

# Anti- Human CD3/CD8/CD45/CD4 (33-2A3/143-44/D3-9/HP2-6)



FITC/PE/PerCP/APC

3F18PEI45PPI4AX-50T

50 test

RUO

## 1. PRODUCT DESCRIPTION

**Clone:** 33-2A3, 143-44, D3-9, HP2-6

**Isotype:** Mouse IgG2a, Mouse IgG1, Mouse IgG1, mouse IgG2a

**Tested application:** flow cytometry

**Immunogen:** The anti-CD3 monoclonal antibody derives from human leukocytes. The anti-CD8 monoclonal antibody derives from human T cells. The anti-CD45 monoclonal antibody derives from T cells from leukemic HPB-ALL. The anti-CD4 monoclonal antibody derives from T cells from leukemic HPB-ALL.

**Species reactivity:** Human

**Storage instruction:** store in the dark at 2-8 °C

**Storage buffer:** aqueous buffered solution containing protein stabilizer and 0.09% sodium azide (NaN 3 ).

**Recommended usage:** Immunostep's CD3/CD8/CD45/CD4 antibody is a monoclonal antibody intended for simultaneous detection and enumeration of lymphocytes. This reagent is effective for direct immunofluorescence staining of human tissue for flow cytometric analysis using 1 test for 10<sup>6</sup> cells. For optimal performance, it is recommended to use this antibody in combination with Immunostep's StepCount (ref. I399991218) counting tubes and RBC Lysis Solution (ref. RBCXIO-50ML).

**Presentation:** liquid

**Source:** Supernatant proceeding from an in vitro cell culture of a cell hybridoma.

**Purification:** Affinity chromatography.

## 2. ANTIGEN DETAILS

**CD3:** The CD3 monoclonal antibody is directed against the CD3 antigen (T3-antigen), which is expressed on human T lymphocytes. The monoclonal antibody reacts with 80-90% of human peripheral T lymphocytes and medullary thymocytes. It does not react with B-cells, monocytes, granulocytes, and platelets. The monoclonal antibody is mitogenic for resting T lymphocytes and blocks the cytolytic activity of CTL clones.

**CD8:** The CD8 monoclonal antibody is directed against the CD8 antigen (T8-antigen), which is expressed on human T lymphocytes. The monoclonal antibody reacts with 20-30% of human peripheral T lymphocytes.

**CD45:** The CD45 monoclonal antibody is directed against the CD45 antigen, defined as T200 or Leucocyte Common Antigen. The antibody reacts with all cells of the hematopoietic lineage, not with cells of other lineages.

**CD4:** The CD4 monoclonal antibody is directed against the CD4 antigen (T4-antigen), which is expressed on human peripheral T lymphocytes and 80% of thymocytes. The monoclonal antibody reacts at a low level with human monocytes and macrophages. It does not react with B-cells, granulocytes, and thombocytes.

Please, refer to [www.immunostep.com](http://www.immunostep.com) technical support for more information.

## 3. WARRANTY

Warranted only to conform to the quantity and contents stated on the label or in the product labelling at the time of delivery to the customer. Immunostep disclaims hereby other warranties.

Immunostep's sole liability is limited to either the replacement of the products or refund of the purchase price.

## 4. INSTRUCTIONS FOR USE

### Diluting RBCXIO Lysis Solution:

1. Dilute the 10X RBCXIO concentrate 1:10 with room temperature (20–25 °C) deionized water.
2. The prepared solution is stable for 1 month when stored in a glass or high-density polyethylene (HDPE) container at room temperature.

**Performing Quality Control:** In accordance with the College of American Pathologists (CAP) guidelines, we recommend running two levels of liquid control material (process control). Controls should be run at least once each day that patient testing is performed.

Use commercial controls providing established values for percent positive and absolute counts with each run to assess system performance. Immunostep recommends using CD-Chex Plus (Streck) normal and CD4 Low as process controls.

**To perform quality control:** Thoroughly mix the appropriate CD-Chex Plus (Streck) control, or equivalent process control. See the IFU for the control for detailed instructions.

1. Stain the control sample using Immunostep's CD3/CD8/CD45/CD4 antibody as described in the following section. The control sample should be processed like patient samples to monitor the ongoing performance of the entire analytic process.
2. Acquire the stained control sample on the flow cytometer.
3. Visually inspect the CD45 vs SSC dot plot. The lymphocyte population should appear as a bright, compact cluster with low SSC. Monocytes and granulocytes should also appear as distinct clusters. Do not proceed with analysis if populations are diffuse and there is little or no separation between clusters.
4. Verify that the results are within the values reported on the Assay Values sheet.

### Staining the Cells:

Use care to protect the tubes from direct light. Perform the procedure at room temperature. See Precautions and Interfering Conditions.

1. For each patient sample, label a 12 × 75-mm tube with the sample identification number. For absolute counts, label an STEPCOUNT counting tube in place of the 12 × 75-mm tube. **Note:** Before use, verify that the STEPCOUNT bead pellet is intact and within the metal retainer at the bottom of the tube. If this is not the case, discard the STEPCOUNT counting tube and replace it with another.
2. Pipette 20 µL of Immunostep's CD3/CD8/CD45/CD4 antibody into the bottom of the tube. **Note:** If using an STEPCOUNT counting tube, pipette the reagent onto the side of the tube, just above the metal retainer, without touching the bead pellet.
3. Pipette 50 µL of well-mixed, anticoagulated whole blood into the bottom of the tube. **Note:** If using an STEPCOUNT counting tube, we recommend using the reverse pipetting technique to pipette the sample onto the side of the tube just above the metal retainer. Avoid smearing blood down the side of the tube. If whole blood remains on the side of the tube, it will not be stained with the reagent and can affect results.
4. Cap the tube and vortex gently to mix.
5. Incubate for 15–30 minutes in the dark at room temperature (20–25 °C).
6. Add 450 µL of 1X RBCXIO lysis solution to the tube.
7. Cap the tube and vortex gently to mix.
8. Incubate for 15–30 minutes in the dark at room temperature (20–25 °C). The sample is now ready to be analyzed on the flow cytometer. If samples will not be analyzed immediately after staining, store them in the dark at room temperature (20–25 °C).

### Acquiring the Samples:

1. Vortex the cells thoroughly at low speed. It is important to reduce aggregation before running samples on the flow cytometer. **Note:** If you are using a Loader, vortex tubes immediately before placing them into the Loader racks.
2. Install the tube on the cytometer and acquire the sample. Before acquiring samples, adjust the threshold to minimize debris and ensure that populations of interest are included.
3. Analyze the data using the appropriate cytometer-specific software. See the cytometer's IFU for more information.

### Flow cytometry analysis

Collect the fluorescence attributed to monoclonal antibody CD3/CD8/CD45/CD4 and determine the percentage of stained cells. It is necessary to use an isotope control conjugated with the same fluorochrome, of the same type of immunoglobulin heavy chain and concentration as that of the CD3/CD8/CD45/CD4, so as to evaluate and correct the unspecific binding of lymphocytes (please see materials required but not provided). Set an analysis region to eliminate fluorescence background noise and to include positively stained cells. Below is an example diagram of peripheral blood stained applying the protocol described in point 6:

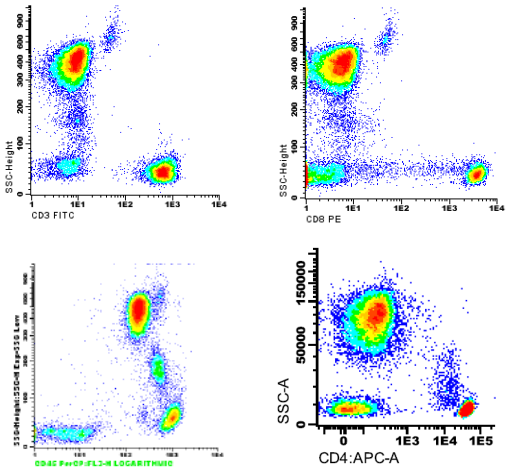


Fig. 1: A biparametric diagram of the average fluorescence intensity of the CD3+ ,CD8+ , CD45+ and CD4+ leucocytes population and its internal complexity (SSC) in a peripheral blood specimen from a healthy donor.

**Results:** Results are reported as the percentage of positive cells per lymphocyte population or as the number of positive cells per microliter of blood (absolute count).

**Calculating Absolute Counts:** During analysis, the absolute number (cells/µL) of positive cells in the sample can be determined by comparing cellular events to bead events. If Immunostep software is used, absolute counts will be determined by the software. For manual data analysis, the absolute count of the cell population (A) can be calculated using the following equation:

$$A=X/Y \times N/V$$

Where:

- X is the number of positive cell events
- Y is the number of bead events
- N is the number of beads per test, which is found on the STEPCOUNT counting tubes foil pouch and can vary from lot to lot
- V is the sample volume (50 µL)

### Controls:

- Positive Controls: Use CD-Chex Plus (Streck) normal and CD4 Low to validate the staining protocol.
- Negative Controls: Include isotype controls and unstained cells to set proper gating strategies.








### Material Not Supplied:

- STEPCOUNT counting tubes (ref. I399991218)
- RBCXIO lysis solution (ref. RBCXIO-50ML)
- CD-Chex Plus (Streck) normal and CD4 Low

## 5. REFERENCES

1. Orfao A, Ciudad J, López-Berges MC, López A, Vidrales B, Caballero MD. Acute lymphoblastic leukemia (ALL): detection of minimal residual disease (MRD) at flow cytometry. Leuk Lymph 1994;13:87-90.
2. Piatier-Tonneau D. CD Guide. CD4. In: Mason D, André P, Bensussan A, Buckley C, Civin C, Clark E, et al, editors. Leucocyte typing VII. White cell differentiation antigens. Proceedings of the 7th International Workshop and Conference; 2000 Jun 19-23; Harrogate, United Kingdom. New York: Oxford University Press Inc.; 2002. p. 750-51.
3. Mason DY, Cordell JL, Gaulard P, Tse AGD, Brown MH. Immunohistological detection of human cytotoxic/suppressor T cells using antibodies to a CD8 peptide sequence. J Clin Pathol 1992;45:1084-8.
4. Nuchols JD, Shea CR, Horenstein MG, Burchette JL, Prieto VG. Quantitation of intraepidermal T-cell subsets in formalin-fixed, paraffin-embedded tissue helps in the diagnosis of mycosis fungoides. J Cutan Pathol 1999;26:169-75.

## 6. EXPLANATION OF SYMBOLS

	Form
	Catalog reference
	Contains sufficient for <n> test
	Quantity per test
	Regulatory Status
	Research Use Only
	Manufacturer

## 7. MANUFACTURED BY:



**Address:** Avda. Universidad de Coimbra, s/n  
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