

Microcentrifuge Spin Column Kits

Purification made easy.

CENTRIFUGATION APPLICATION NOTE

With the current pace of development in genomic and proteomic studies, the demand for safe, economical, high-throughput processes and equipment for microscale nucleic acid isolation and protein purification has also increased. A variety of microcentrifuge spin column kits containing specifically designed filters or membranes are commercially available for these applications.

Microcentrifuge spin column kits can be used in conjunction with centrifugation to obtain plasmid DNA, PCR[®] (polymerase chain reaction) amplified DNA, genomic DNA and various types of RNA (total RNA, miRNA, mRNA, etc.) from eucaryotic, procaryotic and viral sources. These kits efficiently purify nucleic acids so that subsequent steps (sequencing, enzymatic restriction, RNA transcription, qPCR, transfection, microinjection, etc.) can be carried out without interference from contaminants (such as proteins, polysaccharides, undesirable residual PCR products, and metabolites).

Microcentrifuge spin columns and kits are also available for protein purification and concentration, as well as assay prep. These columns help purify small quantities of recombinant proteins in a fast and simple manner. They are based on affinity, size exclusion and other such chromatographic principles. The filter-based columns are also used for buffer exchange as well as protein concentration.

The Microfuge family of microcentrifuges from Beckman Coulter provides rotors that accommodate microcentrifuge spin columns. The Allegra benchtop and Avanti high-performance centrifuges provide enhanced versatility and performance with additional rotor and labware combinations.

Major providers of commercially available kits are QIAGEN, Promega, Bio-Rad, GE Healthcare Life Sciences, Stratagene, and EMD Millipore. Kits are available in various formats—single column or tubes



with filters or membranes for use with small sample numbers, as well as strips of 8 (or 12) columns or tips, and standard 96-well microtiter plates for high throughput. The 8 or 12 strips can be supported with deep-well or square-well plates. The filter membrane containing a large-pore, silica-based matrix/gel-coated with a high density of anion exchange groups is used to capture nucleic acids onto the filter assembly. These disposable assemblies are generally spun from 100 × *g* to 30,000 × *g* for 15 seconds to 30 minutes, depending on the specific protocol in the separation and purification process.

*The PCR process is covered by patents owned by Roche Molecular Systems, Inc., and F. Hoffmann-La Roche, Ltd.

Quick Tips

It is important to follow the kits' manufacturers' instructions for the best results.

- When working with small (microliter) volumes, tapping the side of the tube (or whole plate) or using a brief low-speed spin (i.e., ≥ 100 × *g* for two minutes) will ensure that the droplets, adhering to the side wall of the tube, will be collected toward the bottom for complete mixing and better recovery.
- Avoid the critical speed range for each rotor and centrifuge (refer to the individual rotor manual) during the low-speed spins.
- To prevent damage from accidental spills and leaks of solutions from open columns, clean up rotor and chamber of the centrifuge after use.



CENTRIFUGE ROTOR SPECIFICATIONS

Rotor	Maximum Labware Capability	Max. Speed (RPM/RCF x g)
Microfuge 16		
FX121.5P	12, 1.5/2.2 mL microcentrifuge tubes	14,800 / 15,183
FX241.5P	24, 1.5/2.2 mL microcentrifuge tubes	14,800 / 16,163
Microfuge 20 Series		
FA241.5 FA241.5P	24, 1.5/2.2 mL microcentrifuge tubes	15,000 / 20,627
FA361.5	36, 1.5/2.0 mL microcentrifuge tubes	15,000 / 20,124
Allegra X-30 Series		
FX301.5	30, 1.5/2.0 mL microcentrifuge tubes	16,000 / 28,672
F2402H	24, 1.5/2.0 mL microcentrifuge tubes	18,000 / 29,756
S2096	2, 96 deep-well plates	3,000 / 1,109
Allegra X-12 Series		
SX4750/A	4, 96 deep-well plates	3,750 / 2,885
Allegra X-14 Series		
SX4750/A	4, 96 deep-well plates	4,000 / 3,283
Allegra X-15R		
SX4750/A	4, 96 deep-well plates	4,450 / 4,060
Allegra 25R		
TA-15-1.5	30, 1.5/2.0 mL microcentrifuge tubes	15,000 / 25,160
S5700	2, 96 deep-well plates	5,700 / 6,130
Allegra 64R		
F2402H	24, 1.5/2.0 mL microcentrifuge tubes	26,000 / 61,970
F1202	12, 1.5/2.0 mL microcentrifuge tubes	30,000 / 64,400
H6002	60, 1.5/1.8 mL microcentrifuge tubes	12,200 / 12,400
F3602	36, 1.5/2.0 mL microcentrifuge tubes	22,000 / 47,620
Avanti J Series		
JA-18	30, 1.5 mL microcentrifuge tubes	18,000 / 35,000
JA-18.1	24, 1.5/1.8 mL microcentrifuge tubes	18,000 / 42,100
JA-20	24, 1.5/1.8 mL microcentrifuge tubes	20,000 / 48,400
JA-30.50 Ti	24, 1.5 mL microcentrifuge tubes	30,000 / 73,400
JS-4.0	104, 1.5 mL microcentrifuge tubes 4, 96 deep-well plates	4,000 / 4,050
JS-4.3	104, 1.5/1.8 mL microcentrifuge tubes 4, 96 deep-well plates	4,300 / 4,220 (3,250 / 1,924 with Micro Plus carriers)
JS-5.3	4, DNA kit 96-well filtration plates	5,300 / 6,130
JS-5.9	2, DNA kit 96-well filtration plates	5,900 / 6,570
JS-13.1	36 1.8 mL microcentrifuge tubes	13,000 / 26,500

Some Allegra and Avanti rotors may require adapters or accessories to fit the labware.

Maximum speed and capability might vary based on adapter, labware and instrument model.

Please refer to applicable rotor/instrument manual for exact details.



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