INSTRUCTIONS

Slide-A-Lyzer® Dialysis Cassette, 12-30mL

66130 66230 66830 66456 66030

1508.5

Number	Description
66230	**Slide-A-Lyzer Dialysis Cassette, 2K MWCO, 12-30mL,** 6 each
66130	**Slide-A-Lyzer Dialysis Cassette, 3.5K MWCO, 12-30mL,** 6 each
66830	**Slide-A-Lyzer Dialysis Cassette, 10K MWCO, 12-30mL,** 6 each
66456	**Slide-A-Lyzer Dialysis Cassette, Gamma Irradiated, 10K MWCO, 12-30mL,** 6 each
66030	**Slide-A-Lyzer Dialysis Cassette, 20K MWCO, 12-30mL,** 6 each

Note: The 12-30mL Slide-A-Lyzer Dialysis Cassette has an air chamber that allows the cassette to float provided the recommended sample volume and density are not exceeded.

Storage: Upon receipt store product at room temperature. Product shipped at ambient temperature.

Introduction

The Thermo Scientific Slide-A-Lyzer Dialysis Cassette is a convenient means to process samples for low molecular weight contaminant removal, buffer exchange, desalting and concentration. Slide-A-Lyzer Cassettes are manufactured using clean room conditions to ensure units are contaminant-free. The cassette membrane is composed of low-binding regenerated cellulose and features a hermetically sealed chamber to maintain the highest possible sample retention. Sample introduction and removal are easily accomplished by penetrating the gasket with a hypodermic needle attached to a syringe. When the needle is removed, the gasket reseals, ensuring that no sample is lost from the cassette during dialysis. The 12-30mL Slide-A-Lyzer Cassette has an air chamber at the top of the unit enabling the cassette to float, provided the recommended sample volume and density are not exceeded.

Procedure for using the Slide-A-Lyzer Dialysis Cassette

Note: Although quality assurance standards are stringent, there is always a slight chance of leakage. When dialyzing valuable samples, immediately before adding the sample, check the cassette for leaks by injecting and removing sterile ultrapure water. Perform cassette manipulations over a clean, dry work surface.

A. Hydrate Membrane

1. Remove the cassette from its protective pouch. To prevent contamination, handle the cassette by the plastic frame only. Do not touch the membrane with ungloved hands. The 12-30mL Slide-A-Lyzer Cassette may be placed on end on a flat surface.
2. Hold the float chamber at the top of the unit and immerse cassette in dialysis buffer for 2 minutes to hydrate membrane (Figure 1).

   Note: Hydration increases membrane flexibility and allows it to adjust more readily to the positive pressure created as the sample is added and to the vacuum created when air is removed.
3. Remove cassette from buffer and gently tap the cassette edge on a paper towel to remove excess liquid. Do not blot the membrane.

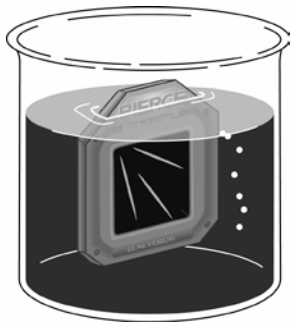

Figure 1. Hydrate the membrane.

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B. Add Sample

1. Determine the appropriate sample volume. If the sample density is ≥ 1.15g/mL, such as protein in saturated 4M $(NH_4)_2SO_4$, 45% sucrose or 8M guanidine, use ≤ 18mL of sample to allow for the influx of water during equilibration with the dialysis buffer and to ensure the cassette remains afloat. For less dense solutions, such as protein in 6M guanidine, 8M urea, 30% sucrose or standard buffers, use ≤ 30mL of sample.
2. Fill the syringe with the sample, leaving a small amount of air in the syringe. For large sample volumes, fill the syringe without the needle in place.

   Caution: To avoid injury from the hypodermic needle, do not remove the plastic sheath from the needle until you are ready to use it. The cassette is designed for 18-gauge, 1-inch beveled needles (21-gauge, 1-inch beveled needles may also be used).
3. Orient the needle bevel sideways and penetrate the gasket through one of the syringe ports at a corner of the cassette. Slowly extend the needle into the cavity to a minimal extent (Figure 2) and inject approximately half of the sample. For samples with high protein concentrations (e.g., 10mg/mL), fill the cassette slowly to avoid foaming.

   Caution: Overextending the needle into the cavity may puncture the membrane.
4. Withdraw some air from the cassette by pulling up on the syringe piston and then inject remaining sample (Figure 3).
5. With the syringe needle inserted in the cassette cavity, withdraw remaining air from the cavity to compress the membrane windows so the sample contacts the greatest surface area (Figure 4). Use caution to prevent the needle from contacting the membrane. Minimal air left inside the cassette will not significantly affect dialysis efficiency.
6. Remove the syringe needle from the cassette while retaining air in the syringe. The gasket will reseal and the membrane cavity will contain minimal or no air. Mark the cassette corner with a permanent marker or record the number of the injected port.

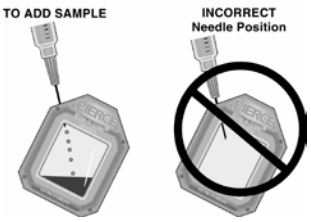

Figure 2. Extend the needle into the cavity to a minimal extent and inject half of the sample.

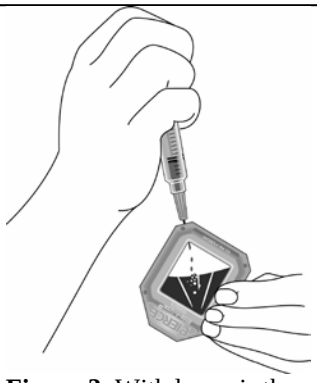

Figure 3. Withdraw air then inject the remaining sample.

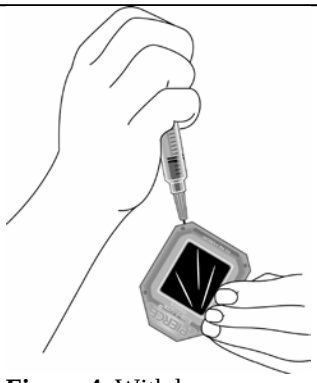

Figure 4. Withdraw remaining air to compress the membrane window.

C. Dialyze Sample

1. Float cassette in the dialysis solution of choice and stir gently to avoid creating a vortex that might pull the cassette down in contact with the stir bar. For dense samples (≥ 1.15g/mL), use a solution with ≥ 0.25M buffer salts for the first 2 hours of dialysis.
2. Dialyze for the amount of time sufficient to remove low molecular weight compounds for the specific downstream application. Using the dialysis buffer at 200-500 times the volume of the sample, a typical dialysis procedure is as follows:

   1.) Dialyze for 2 hours at room temperature or 4°C.

   2.) Change the dialysis buffer and dialyze for another 2 hours.

   3.) Change the dialysis buffer and dialyze overnight at 4°C.

D. Remove Sample

Note: Avoid penetrating guide ports more than once to prevent gasket coring and subsequent sample loss.

1. Fill syringe with approximately 15mL of air and penetrate gasket with the needle through a top, unused syringe guide port (Figure 5).
2. Slowly discharge air into cassette cavity to separate membranes, which prevents needle penetration of the membrane.
3. With the needle in place, turn the unit so that needle is on the bottom. Allow sample to collect near the port and withdraw sample into the syringe (Figure 5).

Figure 5. Inject air into the cassette. With needle in place, rotate cassette and remove sample.

Troubleshooting

Problem	Possible Cause	Solution
Difficulty removing air	Membrane not hydrated	Immerse cassette in dialysis solution for 2 minutes before injecting sample
Sample leaked from the cassette	Needle inserted too deep and punctured the membrane, particularly during air and sample removal	Insert only the bevel portion of the needle into the cassette
Filled cassette does not float in dialysis solution	Recommended cassette capacity exceeded (see Steps B1 and C1 in the procedure)	Reduce sample volume to ≤ 18mL
		Transfer filled cassette to higher density dialysis solution (with ≥ 0.25M buffer salts)
		Allow filled cassette to remain in dialysis solution without stirring until sample partially equilibrates and cassette rises to the surface
		Insert cassette into a gray Thermo Scientific Slide-A-Lyzer Buoy (Product No. 66432)

Additional Information

A. Slide-A-Lyzer Membrane Specifications

MWCO	Glycerol Content	Sulfur Content	Heavy Metals Content
2K	None	0.169%	Trace
3.5K	None	0.1-0.15%	Trace
10K	~21%	0.1-0.15%	Trace
20K	None	0.04%	Trace

B. Slide-A-Lyzer Dialysis Membrane Chemical Compatibility

Note: The following ratings refer to chemical compatibility with the regenerated cellulose dialysis membrane. The plastic cassette frame and silicone-like gasket may leach, dissolve, deform or otherwise fail in certain strong acids and bases, alcohols, aromatic and chlorinated hydrocarbons and other chemicals (see asterisks in table) that are listed as being compatible with the dialysis membrane. Test solvents with a cassette before attempting to dialyze valuable samples.

Acetic acid, 25%	G	Ethyl acetate	G*	Nitric acid, < 5%	G
Acetone	G*	Ethylene glycol	G	Nitric acid, > 25%	N
Ammonium hydroxide, 1N	F	Formaldehyde solution, 30%	G	Perchloric acid, 25%	N
Ammonium hydroxide, 25%	F	Formic acid, 25%	G*	Phosphoric acid, 25%	F
Ammonium sulfate, 1M	G	Formic acid, 100%	G*	Potassium hydroxide, 1N	N
Amyl acetate	G*	Hexane	G*	Propylene glycol	G
Benzene	G*	Hydrochloric acid, < 5%	G	Sodium hydroxide, 0.1N	G
Benzyl alcohol	G*	Hydrochloric acid, > 25%	N	Sodium hydroxide, 1N	F
Butanol	G*	Hydrofluoric acid, 25%	F	Sulfuric acid, < 5%	G
Butyl acetate	G*	Hydrogen peroxide, 30%	G	Sulfuric acid, > 25%	N
Carbon tetrachloride	G*	Iodine solutions	N*	Tetrahydrofuran	G
Chloroform	G*	Isopropyl alcohol	G	Toluene	G*
Dimethylformamide	F*	Methanol, < 50%	G*	Trichloroacetic acid, < 10%	F
Dioxane	F	Methyl acetate	G*	Trichloroacetic acid, > 25%	N
Ethanol, 70%	G	Methyl ethyl ketone	G*	Trichloroethylene	G*
Ethanol, 95%	G	Methylene chloride	G*	Xylene	G*

Legend: G = Good resistance; F = Fair resistance (pore swelling may occur); N = Not recommended
*Chemicals known to adversely affect the plastic cassette frame; brief or dilute exposure may be compatible.

C. Slide-A-Lyzer Dialysis Cassette Product Numbers and Descriptions

Cassette Size	Membrane Molecular Weight Cutoff (MWCO) 2000	3500	7000	10,000	20,000
0.1-0.5mL*	66205 (10-pk)	66333 (10-pk) 66335 (Kit)	66373 (10-pk) 66375 (Kit)	66383 (10-pk) 66385 (Kit) 66454 (GI)	66005 (10-pk)
0.5-3mL	66203 (10-pk)	66330 (10-pk) 66332 (Kit)	66370 (10-pk) 66372 (Kit)	66380 (10-pk) 66382 (Kit) 66455 (GI)	66003 (10-pk)
3-12mL	66212 (8-pk)	66110 (8-pk) 66107 (Kit)	66710 (8-pk) 66707 (Kit)	66810 (8-pk) 66807 (Kit) 66453 (GI)	66012 (8-pk)
12-30mL	66230 (6-pk)	66130 (6-pk)	NA	66830 (6-pk) 66456 (GI)	66030 (6-pk)

Kits include package of cassettes, plus an equal number of float buoys, syringes and needles.
GI = Gamma (γ) Irradiated package of cassettes.
NA = Not Available.
*2K MWCO cassettes in this size are best used for 0.2-0.5mL samples.

D. Information Available from the Web Site

- Tech Tip #20: Dialysis: an overview
- Tech Tip #14: Perform labeling and other reactions in Slide-A-Lyzer Dialysis Cassettes
- Tech Tip #43: Protein stability and storage
- Tech Tip #6: Extinction coefficients guide
- Tech Tip #19: Remove detergent from protein samples

Thermo Scientific Slide-A-Lyzer Accessories

66494 **Slide-A-Lyzer Syringe (1mL) and 18-Gauge Needles,** 10 each

66490 **Slide-A-Lyzer Syringe (5mL) and 18-Gauge Needles,** 10 each

66493 **Slide-A-Lyzer Syringe (20mL) and 18-Gauge Needles,** 10 each

66430 **Slide-A-Lyzer Buoys (White),** for 0.5 and 3mL cassettes, 10 pack

66432 **Slide-A-Lyzer Buoys (Grey),** for 3-12mL cassettes only, 8 pack

66431 **Slide-A-Lyzer Carousel Buoy,** for 0.5 and 3mL cassettes (1 each)

87776 **Pierce Detergent Removal Spin Columns, 125µL,** 25 columns, for 10-25µL samples

87777 **Pierce Detergent Removal Spin Columns, 0.5mL,** 25 columns, for 25-100µL samples

87778 **Pierce Detergent Removal Spin Columns, 2mL,** 5 columns, for 150-500µL samples

87779 **Pierce Detergent Removal Spin Columns, 4mL,** 5 columns, for 500-1000µL samples