



User Guide

Centriprep® Centrifugal Filter Devices

Centriprep® 3K and 50K devices for research use only and for use in diagnostic procedures.



Introduction

Centriprep® centrifugal filter devices are disposable ultrafiltration devices used for purifying, concentrating, dialyzing, and filtering biological samples in the 0–12 mL volume range. These ready-to-use ultrafiltration devices are designed for operation in both centrifuges that have a maximum 3000 rpm centrifuge speed. They can also be used as filter units through their side. The Centriprep® device consists of a sample reservoir with a built-in cup, a filter collector containing a fine ultrafilter (Ultracel®) regenerated cellulose membrane, and an on-rod cap for sample isolation.

The Centriprep® device design allows filtration and fine particle sedimentation to occur at the same time without clogging the membrane. With a Centriprep® 50K device a 10 mL sample can be concentrated to 0.5 mL in just 20 minutes and concentrations of smaller volume samples may take a high concentration factor and a high recovery of the membrane may be achieved, and greater than 90% recovery of retained macromolecules within 20 minutes. A built-in dialysis procedure fluid permeability (water volume of 0.5–0.8 mL).

The Centriprep® product line includes built-in membrane weight markers (MW 10).

- Centriprep® 3K device — 3000 MWCO (amine membrane support)
- Centriprep® 50K device — 50000 MWCO (amine membrane support)
- Centriprep® 50K device — 50000 MWCO (cellulose membrane support)
- Centriprep® 50K device — 50000 MWCO (poly membrane support)

NOTE: Centriprep® 30K and 30K devices are the only Centriprep® devices intended for in-vitro diagnostics use. For information on these devices, go to www.millipore.com/centrifugal_filters/centriprep.

Applications

Centriprep® 3K centrifugal filter devices

- Concentrating and dialyzing oligonucleotides, peptides, growth factors, and small proteins.

Centriprep® 50K, 30K, and 50K centrifugal filter devices

- Concentrating and dialyzing column fluids and protein buffers containing proteins, enzymes, and antibodies.
- Recovering biomolecules from cell culture supernatants, tissues, extracts, or other biological samples.
- Purifying low-molecular-weight components (e.g., amino acids) and antibodies from physiological fluids, cell culture media, or fermentation broths.

Centriprep® Device Components



Required Equipment

Centriprep® devices require the variable speed centrifuge with either a swinging-bucket or fixed-angle rotor and carrier that can properly accommodate 60 mL centrifuge tubes. The centrifuge must be capable of 1000–3,000 \times g for a listing of compatible centrifuges and rotors, see www.millipore.com/centrifugal_filters.

Limitations

With fixed-angle rotors, polarization control may be adversely affected at low \times g-force below 1000 \times g. Operating an average centrifuge with a low concentration, filtered flow may be reduced, which may allow some of the sample to be lost and prevent the following fluid handling subsequently. Some may result in leakage or damage to the device.

Device	Maximum Centrifugal Force
Centriprep® 3K	3,000 \times g
Centriprep® 50K	3,000 \times g

Device Storage and Shelf Life

For best results, store Centriprep® devices at 15–25 °C. Performance may be adversely affected if the devices are stored at extreme temperatures (i.e., below 0 °C or above 40 °C). Shelf life is shown below from date of manufacture.

Rinsing Before Use

The appearance of Centriprep® centrifugal filter devices contain trace amounts of glycerol. If this interferes with analysis, fill the device with approximately 10 mL of distilled or deionized water and centrifuge until the first equilibration point is reached. Remove filtrate and concentrate. Repeat as necessary until no more interference is noted. Once each measurement must be kept and to ensure full recovery.

Membrane and Device Appearance

- Occasionally an unused Centriprep® device may have a few drops of moisture on the filter collector or sample reservoir. This is due to condensation of moisture in the membrane and does not affect performance.
- After centrifugation, a small amount of filtrate (approximately 0.5 mL) may remain in the trap between the membrane and the membrane support of the Centriprep® device. This is normal and does not affect device operation or performance.
- The Ultracel® membrane used in the Centriprep® centrifugal filter devices may appear slightly wrinkled after spinning.

Centrifugal Filter Device Reset

Centriprep® devices are intended for single-use only. Attempts to clean the device may damage the membrane surface or the seal, possibly compromising the seal integrity and thereby affecting performance.

Principle of Operation

To begin operation, the sample container's built-in cap is loosened and the filter collector is removed. Sample is added, then the filter collector is carefully reinserted back into the sample container following standard aseptic techniques, sealing the device. The assembled centrifugal filter device is centrifuged at 1,000–3,000 \times g, depending on the membrane MWCO used.

Inserting the filter collector into the sample reservoir creates a slight hydrostatic pressure differential that exerts an upward buoyancy force on the membrane at the filter collector bottom. By force, the hydrostatic pressure may delay the upward movement in the small reservoir ultrafiltration. Centrifugation overcomes this pressure. During low molecular weight products and solutes through the membrane into the filter collector. Solutes with molecular weights above the membrane MWCO remain in the sample container. Centrifugation (centrifugal force) is the operation continues. Ultrafiltration occurs in the device opposite the centrifuge force vector.



The pressure differential created by the raised solution level is important to centrifugal filter device operation. During centrifugation, the sample solution membrane falls on the filter membrane top. In the process, the filter collector falls to the bottom and stays in the bottom of the sample container, preventing maximum filtrate collection. Eventually an equilibrium is reached above the neutral arm at equal heights. Filtrate then stops, since the hydrostatic pressure differential is zero now.

If further concentration is required, degas the filtrate before spinning the device for a second time. Depending on solubility and pressure differential between the sample membrane and the filter membrane, allowing filtration to resume. Filtrate continues until a new equilibrium point is achieved. Note that the pressure differential is constantly changing during operation at the neutral arm position.

Centriprep® centrifugal filter devices are designed to maintain high flow rates by minimizing volume build-up on the membrane during operation. Centrifugal force continuously maintains a 0.2 mL away from the membrane to the sample collector bottom. Because the Centriprep® membrane "floats" above the collection bowl, the full surface of the membrane is used at all times, and flow is unrestricted. This is particularly beneficial when working with suspensions, which can easily clog the membrane.

Millipore Centriplus User Guide

Yi-Tong Ma



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Genetic Engineering News ,1999

Comparative Medicine ,2008

The Journal of Immunology ,2003

Clinical and Vaccine Immunology ,2006

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In an era characterized by interconnectedness and an insatiable thirst for knowledge, the captivating potential of verbal expression has emerged as a formidable force. Its capability to evoke sentiments, stimulate introspection, and incite profound transformations is genuinely awe-inspiring. Within the pages of "**Millipore Centriplus User Guide**," a mesmerizing literary creation penned by a celebrated wordsmith, readers attempt an enlightening odyssey, unraveling the intricate significance of language and its enduring affect our lives. In this appraisal, we shall explore the book is central themes, evaluate its distinctive writing style, and gauge its pervasive influence on the hearts and minds of its readership.

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