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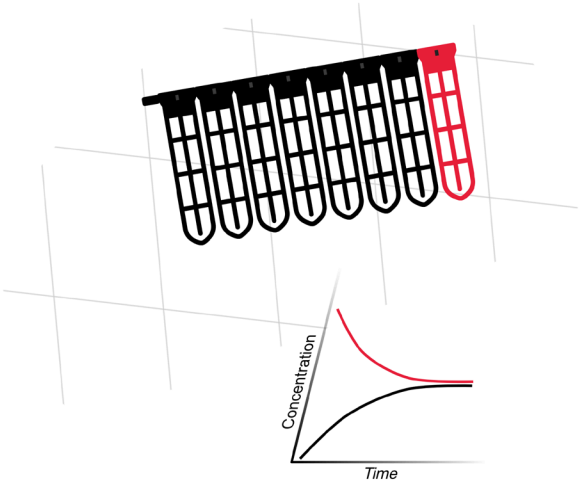
Xpress Micro Dialyzer
MD100
Manual & Data Sheet



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

◄ ***Table 1***
Product overview

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 hormons 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

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®*

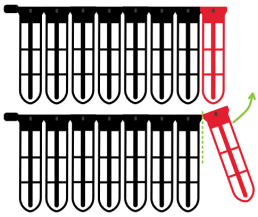
The Bio-Xell membrane is a natural product, which can cause higher variation ranges within and between the dialyzer lots. This results in different dialysis speeds. We recommend to extend the dialysis time. Recommended dialysis duration, e.g. dyes: 4 hrs.

◄ ***Table 2***
Specifications MD100

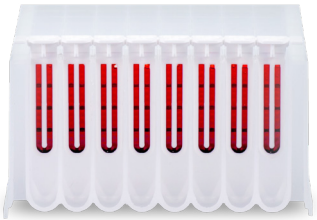
▼ ***Figure 1***
Single Segments for single samples

Single samples

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

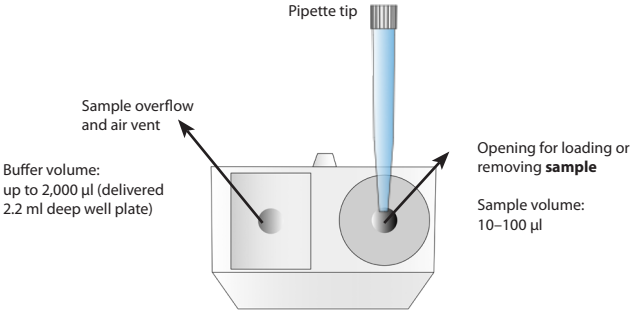


Micro Dialyzer MD100 cartridge
- view from front -

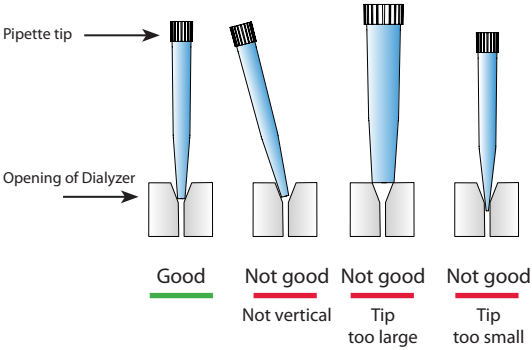


◄ ***Figure 2***
MD100 cartridge in 96-deep well plate

Handling



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

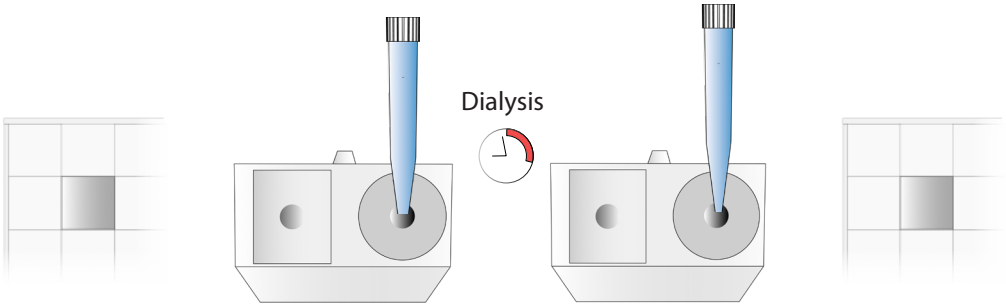


◄ ***Figure 4***
Correct use of pipette tips

Note:

Pipette tips must be vertical and inserted firmly into opening.

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



1. Fill the buffer (**up to 2.0 ml**) in each well of a deep well plate using 1000 µl or 5 ml pipette tips (see table 3)

2. Load the sample (10–100 µl) in the **round** opening of each dialyzer segment by using pipette tips of 200–300 µl.

3. Remove the sample (up to 100 µl) in the **round** openeing by using a pipette of 200–300 µl.

4. Remove the outer buffer (up tp 2.0 ml) from the deep well plate using 1,000 µl or 5 ml pipette tips.

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

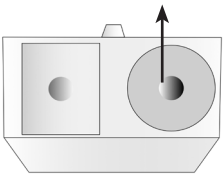
- Place the Micro Dialyzer cartridges into the buffer filled deep well plate.
- The dialysis starts simultaneously in each segment when they are placed into the buffer filled deep well plate.

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.

▼ ***Figure 6***

Opening for sample loading/removing



Head of a MD100 dialyzer (one segment)

Video demonstration

For a demonstration of the Dialyzer Family visit our website:

https://www.scienova.com

Recommendations

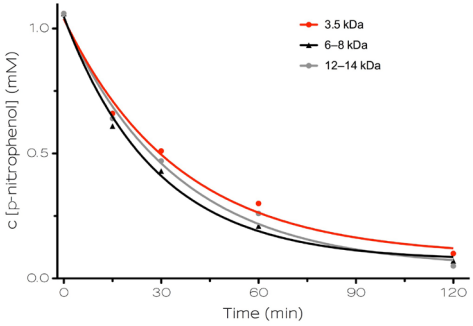
- When pipetting into and from sample openings, be sure pipette tip is firmly seated into opening. Also reduce pipetting speed slightly especially during sample introduction.
- Remove sample from MD100 by aspiration with blow-out (min. 30 µl) e.g. 100 µl sample - adjust pipette to 130 µl.
- If using 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

◄ ***Table 3***
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**



◄ ***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 shaked, 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

◄ ***Table 4***
Chemical resistance of the MD100

Note

Tested MWCO:
3.5 | 6–8 | 12–14 kDa
Incubation: 18 h
Determination Method: Optical integrity and leak-tightness to air pressure

Notes

This product Micro Dialyzer MD100 ("Product") is warranted to operate or perform substantially in conformance with published Product specifications in effect at the time of sale, as set forth in the Product documentation, specifications and/or accompanying package inserts ("Documentation") and to be free from defects in material and workmanship. Unless otherwise expressly authorized in writing, Products are supplied for research use only. No claim of suitability for use in applications regulated by FDA is made. The warranty provided herein is valid only when used by properly trained individuals. Unless otherwise stated in the Documentation, this warranty is limited to one year from date of shipment when the Product is subjected to normal, proper and intended usage. This warranty does not extend to anyone other than the original purchaser of the Product ("Buyer").

No other warranties, express or implied, are granted, including without limitation, implied warranties of merchantability, fitness for any particular purpose, or non infringement. Buyer's exclusive remedy for non-conforming Products during the warranty period is limited to replacement of or refund for the non-conforming Product(s).

There is no obligation to replace Products as the result of (i) accident, disaster or event of force majeure, (ii) misuse, fault or negligence of or by Buyer, (iii) use of the Products in a manner for which they were not designed, or (iv) improper storage and handling of the Products.

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