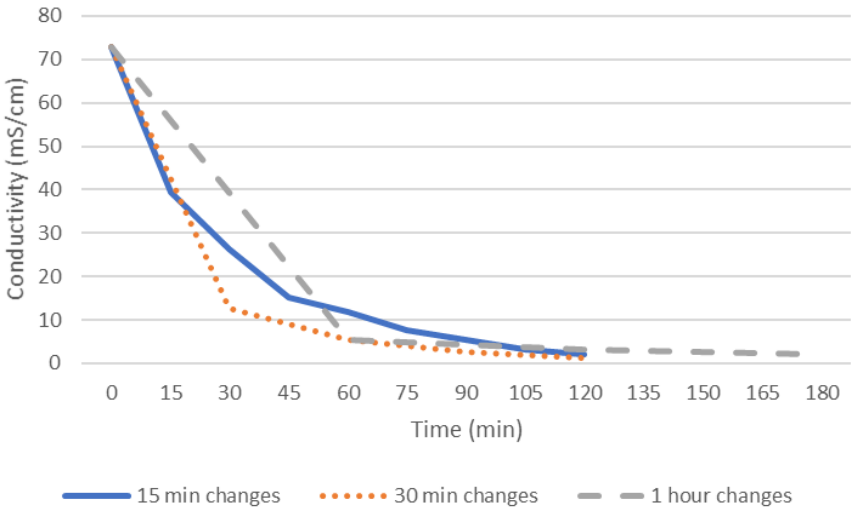


Figure 4 Comparing the efficiency of timed dialysis changes of NaCl in the Thermo Scientific Pierce 96-well Microdialysis Device

Samples of 0.1 mL (0.5 mg/mL Human IgG containing 1 M NaCl) were dialyzed against 1.8 mL of water in a 96 deep-well plate at room temperature. The water was changed at 15-, 30-, and 1-hour intervals over a 3-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.
96-well Deep-Well Plate, 2.2 mL, 1/pkg	88261
Sealing sheet for 96-well Microdialysis Plate, 1/pkg	88269
Pierce™ 96–Well Microdialysis Plate	www.thermofisher.com
Thermo Scientific™ Single-Use RED Plate with Inserts, 8K MWCO, 1 each	90006
Slide-A-Lyzer™ MINI Dialysis Unit, 2K MWCO, 0.1 mL	69580
Slide-A-Lyzer™ MINI Dialysis Unit, 3K MWCO, 0.1 mL	69550
Slide-A-Lyzer™ MINI Dialysis Unit, 7K MWCO, 0.1 mL	69560
Slide-A-Lyzer™ MINI Dialysis Unit, 10K MWCO, 0.1 mL	69570
Slide-A-Lyzer™ MINI Dialysis Unit, 20K MWCO, 0.1 mL	69590
BupH™ Phosphate Buffered Saline Packs	28372
BupH™ Tris Buffered Saline Packs	28376

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at **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**.

Thermo Fisher Scientific | 3747 N. Meridian Road | Rockford, Illinois 61101 USA
For descriptions of symbols on product labels or product documents, go to thermofisher.com/symbols-definition.

The information in this guide is subject to change without notice.

Revision history: Pub. No. MAN0011812

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