

СИСТЕМА ОЧИСТКИ AMICON PRO



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Amicon® Pro Purification System

Introduction

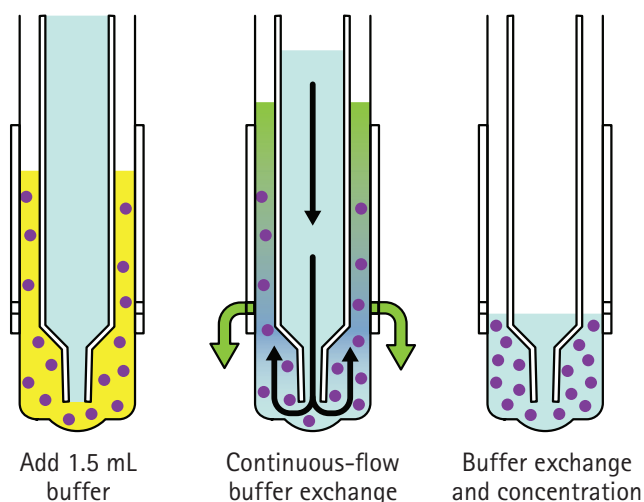
Affinity purification is based on the specific interaction of a target molecule with an immobilized ligand. For recombinant proteins, the addition of fusion tags enables affinity purification by a number of strategies, including resin-based matrices. Current small-scale centrifugal-based strategies are labor intensive, requiring multiple spins at each step and numerous sample transfers between different devices. This is particularly true in cases where samples must be dialyzed (buffer exchange) and/or concentrated prior to downstream application. The Amicon® Pro Purification System streamlines this process by providing a single adaptable centrifugal device capable of performing all steps in the purification scheme. When used in combination with affinity resins, this system offers a robust, time-effective solution for small-scale purification of affinity-tagged proteins.

By condensing the entire purification workflow into one device, the Amicon® Pro Purification System eliminates the need for multiple sample transfers, thereby minimizing protein loss. The large exchange reservoir accommodates a range of volumes (up to 10 mL) as well as reducing the need for multiple spin steps during the wash and elution phases. Direct coupling to an Amicon® Ultra-0.5 device further provides simultaneous concentration during the elution phase; a feature particularly advantageous for depletion or enrichment applications. Lastly, the Amicon® Pro Purification System offers highly efficient diafiltration, permitting buffer exchange and concentration of the final purified sample in a single 15 minute spin.

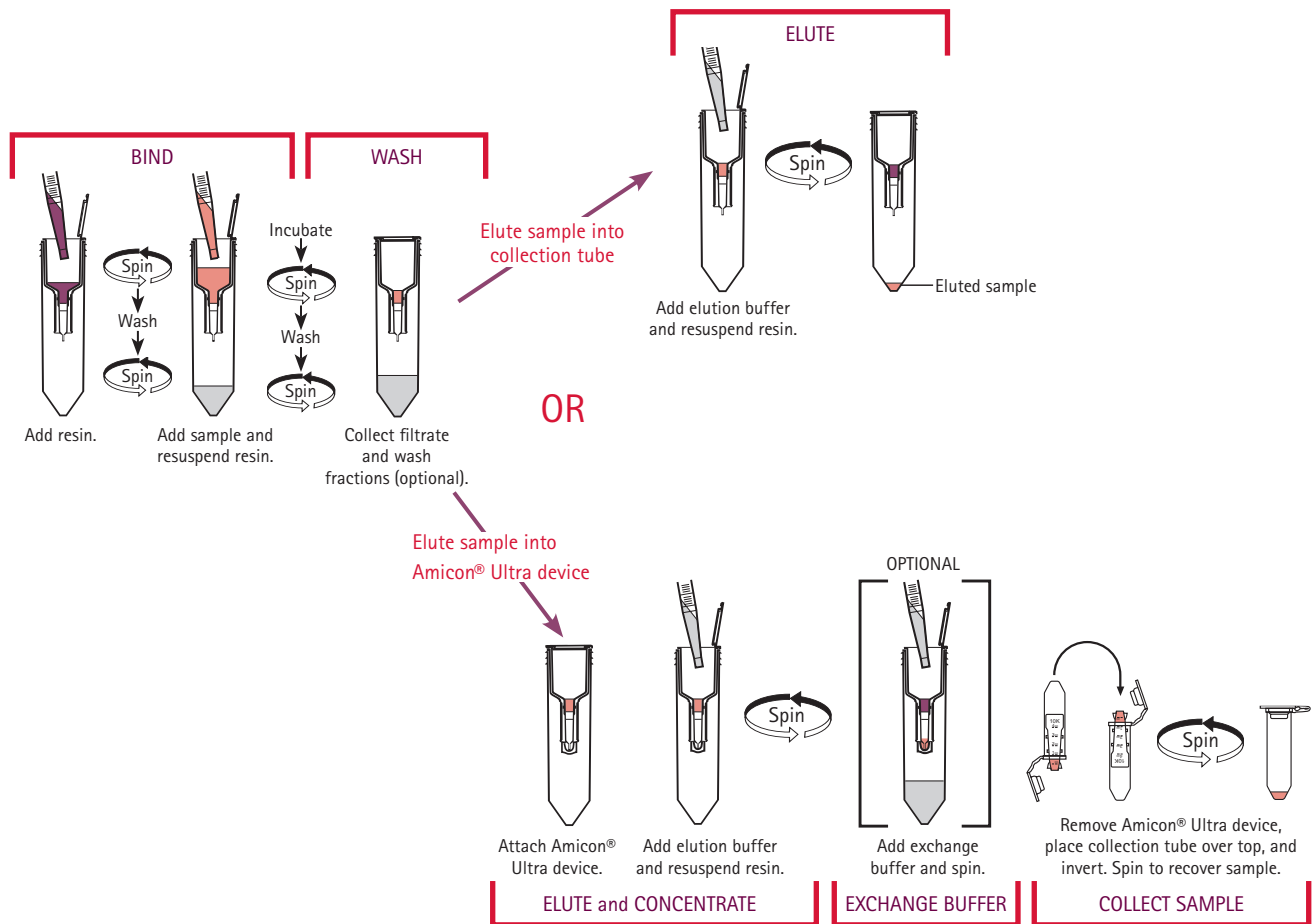
Design Features

The Amicon® Pro system builds on key attributes of the Amicon® Ultra-0.5 device; fast, efficient sample concentration with minimal membrane fouling or sample loss. The lower portion of exchange device is designed to exactly match the contours of Amicon® Ultra-0.5 mL filter. This adaptation facilitates optimal exposure of the filtering membrane's active surface area while reducing space (volume) between the plastic sidewalls. The tip is also tapered to maximize the external-to-internal volume ratio, ensuring that fresh buffer is slowly but consistently metered in, mixed with sample, then forced across the membrane boundaries. This continuous process decreases the likelihood of protein aggregation or precipitation. Moreover, the upper reservoir of the Amicon® Pro device is designed to hold up to 10 mL of buffer, permitting single-spin exchange and concentration.

Concentration and exchange in a single spin



The Amicon® Pro Purification System Workflow



Applications

Due to its modular design, the Amicon® Pro device can be used for both affinity-based purification applications and filter-based applications that do not require up-front purification.

Affinity-based applications

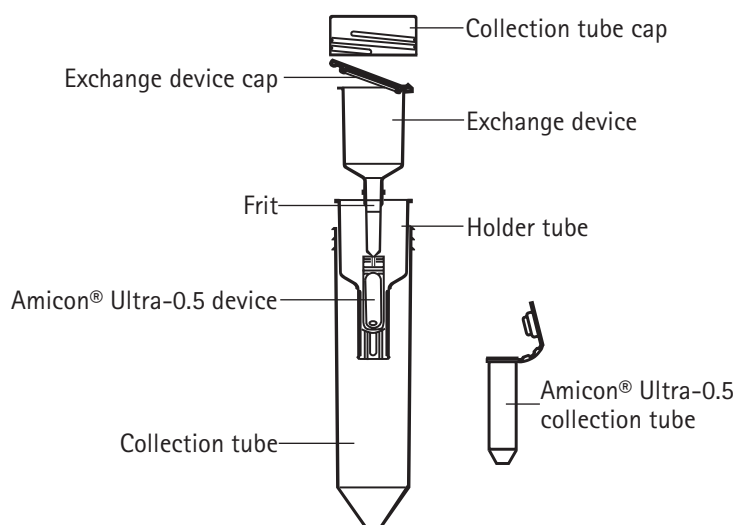
- Affinity-based protein purification with Amicon® Pro Purification Kits: Each kit contains resin and buffers and can be ordered with and without the Amicon® Pro Purification System. Refer to Ordering Information section for available kits.
- Affinity-based purification using other commercially available resins (greater than 10 µm in diameter) and buffers
- Affinity-based depletion of biological samples (serum) for downstream analysis

Filter-based applications without purification (requires Amicon® Ultra-0.5 device)

- Concentration of biological samples containing proteins, nucleic acids (DNA/RNA samples, either single- or double-stranded), and microorganisms
- Small-scale antibody conjugation
- Desalting, buffer exchange, or diafiltration for sample cleanup

Parts and Functions of the Amicon® Pro Purification System

The Amicon® Pro Purification System consists of the following components:



Part	Function
Collection tube cap	Collection tube sample containment
Exchange device cap	Exchange device sample containment, also acts as a diaphragm to displace residual sample from the tip of the exchange device
Exchange device	Facilitates capture, wash, and elution of protein sample
Frit	Low protein-binding, moderately hydrophobic disc holds back aqueous solutions until centrifugation and prevents resin passage during centrifugation
Holder tube	Seats exchange device in 50 mL collection tube and provides attachment for Amicon® Ultra device
Amicon® Ultra-0.5 device	Used to concentrate the sample with the option of simultaneous buffer exchange. The device is capable of 30-fold concentration, with high sample recovery (typically greater than 90% of dilute starting solution). Refer to the Amicon® Ultra-0.5 User Guide for further information. The Amicon® Ultra-0.5 device is available in 5 different cutoffs (molecular weight cutoff, MWCO). 3K device – 3,000 MWCO 10K device – 10,000 MWCO 30K device – 30,000 MWCO 50K device – 50,000 MWCO 100K device – 100,000 MWCO
Amicon® Ultra-0.5 collection tube	Used for final sample recovery by reverse spin from the Amicon® Ultra-0.5 device
Collection tube	Collects sample flow-through, wash fractions, and Amicon® Ultra-0.5 ultrafiltrate during the various steps of the protocol

Specifications

Amicon® Pro Purification Device

Maximum volume	10 mL
Recommended relative centrifugal force	1,000 × g for flow-through, wash, and elution steps 4,000 × g for concentration/buffer exchange
Maximum relative centrifugal force	4,000 × g
Centrifuge compatibility	Swinging-bucket rotor only
Exchange device hold-up volume	< 1 µL after expelling residual volume with exchange cap

Amicon® Ultra-0.5 Device

Maximum initial sample volume	0.5 mL*
Typical final concentrate volume	15–20 µL
Recommended relative centrifugal force	14,000 × g for concentration/buffer exchange (when used as a stand-alone component) 1,000 × g for recovery (reverse) spin
Maximum relative centrifugal force	15,000 × g (when used as a stand-alone component)
Centrifuge compatibility	Swinging-bucket rotor when coupled to Amicon® Pro exchange device, or microcentrifuge fixed-angle rotor when spun with Amicon® Ultra-0.5 collection tube.
Active membrane area	1 cm ²
Hold-up volume	< 5 µL

Dimensions

Amicon® Pro collection tube plus cap	Length: 120 mm (4.7 in.)	Diameter: 34.3 mm (1.35 in.)
Amicon® Ultra device alone	Length: 29.5 mm (1.2 in.)	Diameter: 9.4 mm (0.4 in.)
Amicon® Ultra device and tube (recovery mode)	Length: 47.4 mm (1.9 in.)	
Amicon® Ultra collection tube (cap closed)	Length: 42.1 mm (1.7 in.)	Diameter: 10.8 mm (0.4 in.)

Materials of Construction

Amicon® Pro collection tube	Polypropylene
Amicon® Pro collection tube cap	Polyethylene
Amicon® Pro holder tube	Polypropylene
Amicon® Pro exchange device	Polypropylene, thermoplastic elastomer (TPE)
Frit	Polypropylene/polyethylene
Amicon® Ultra-0.5 device	Copolymer styrene/butadiene
Amicon® Ultra-0.5 collection tube	Polypropylene
Amicon® Ultra-0.5 membrane	Ultracel® low binding regenerated cellulose

* Under most circumstances, samples will not be loaded directly into the Amicon®-Ultra-0.5 device. Sample concentration will occur simultaneously with protein elution or buffer exchange and will involve loading sample (or buffer) into the exchange device.

Chemical Compatibility

The Amicon® Pro Purification System is intended for use with biological fluids and aqueous solutions. Before use, check the sample for chemical compatibility with the device.

Table 3. Chemical Compatibility of the Amicon® Pro Purification System

Acids	Concentration		Concentration
Acetic acid	≤ 50%*	Phosphoric acid	≤ 30%
Formic acid	≤ 5%*	Sulfamic acid	≤ 3%
Hydrochloric acid	≤ 1.0 M	Sulfuric acid	≤ 3%
Lactic acid	≤ 50%	Trichloroacetic acid (TCA)	≤ 10%*
Nitric acid	≤ 10%	Trifluoroacetic acid (TFA)	≤ 30%*

Alkalies

Ammonium hydroxide	≤ 10%	Sodium hydroxide	≤ 0.5 M
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Alcohols

n-Butanol	≤ 70%	Isopropanol	≤ 70%
Ethanol	≤ 70%	Methanol	≤ 60%

Detergents

Alconox® detergent	≤ 1%	Sodium dodecyl sulfate (SDS)	≤ 0.1%
CHAPS detergent	≤ 0.1%	Tergazyme® detergent	≤ 1%
Lubrol® PX detergent	≤ 0.1%	Triton® X-100 surfactant	≤ 0.1%
Nonidet™ P-40 surfactant	≤ 2%	Tween® 20 surfactant	≤ 0.1%
Sodium deoxycholate	≤ 5%		

Organic solvents

Acetone	not recommended	Ethyl acetate	not recommended
Acetonitrile	≤ 20%	Formaldehyde	≤ 5%
Benzene	not recommended	Pyridine	not recommended
Carbon tetrachloride	not recommended	Tetrahydrofuran	not recommended
Chloroform	not recommended	Toluene	not recommended
Dimethyl sulfoxide (DMSO)	≤ 5%*		

Miscellaneous

Ammonium sulfate	saturated	Phenol	≤ 1%
Diethyl pyrocarbonate	≤ 0.2%	Phosphate buffer (pH 8.2)	≤ 1 M
Dithiothreitol (DTT)	≤ 0.1 M	Polyethylene glycol	≤ 10%
Glycerine	≤ 70%	Sodium carbonate	≤ 20%
Guanidine HCl	≤ 6 M	Tris buffer (pH 8.2)	≤ 1 M
Imidazole	≤ 100 mM	Urea	≤ 8 M
Mercaptoethanol	≤ 0.1 M		

* Contact with this chemical may cause materials to leach out of the component parts. Solvent blanks are recommended to determine whether leachables represent potential assay interferences

Ordering Information

This section lists catalogue numbers for Amicon® Pro Purification Systems, Kits, and associated products.

Description Catalogue Number

Amicon® Pro Purification Systems	Amicon® Pro + Amicon® Ultra-0.5 Devices*				
	3K	10K	30K	50K	100K
Amicon® Pro Purification System (12/pk)	ACS500312	ACS501012	ACS503012	ACS505012	ACS510012
Amicon® Pro Purification System (24/pk)	ACS500324	ACS501024	ACS503024	ACS505024	ACS510024

Amicon® Pro Purification Kits (12/pk)	Reagent Kit + Amicon® Pro Purification System*					Reagent Kit (Resin and buffers only; no devices)
	3K	10K	30K	50K	100K	
Amicon® Pro Affinity Concentration Kit Ni-NTA	ACK5003NT	ACK5010NT	ACK5030NT	ACK5050NT	ACK5100NT	ACR5000NT
Amicon® Pro Affinity Concentration Kit GST	ACK5003GS	ACK5010GS	ACK5030GS	ACK5050GS	ACK5100GS	ACR5000GS
Amicon® Pro Affinity Concentration Kit Protein A	ACK5003PA	ACK5010PA	ACK5030PA	ACK5050PA	ACK5100PA	ACR5000PA
Amicon® Pro Affinity Concentration Kit Protein G	ACK5003PG	ACK5010PG	ACK5030PG	ACK5050PG	ACK5100PG	ACR5000PG

* Choose cat. no. by Amicon® Ultra-0.5 device MWCO

Amicon® Pro Device (24/pk)	
Includes collection tube and cap, exchange device, and holder tube. Does not include Amicon® Ultra-0.5 filters.	ACS500024

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