Slide-A-Lyzer™ G3 Dialysis Cassettes

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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™ Slide-A-Lyzer™ G3 Dialysis Cassettes are single-use devices designed for maximum performance and convenience. They are used in a wide range of applications, including low molecular weight contaminant removal, buffer exchange, desalting, and concentration. Sample loading and removal are easily accomplished by using a serological pipette or hypodermic needle (optional) attached to a syringe. The built-in air chambers at the top of the unit provide buoyancy and vertical orientation to the cassettes during the dialysis process. The cassettes' membranes are composed of low-binding regenerated cellulose for maximum sample recovery while maintaining sample purity. Cassettes are manufactured using clean-room conditions to ensure units are contaminant-free.

Contents and storage

Component size	Amount	Membrane molecular weight cut-off					Storage
		2K MWCO	3.5K MWCO	10K MWCO	(Irradiated)[1] 10K MWCO	20K MWCO	
3 mL (1–3 mL)	10 cassettes	A52961	A52966	A52971	A52981	A52976	Room temperature
15 mL (5–15 mL)	8 cassettes	A52962	A52967	A52972	A52982	A52977	
30 mL (10–30 mL)	6 cassettes	A52963	A52968	A52973	A52983	A52978	
70 mL (25–70 mL)	6 cassettes	A52964	A52969	A52974	A52984	A52979	
125 mL (65–125 mL)	6 cassettes	A52965	A52970	A52975	A52985	A52980	

[1] The electron beam (E-Beam) irradiation process uses high-energy electrons for sterilization and contamination control of single-use medical devices.

Before you begin

- For loading and retrieving the sample from the dialysis cassette, use the device listed in the table below or a syringe with an attached needle.

Cassette Size	Loading/Removal Device	Source
3 mL	1 mL serological pipette	13-676-10B
15 mL, 30 mL, 70 mL	10 mL serological pipette	13-678-11E
125 mL	25 mL serological pipette	13-678-14B

- Over-filling the cassette will result in sample loss. Do not exceed the indicated volume for the cassette.
- Determination of appropriate sample volume. Certain dialysis conditions can cause an influx of water during dialysis (e.g., 2 M $(NH_4)_2SO_4$, 20% sucrose, or 8 M guanidine). If the cassette swells, use a syringe to remove some of the sample and relieve pressure before opening the cap, or some sample could be lost. Performing serial dialysis using buffers with decreasing concentration of solutes (salt) will prevent the osmotic pressure from swelling the membrane (e.g., dialyze a 5 M NaCl sample against a buffer with 0.5 M NaCl, then dialyze against 0.15 M NaCl). Please refer to the recommended volumes in our chemical compatibility guide at the end of this instruction guide.

Use a serological pipette with the dialysis cassette

Hydrate membrane

1. Remove the cassette from its protective pouch. To prevent membrane contamination, handle the cassette by the plastic frame only. Do not touch the membrane with ungloved hands. The cassette may be placed upright on its bottom end on a flat surface.

2. Immerse the cassette in dialysis buffer for 2 minutes (Figure 1). It may be necessary to hold the cassette under the surface for the hydration step as the air inside the cassette may cause it to float sideways.

   Note: Hydration increases membrane flexibility and allows it to adjust more readily to the sample loading and removal of excess air. To achieve maximum flexibility for the 2K membrane, hydration for 4 minutes may be required.

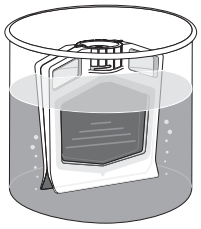

Figure 1 Hydrate the membrane.

3. Remove cassette from the buffer. To remove excess buffer, gently tap the cassette on a paper towel. Turn the cassette upside down and tap again. **Do not blot the membrane.**

Add sample

1. Open the cassette by gently twisting the cap counterclockwise (Figure 2).

2. Using an appropriate device (refer to “Before you begin” on page 1), add the sample to the cassette, slowly withdrawing the pipette while dispensing. Do not overload the cassette (Figure 3).

   Note: To load the cassette, insert the serological pipette fully into the device and slowly remove the pipette while filling. Repeat as needed.

3. Remove the excess air in the cassette by simultaneously pressing the membrane gently on both sides using your gloved thumb and forefinger and insert the cap (Figure 4).

   Note: The minimum sample volume required for the 3-, 15-, 30-, 70-, and 125-mL cassettes is approximately ½ of the cassette’s maximum volume.

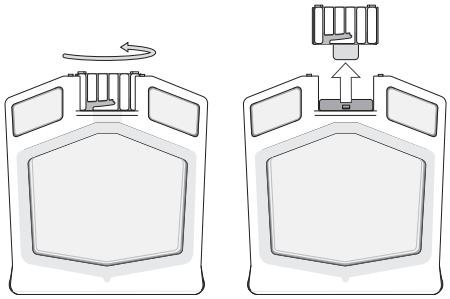

Figure 2 Open the cassette.

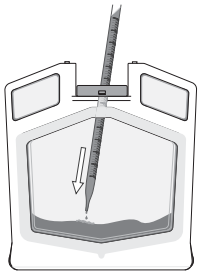

Figure 3 Add sample.

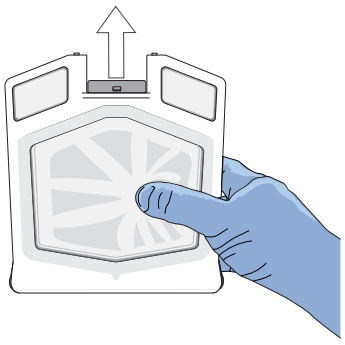

Figure 4 Remove most of the air.

4. Insert cap and lock by gently twisting it clockwise until the arrows align and a firm stop is felt (Figure 5).

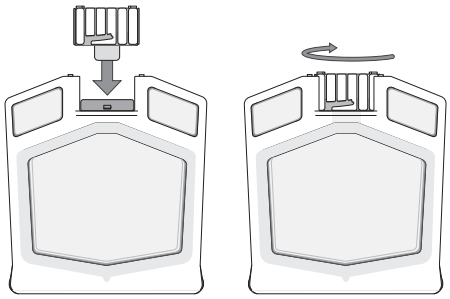

Figure 5 Lock the cap.

Dialyze sample

1. Float cassette vertically in the dialysis buffer and stir gently to avoid creating a vortex that might pull the cassette down in contact with the stir bar.

2. Dialyze for sufficient time to remove low molecular weight compounds for the specific downstream application. Use a volume of at least 20X sample volume of new dialysis buffer at each change. A typical dialysis procedure is as follows: Dialyze for 2–3 hours at room temperature or 4°C. Change the dialysis buffer and dialyze for another 2–3 hours. Change the dialysis buffer and dialyze overnight. For devices containing a 2K MWCO membrane, additional time or one additional dialysis step may be required.

Remove sample

If the cassette is swollen, recover the sample using a syringe as described in “Recover sample” on page 4. Opening a swollen cassette will cause the sample to rise into the loading port and result in the loss of a portion of the sample.

1. Remove cassette from buffer. To remove excess buffer, gently tap the cassette on a paper towel. Turn the cassette upside-down and tap again. **Do not blot the membrane.**

2. Open the cassette by gently turning the cap counterclockwise (Figure 2).

3. Using an appropriately sized serological pipette, retrieve the sample by slowly aspirating while inserting pipette toward bottom of the cassette (Figure 6).

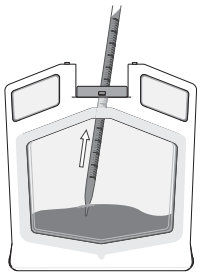

Figure 6 Remove the sample.

Use a syringe with the dialysis cassette

Hydrate membrane

1. Remove the cassette from its protective pouch. To prevent membrane contamination, handle the cassette by the plastic frame only. Do not touch the membrane with ungloved hands. The cassette may be placed upright on the bottom end on a flat surface.

2. Immerse cassette in dialysis buffer for 2 minutes to hydrate the membrane (Figure 1). It may be necessary to hold the cassette under the surface for the hydration step as the air inside the cassette may cause it to float sideways.

   Note: Hydration increases membrane flexibility and allows it to adjust more readily to the sample loading and removal of excess air. To achieve maximum flexibility for the 2K membrane, hydration for 4 minutes may be required.

3. Remove cassette from buffer. To remove excess buffer, gently tap the cassette on a paper towel. Turn the cassette upside down and tap again. Do not blot the membrane

Add sample

CAUTION! To avoid injury from the needle, do not remove the needle's plastic sheath until ready to use. The cassette is designed for a maximum 18-gauge beveled needle.

Note: The penetrable septum can be pierced up to 5 times for the 3-mL cassettes, and up to 10 times for 15-, 30-, 70-, and 125-mL cassettes.

1. Fill the syringe with the sample, leaving a small amount of air in the syringe.
2. Penetrate the septum at the center of the cassette's cap. Overextending the needle into the sample chamber may puncture the membrane (Figure 7). Slowly extend the needle minimally into the chamber so that the open end of the needle is barely visible.
3. Inject approximately half of the sample (Figure 8). For samples with high protein concentrations (e.g., 10 mg/mL), fill the cassette slowly to avoid foaming
4. Withdraw some air from the cassette by pulling back on the syringe piston and then inject remaining sample.
5. With the needle inserted into the cassette chamber, withdraw remaining air to compress the membrane windows so the sample contacts the greatest possible membrane surface area. Use caution to prevent the needle from contacting the membrane. A small amount of air left inside the cassette will not significantly affect dialysis efficiency.
6. Remove needle from the cassette's cap while retaining air in the syringe. The septum will reseal, and the sample chamber will contain minimal or no air.

Figure 7 Needle positioned too far inside cassette.

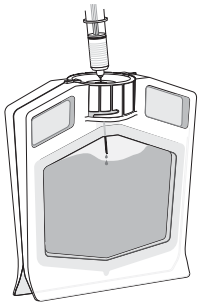

Figure 8 Add sample.

Dialyze sample

1. Float cassette vertically in the dialysis buffer and stir gently to avoid creating a vortex that might pull the cassette down in contact with the stir bar.
2. Dialyze for an amount of time sufficient to remove low molecular-weight compounds for the specific downstream application. Use a volume of at least 20X sample volume of new dialysis buffer at each change. For devices containing a 2K MWCO membrane, additional time or one additional dialysis step may be required.

   A typical dialysis procedure is as follows:

   1. Dialyze for 2-3 hours at room temperature or 4°C.
   2. Change the dialysis buffer and dialyze for another 2-3 hours.
   3. Change the dialysis buffer and dialyze overnight.

Recover sample

1. Penetrate gasket with the needle through the cap and slowly inject air into the sample chamber to the maximum allowed sample volume. This will also help separate the membranes and prevent accidental membrane needle puncture (Figure 9).

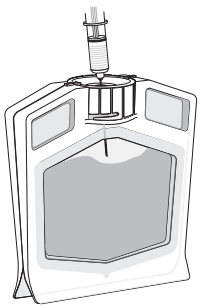

Figure 9 Add air to the cassette.

2. With the needle in place, turn the unit so the needle is at the bottom. Allow sample to collect near the port and withdraw sample into the syringe (Figure 10).

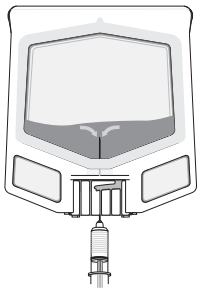

Figure 10 Remove the sample.

Additional information

Cassette chemical compatibility

- For optimal results, use the Slide-A-Lyzer™ G3 Dialysis Cassettes at 4–25°C with standard laboratory solutions or samples within a pH range of 5–9 and a molar concentration of ≤2 M.
- Do not use cassettes with samples or buffers containing alcohols, aromatic chlorinated hydrocarbons, or strong acids and bases. Combining these solution types with the plastic cassette frame may leach, dissolve, deform, or otherwise cause failure. Test compatibility with solvents or questionable solutions before attempting to dialyze valuable samples.
- Do not use the Slide-A-Lyzer™ G3 Dialysis Cassettes with samples or buffers with very high density, viscosity or molarity. An excessive influx of water may occur during dialysis, which may cause a membrane to dislodge from the device and result in sample loss (see instructions above and Table 1 for guidelines).
- Do not use cassettes with ammonium sulfate solutions >2 M.

Table 1 Slide-A-Lyzer™ G3 Dialysis Cassettes chemical compatibilities.

Chemical[1]	Compatible Volume For Each Cassette Size (mL)				
	3 mL	15 mL	30 mL	70 mL	125 mL
Sucrose, 20%	1.50	7.50	15.0	35.0	62.5
Glycerol, 20%	1.50	7.50	15.0	35.0	62.5
Ammonium sulfate, 2 M	1.50	7.50	15.0	35.0	62.5
Sodium chloride, 2 M	1.50	7.50	15.0	35.0	62.5
Guanidine HCl, 8 M	1.50	7.50	15.0	35.0	62.5
DMSO, 2%	2.70	13.50	27.0	63.0	112.5
Glycine, 0.1M (pH 2)	3.00	15.00	30.0	70.0	125.0
Ethanol, 20% (5-minute rinse)	3.00	15.00	30.0	70.0	125.0

[1] Chemical compatibilities vary throughout the Slide-A-Lyzer™ Dialysis product line. Confirm compatibilities of individual chemicals with the appropriate product.

Membrane specifications

Table 2 Slide-A-Lyzer™ G3 Dialysis Cassettes membrane specifications.

MWCO	Glycerol Content	Sulfur Content	Heavy Metals Content
2K	None	0.169%	Trace
3.5K	None	0.10–0.15%	
10K	~21%	0.10–0.15%	
20K	None	0.04%	

Troubleshooting

Observation	Possible cause	Recommended action
Difficulty removing air	Membrane was not hydrated.	Immerse cassette in dialysis solution for 2 minutes before adding sample.
Sample leaked from cassette	There was a hole in the membrane.	Before adding sample, test the membrane for holes using purified water.
	The needle was inserted too deep and punctured the membrane during sample loading, air removal, or sample removal.	Insert only the bevel portion of the needle into the cassette.
Filled cassette does not float in dialysis solution	Exceeded recommended cassette capacity. See “Before you begin” on page 1.	Reduce sample volume to <60% of the cassette's total volume.
		Allow filled cassette to remain in dialysis solution without stirring until sample partially equilibrates and cassette rises to the surface.
Cassette does not vertically float	There was additional air in the cassette.	Remove excess air inside the cassette.
		Remove the cassette from the buffer, then place back into the dialysis buffer by having the bottom corner enter the solution first.

Related products

- Slide-A-Lyzer™ Cassettes, mini devices, and flasks (https://www.thermofisher.com/search/browse/category/us/en/90222241/dialysis+and+desalting)
- Zeba™ Spin Desalting Columns (https://www.thermofisher.com/search/browse/category/us/en/90222241/dialysis+and+desalting)
- Pierce™ Protein Concentrators (https://www.thermofisher.com/search/browse/category/us/en/90179033/ultrafiltration+filters+and+devices)
- Pierce™ Detergent Removal Spin Columns and Kits (https://www.thermofisher.com/search/browse/category/us/en/90223022/protein+purification+reagents+and+kits)
- Protease and phosphatase inhibitor cocktails and tablets (https://www.thermofisher.com/search/browse/category/us/en/90223020)

Limited product warranty

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For descriptions of symbols on product labels or product documents, go to thermofisher.com/symbols-definition.

Revision history: Pub. No. MAN0027985 D.0

Revision	Date	Description
D.0	17 April 2023	Contents and storage table corrected for component volumes and adding irradiated cassette column.
C.0	10 January 2023	Contents and storage table corrected.
B.0	29 November 2022	Two catalog numbers were corrected in the contents and storage table.
A.0	30 June 2022	Initial release.