

## Contents

1. Description
  - 1.1 Important safety information
  - 1.2 Background information
  - 1.3 Technical specifications
  - 1.4 Applications
  - 1.5 Reagent and instrument requirements
2. Use of Whole Blood Column Kit with manual separators
  - 2.1 Reagent and column preparation
  - 2.2 Magnetic separation using Whole Blood Columns
3. Use of the Whole Blood Columns with the MultiMACS Cell24 Separator Plus

## 1. Description

This product is for research use only.  
For use by professional laboratory personnel only.

<b>Components</b>	<b>10 Whole Blood Columns</b> columns and plungers, sterile packed.  <b>50 mL Whole Blood Column Elution Buffer</b> contains stabilizer and 0.09% sodium azide.
<b>Storage</b>	Store Whole Blood Columns dry at +10 to +35 °C and protected from light. Store Whole Blood Column Elution Buffer at +2 to +8 °. The expiration date is indicated on the box label. Do not use after this date.

### 1.1 Important safety information

- ⚠ WARNING** Contamination or infection could result in death or serious injury depending on the material used.
- All biological material must be considered potentially infectious
- Regulations for the treatment and disposal of infectious materials must be observed.

### 1.2 Background information

The patented MACS® Column Technology is based on the use of MACS MicroBeads, MACS Columns, and MACS Separators. Whole Blood Columns have been developed for the gentle isolation of cells labeled with MACS Whole Blood MicroBeads. As MACS MicroBeads are extremely small, superparamagnetic particles, a high-gradient magnetic field is required to retain the labeled cells. Whole Blood Columns contain an optimized matrix to generate

this strong magnetic field when placed in a permanent magnet, such as the MidiMACS™ Separator, QuadroMACS™ Separator, SuperMACS™ II Separator, or MultiMACS™ Cell24 Separator Plus.

### 1.3 Technical specifications

	Max. volume of whole blood per single column
Manual use	0.25–15 mL
Use with MultiMACS Cell24 Separator Plus	10 mL

- Columns are “flow stop” and do not run dry.
- Void volume: 600 µL. Reservoir volume: 7.5 mL.
- Typical flow rate for phosphate-buffered saline (PBS) containing 0.5% bovine serum albumin (BSA): 2.4–3.4 mL/min.
- Whole Blood Columns are for single use only.
- Use Whole Blood Elution Buffer to elute positive cell fraction from column.

### 1.4 Applications

Whole Blood Columns have been developed for positive selection of leukocyte subsets from anticoagulated whole blood labeled with MACS Whole Blood MicroBeads or MACSprep™ MicroBeads in combination with a MACS Separator.

- ▲ Do not use Whole Blood Columns in combination with magnetic particles other than MACS Whole Blood MicroBeads or MACSprep MicroBeads. Magnetic forces in the column are very high and may damage biological material if other beads are used.
- ▲ To remove clumps and to prevent aggregates in the sample, pass cells through 30 µm nylon mesh (Pre-Separation Filters (30 µm), # 130-041-407) before separation.

### 1.5 Reagent and instrument requirements

- Separation buffer: Prepare a solution containing phosphate-buffered saline (PBS), pH 7.2, 0.5% bovine serum albumin (BSA), and 2 mM EDTA by diluting MACS BSA Stock Solution (# 130-091-376) 1:20 with autoMACS® Rinsing Solution (# 130-091-222). Keep buffer cold (+2 to +8 °). Degas buffer before use, as air bubbles could block the column.
- ▲ **Note:** The recommended buffer is PBS supplemented with EDTA and BSA. The suitability of other buffers has to be tested experimentally.
- ▲ **Note:** Use degassed buffer only! Degas buffer by applying vacuum, preferentially with buffer at room temperature. Excessive gas in running buffer will form bubbles in the matrix during separation. This may lead to clogging of the column and decrease the quality of separation.
- MACS Whole Blood MicroBeads or MACSprep MicroBeads for magnetic labeling of cells

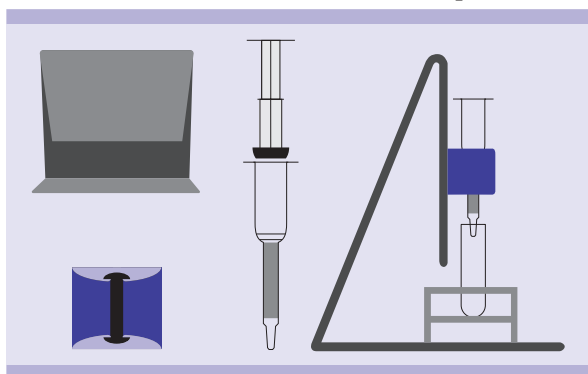
- MidiMACS Separator (# 130-042-302), QuadroMACS Separator (# 130-091-051), SuperMACS II Separator (# 130-044-104), MultiMACS Cell24 Separator Plus (# 130-098-637), or MultiMACS X (# 130-118-515)
- MACS MultiStand (# 130-042-303) in combination with MidiMACS Separator or QuadroMACS Separator
- Adapter for MS, LS, and LD Columns for use with SuperMACS II Separator
- Single-Column Adapter is needed for use of Whole Blood Columns with the MultiMACS Cell24 Separator Plus. The Single-Column Adapter is part of the MultiMACS Cell24 Separator Plus package.
- MACS Acrylic Tube Rack (# 130-041-406) or MACS 15 mL Tube Rack (# 130-091-052).
- (Optional) MS Columns (# 130-042-201) or LS Columns (# 130-042-401)
- (Optional) Pre-Separation Filters (30  $\mu$ m) (# 130-041-407) to remove cell clumps.
- (Optional) Red Blood Cell Lysis Solution (10 $\times$ ) (# 130-094-183).

## 2. Use of Whole Blood Column Kit with manual separators

### 2.1 Reagent and column preparation

1. Adjust Whole Blood Column Elution Buffer to room temperature.
2. Insert Whole Blood Column with the column wings to the front into a MACS Separator according to A) or B).

#### A) Use with MidiMACS or QuadroMACS Separator



Attach MidiMACS Separator or QuadroMACS Separator to the MultiStand and place Whole Blood Column in the separator. Place a collection tube under the Whole Blood Column.

▲ **Note:** Check that the ejection blocks in the gap of the magnet are attached before placing the MACS Column into the magnetic field of the MidiMACS or QuadroMACS Separator.

▲ **Note:** Be careful when attaching the QuadroMACS Separator to the MultiStand to avoid trapping your fingers (for details refer to the QuadroMACS Starting Kit data sheet).

#### B) Use with SuperMACS II Separator

For use of Whole Blood Columns with the SuperMACS II Separator, please refer to the respective data sheet.

3. Prepare Whole Blood Column by rinsing with **separation buffer**: apply 3 mL of **separation buffer** on top of the column and let the buffer run through. Whole Blood Columns are “flow stop” and do not run dry.
4. Discard effluent and change collection tube. The Whole Blood Column is now ready for magnetic separation.

▲ **Note:** Use column immediately after filling to avoid formation of air bubbles caused by warming up. Do not store columns after filling.

▲ **Note:** The time for filling the column with buffer is dependent on the storage conditions, temperature, and humidity. Therefore, the time may vary from a few seconds to several minutes. This filling time has no influence on the quality of the separation.



### 2.2 Magnetic separation using Whole Blood Columns

▲ For details on magnetic labeling, refer to the MACS Cell Separation Reagent data sheets.

▲ Always wait until the column reservoir is empty before proceeding to the next step.

1. Apply magnetically labeled cell suspension onto the prepared Whole Blood Column. Collect flow-through containing unlabeled cells.

▲ **Note:** The reservoir of the Whole Blood Column can contain a maximum of 7.5 mL. Samples greater than 7.5 mL should be applied in aliquots to the column.

2. Wash Whole Blood Column with 3 $\times$  3 mL **separation buffer**. Collect unlabeled cells that pass through and combine with the effluent from step 1.

▲ **Note:** Perform washing steps by adding buffer aliquots only when the column reservoir is empty.

3. Remove Whole Blood Column from the separator and place it on a new collection tube.

4. Pipette 4 mL **Whole Blood Column Elution Buffer** onto the Whole Blood Column. Immediately flush out the magnetically labeled cells by firmly pushing the plunger into the column.

5. (Optional) To increase the purity of the magnetically labeled fraction, the eluted fraction can be enriched over a second MS Column (for up to 10<sup>7</sup> magnetically labeled cells) or LS Column (for up to 10<sup>8</sup> magnetically labeled cells). Repeat the magnetic separation procedure as described in steps 2 to 5 by using a new column.

Remaining erythrocytes can be lysed using Red Blood Cell Lysis Solution (10 $\times$ ) (# 130-094-183).

## 3. Use of the Whole Blood Columns with the MultiMACS Cell24 Separator Plus

Up to 12 Whole Blood Columns can be used in a single run with the MultiMACS 12 $\times$  Single Column Adapter LS (# 130-108-816).

For further details please refer to the MultiMACS Cell24 Separator Plus user manual.

Refer to [www.miltenyibiotec.com](http://www.miltenyibiotec.com) for all data sheets and protocols. Miltenyi Biotec provides technical support worldwide. Visit [www.miltenyibiotec.com](http://www.miltenyibiotec.com) for local Miltenyi Biotec Technical Support contact information.

# Legal notices

## Limited product warranty

Miltenyi Biotec B.V. & Co. KG and/or its affiliate(s) warrant this product to be free from material defects in workmanship and materials and to conform substantially with Miltenyi Biotec's published specifications for the product at the time of order, under normal use and conditions in accordance with its applicable documentation, for a period beginning on the date of delivery of the product by Miltenyi Biotec or its authorized distributor and ending on the expiration date of the product's applicable shelf life stated on the product label, packaging or documentation (as applicable) or, in the absence thereof, ONE (1) YEAR from date of delivery ("Product Warranty"). Miltenyi Biotec's Product Warranty is provided subject to the warranty terms as set forth in Miltenyi Biotec's General Terms and Conditions for the Sale of Products and Services available on Miltenyi Biotec's website at [www.miltenyibiotec.com](http://www.miltenyibiotec.com), as in effect at the time of order ("Product Warranty"). Additional terms may apply. BY USE OF THIS PRODUCT, THE CUSTOMER AGREES TO BE BOUND BY THESE TERMS.

THE CUSTOMER IS SOLELY RESPONSIBLE FOR DETERMINING IF A PRODUCT IS SUITABLE FOR CUSTOMER'S PARTICULAR PURPOSE AND APPLICATION METHODS.

## Technical information

The technical information, data, protocols, and other statements provided by Miltenyi Biotec in this document are based on information, tests, or experience which Miltenyi Biotec believes to be reliable, but the accuracy or completeness of such information is not guaranteed. Such technical information and data are intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. Miltenyi Biotec shall not be liable for any technical or editorial errors or omissions contained herein.

All information and specifications are subject to change without prior notice. Please contact Miltenyi Biotec Technical Support or visit [www.miltenyibiotec.com](http://www.miltenyibiotec.com) for the most up-to-date information on Miltenyi Biotec products.

## Licenses

This product and/or its use may be covered by one or more pending or issued patents and/or may have certain limitations. Certain uses may be excluded by separate terms and conditions. Please contact your local Miltenyi Biotec representative or visit Miltenyi Biotec's website at [www.miltenyibiotec.com](http://www.miltenyibiotec.com) for more information.

The purchase of this product conveys to the customer the non-transferable right to use the purchased amount of the product in research conducted by the customer (whether the customer is an academic or for-profit entity). This product may not be further sold. Additional terms and conditions (including the terms of a Limited Use Label License) may apply.

CUSTOMER'S USE OF THIS PRODUCT MAY REQUIRE ADDITIONAL LICENSES DEPENDING ON THE SPECIFIC APPLICATION. THE CUSTOMER IS SOLELY RESPONSIBLE FOR DETERMINING FOR ITSELF WHETHER IT HAS ALL APPROPRIATE LICENSES IN PLACE. Miltenyi Biotec provides no warranty that customer's use of this product does not and will not infringe intellectual property rights owned by a third party. BY USE OF THIS PRODUCT, THE CUSTOMER AGREES TO BE BOUND BY THESE TERMS.

## Trademarks

autoMACS, MACS, MACSprep, MidiMACS, the Miltenyi Biotec logo, MultiMACS, QuadroMACS, and SuperMACS are registered trademarks or trademarks of Miltenyi Biotec B.V. & Co. KG and/or its affiliates in various countries worldwide. All other trademarks mentioned in this publication are the property of their respective owners and are used for identification purposes only.

Copyright © 2024 Miltenyi Biotec and/or its affiliates. All rights reserved.