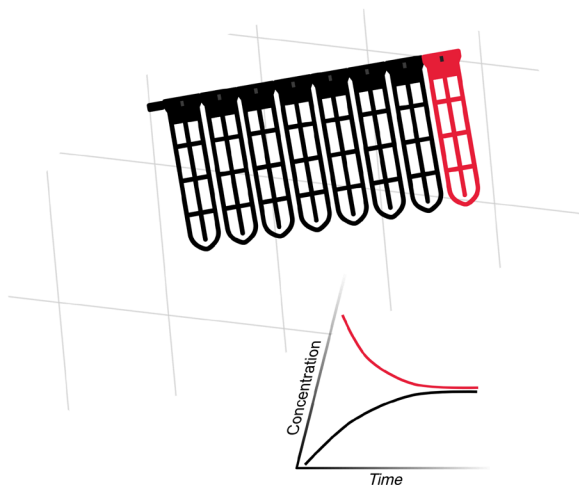


Xpress Micro Dialyzer

MD100

Manual & Data Sheet



General Information

The Xpress Micro Dialyzer MD100 is a unique system designed for processing large quantities of samples for a variety of applications. The MD100 is delivered ready-to-use in a 96 deep well plate with 12 sample cartridges where each cartridge has 8 single sample segments. The segments can also be easily separated to test single samples. The design of the MD100 allows 96 samples to be loaded and removed from the top of the device without removing the cartridges. The MD100 may be used with common single and multi-channel pipettes as well as automated liquid handling systems. It is compatible with the SBS microplate standard.



MD100 cartridge in 96-deep well plate

Product Features and Benefits

Feature	Benefit
Pipette in or remove sample from the top of the device without removing sample cartridges.	Simple to process large quantities of samples. Also easy to automate with liquid handling systems.
Regenerated cellulose membrane.	Low protein and hormone binding for high recovery of test samples.
High membrane surface area per sample.	Short incubation time to reach equilibrium - as quickly as 120 minutes.

Applications

- Protein and peptide sample purification (eg. desalting before mass spectrometry)
- Separation of free hormones from those bound to plasma proteins
- Optimization of protein renaturation with different renaturation buffers and steps
- Removal of dyes after protein labeling
- Protein sample rebuffering
- Protein in vitro translation
- Enzyme activity assays

◀ **Table 1**
Product overview

Specifications

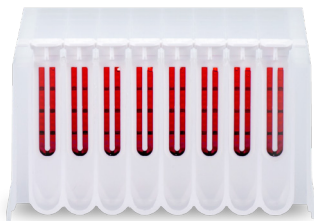
Application conditions

Sample volume	10–100 µl
Buffer volume	800–2,000 µl*
Temperature	1–60 °C
pH	4–8
Sample	Aqueous solutions only
Membrane	Low binding regenerated cellulose Contains glycerol to prevent embrittlement and traces of elements like sulphides and heavy metals
Cutoffs (MWCO)	2 3.5 6–8 12–14 20 140** kDa
Weight	140 g (12 cartridges MD100 in 96-deep well plate)
Dimensions	12.6×8.4×4.6 cm (L×W×H)

* maximum filled well with Micro Dialyzer

** Membrane: scienova Bio-Xell®

The Bio-Xell membrane is a natural product, which can cause higher variation ranges within and between the dialyzer lots. This results in different dialysis speeds. We recommend to extend the dialysis time. Recommended dialysis duration, e.g. dyes: 4 hrs.



◀ **Table 2**

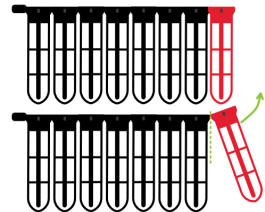
Specifications MD100

▼ **Figure 1**

Single Segments for single samples

Single samples

- Separate cartridge into single segments:
- Connection between segments (predetermined breaking point)
- Rotate upwards to separate one or more segments (optional)

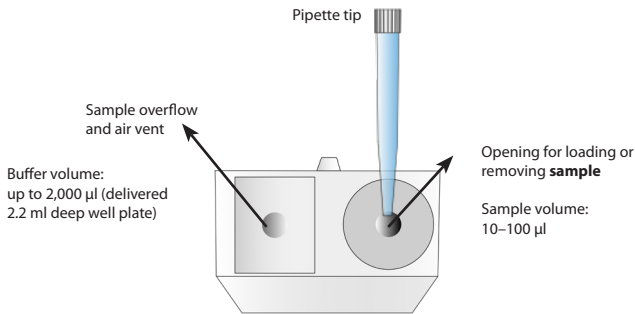


Micro Dialyzer MD100 cartridge
- view from front -

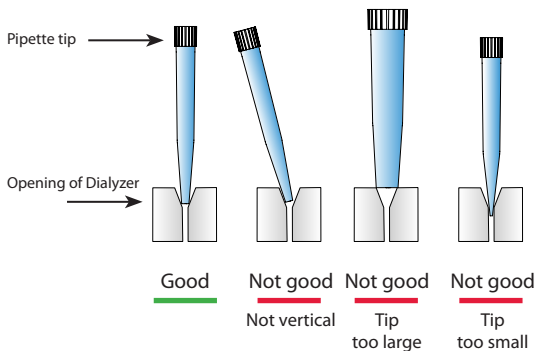
◀ **Figure 2**

MD100 cartridge in 96-deep well plate

Handling



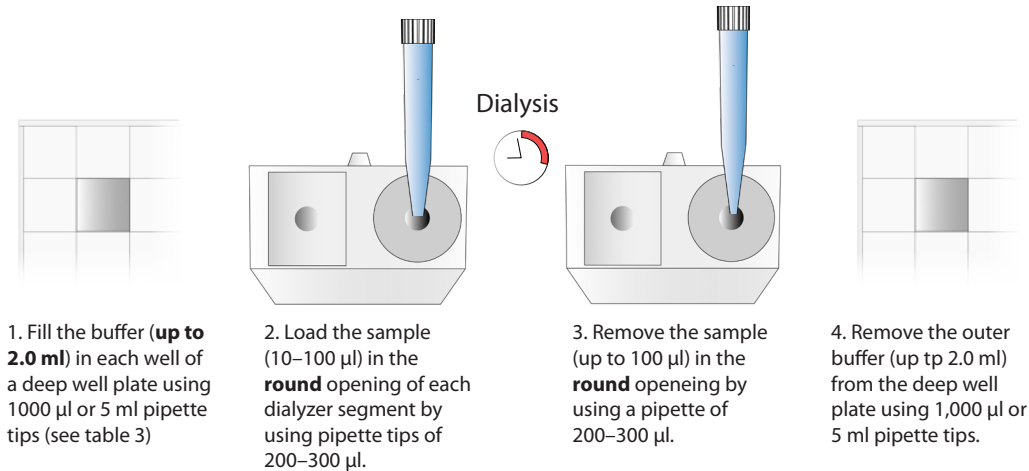
◀ **Figure 3**
Micro Dialyzer MD100 Segment
- view from above -



◀ **Figure 4**
Correct use of pipette tips

Note:
Pipette tips must be
vertical and inserted
firmly into opening.

▼ **Figure 5**
Usage of Micro Dialyzer MD100



Instructions

Preparing before usage

- The MD100 is delivered ready-to-use and no special preparation is necessary.
- It is recommended to start with loading the buffer into the deep well plate and then filling the sample into the Micro Dialyzers.

Loading buffer (cartridge)

- Recommended buffer volumes are listed in table 3.
- Fill the empty wells with required buffer volume.

Loading sample (cartridge)

- The openings are designed for the usage of commercial pipette tips (up to 300 µl).
- Designed for the use of commercial single channel or 8-channel pipettes and automated liquid handling systems.
- Fill pipette with 10 to 100 µl of sample and put the tips into the round opening (see figure 6).
- Carefully load the sample into the channel.

Starting dialysis

- Place the Micro Dialyzer cartridges into the buffer filled deep well plate.
- The dialysis starts simultaneously in each segment when they are placed into the buffer filled deep well plate.

Removing dialysed sample and buffer

- Remove sample by using the round opening.
- It is recommended to lift the cartridge to remove the buffer before removing the sample.
- Or transfer the cartridge to a second plate and remove sample from the cartridge and buffer from the first plate.

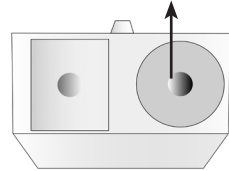
Video demonstration

For a demonstration of the Dialyzer Family visit our website:

<https://www.scienova.com>

▼ **Figure 6**

Opening for sample loading/removing



*Head of a MD100 dialyzer
(one segment)*



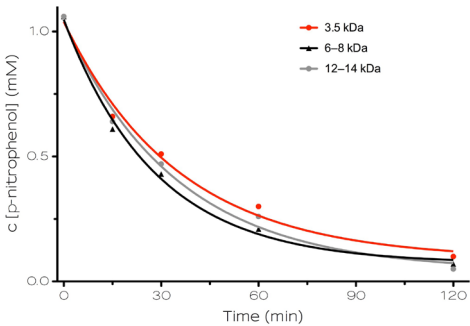
Recommendations

- When pipetting into and from sample openings, be sure pipette tip is firmly seated into opening. Also reduce pipetting speed slightly especially during sample introduction.
- Remove sample from MD100 by aspiration with blow-out (min. 30 µl) e.g. 100 µl sample - adjust pipette to 130 µl.
- If using sample volumes smaller than 100 µl with corresponding buffer volumes remove sample with blow-out .
- Samples less than 25 µl may have reduced volume recovery (less than 90 %).
- For effective dialysis, it is important to have the buffer level above the level of the sample (see table 3).
- At higher temperatures, dialysis takes place at a faster rate.

Sample volumes and corresponding buffer volumes

sample (µl)	buffer (µl)*	ratio
10	700	1:71
20	900	1:46
40	1,100	1:28.5
60	1,250	1:21.8
80	1,350	1:17.9
100	1,450	1:15.5

* in 96-deep well plate, liquid in sample chamber and sample channel on same level



◀ **Table 3**
Sample volumes and corresponding buffer volumes

◀ **Figure 7**
Example: Dialysis of the dye p-nitrophenol in Micro Dialyzer MD100, comparison of several molecular weight cutoffs

Conditions: MD100 in 96-deep-well-plate, MWCO 3.5, 6–8, 12–14 kDa, dialysis buffer: 1.8 ml PBS pH 7.4, sample: 100 µl 1 mM p-nitrophenol in PBS pH 7.4, method: buffer exchange intervall 30 min, determination method: Tecan Sunrise Photometer, λ=420 nm, performed at room temperature, non shaken, n=3.

Chemical Resistance

G	Acetonitrile	G	Acetic acid 25 %
G	Acetone	G	Acetic acid 96 %
G	Chloroform	G	Formic acid 25 %
G	Sodium hydroxide 32 %	N	Formic acid 100 %
G	Ethanol 70 %	L	Hydrochloric acid 10 %
G	Ethanol 98 %	N	Hydrochloric acid 25 %
G	Ethylacetate	N	Hydrochloric acid 37 %
G	Ethylene glycole	N	Hydrofluoric acid 50 %
G	Glycerol	N	Nitric acid 25 %
G	n-Hexane	N	Nitric acid 65 %
G	iso-Propanol	L	Phosphoric acid 25 %
G	Methanol 98 %	N	Phosphoric acid 85 %
G	Methylene chloride	N	Sulfuric acid 98%
G	1-Propanol	L	Ammonium hydroxide 1 N
G	Tetrahydrofuran	L	Ammonium hydroxide 25 %
G	Toluene	L	Potassium hydroxide 1 N
G	Hydrogen peroxide 30 %	N	Potassium hydroxide 32 %
		L	Sodium hydroxide 1 N
		N	Sodium hydroxide 32 %

G	Good chemical resistance
L	Limited chemical resistance, e.g. pore size cannot be guaranteed
N	No chemical resistance, use not recommended

Note

Tested MWCO:

3.5 | 6–8 | 12–14 kDa

Incubation: 18 h

Determination Method: Optical integrity and leak-tightness to air pressure

◀ **Table 4**

Chemical resistance of the MD100

[illegible]

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