Buccutite™ Rapid PE-iFluor® 594 Tandem Antibody Labeling Kit *Microscale Optimized for Labeling 25 ug Antibody Per Reaction*

Catalog number: 1355
Unit size: 2 Labelings

Component	Storage	Amount (Cat No. 1355)
Component A: Buccutite™ FOL-Activated PE-iFluor® 594	Refrigerated (2-8 °C), Minimize light exposure	2 Vials (Lyophilized)
Component B: Buccutite™ MTA	Minimize light exposure, Refrigerated (2-8 °C)	2 vials (Lyophilized)
Component C: Reaction Buffer	Minimize light exposure, Refrigerated (2-8 °C)	1 Vial (20 uL)

OVERVIEW

The Buccutite™ Rapid PE-iFluor® 594 Tandem Antibody Labeling Kit provides a streamlined approach for efficient, small-scale labeling of antibodies with PE-iFluor® 594. Compared to conventional methods such as SMCC crosslinking, Buccutite™ technology offers a more straightforward and reproducible solution. Using a simple two-step mixing protocol, antibodies or proteins can be conjugated with PE-iFluor® 594 in less than two hours. Each kit includes all reagents necessary for two labeling reactions, with Buccutite™ FOL-Activated PE-iFluor® 594 vials specifically formulated to label 25 µg of purified protein or antibody per reaction. Prior to labeling, stabilizing proteins (e.g., BSA) should be removed, and amine-rich buffers such as Tris should be avoided to prevent interference with the labeling chemistry. PE-iFluor® 594 is a tandem fluorophore with excitation and emission maxima at ~565 nm and ~606 nm, respectively. Its high fluorescence intensity makes it particularly suitable for detecting low-abundance targets while minimizing spectral spillover and reducing compensation complexity. These properties make PE-iFluor® 594 an excellent choice for flow cytometry, spectral flow cytometry, and other immunoassays requiring high sensitivity. However, it is not recommended for applications where photostability is critical. This kit enables direct conjugation of primary antibodies, eliminating the need for secondary antibody labeling strategies. The resulting conjugates streamline workflows and facilitate the development of complex multicolor assays, enhancing experimental flexibility and reducing reagent complexity.

AT A GLANCE

Protocol Summary

1. Add 1.25 µL Reaction Buffer (Component C) into antibody (25 µL)
2. Add 2.5 µL Buccutite™ MTA working solution
3. Incubate at room temperature for 30 - 60 minutes
4. Mix with 50 µL Buccutite™ FOL-Activated PE-iFluor® 594 working solution
5. Incubate at room temperature for 60 minutes

Important: Upon receipt, store the kit at 4 °C. When stored properly, the kit should be stable for six months. Alternatively Components A and B can be stored at -20 °C. Do not freeze Reaction Buffer (Component C). Warm all the components and centrifuge the vials briefly before opening, and immediately prepare the required solutions before starting your conjugation. The following SOP is an example for labeling goat anti-mouse IgG antibody.

PREPARATION OF WORKING SOLUTION

Antibody Working Solution

1. To label 25 µg of antibody (assuming the target antibody concentration is 1 mg/mL), mix 1.25 µL (5% of the total reaction volume) of Reaction Buffer (Component C) with 25 µL of the target antibody solution.

   Note: If your antibody has a different concentration, adjust the volume to ensure approximately 25 µg of antibody is available for the labeling reaction.

   Note: The antibody should be dissolved in 1X phosphate buffered saline (PBS), pH 7.2-7.4; If the antibody is dissolved in glycine buffer, it must be dialyzed against 1X PBS, pH 7.2-7.4, or use Amicon Ultra-0.5, Ultracel-10 Membrane, 10 kDa (Cat. #UFC501008 from Millipore) to remove free amines or ammonium salts (such as ammonium sulfate and ammonium acetate) that are widely used for antibody precipitation.

   Note: Ensure the antibody is pure and not stabilized with bovine serum albumin (BSA) or gelatin, as these stabilizers significantly impair labeling efficiency.

   Note: For optimal labeling efficiency, the antibody concentration should be in the range of 1–10 mg/mL. If the concentration is below 1 mg/mL, the Buccutite™ MTA reaction efficiency is significantly reduced.

Buccutite™ MTA Working Solution

1. Add 10 µL of DMSO (Not provided) to the vial of Buccutite™ MTA (Component B).

   Note: Buccutite™ MTA working solution is unstable after reconstitution. Please use promptly upon preparation and discard the remaining portion after use.

Buccutite™ FOL-Activated PE-iFluor® 594 Working Solution

1. Add 50 µL of ddH_2O to the vial of Buccutite™ FOL-Activated PE-iFluor® 594 (Component A).

SAMPLE EXPERIMENTAL PROTOCOL

Run Antibody-Buccutite™ MTA Reaction

1. Add 2.5 µL of Buccutite ™ MTA working solution into antibody working solution, and mix them well by repeatedly pipetting for a few times or vortex the vial for a few seconds.
2. Keep the antibody- Buccutite ™ MTA reaction mixture at room temperature for 30 - 60 minutes.

   Note: The antibody-Buccutite™ MTA reaction mixture can be rotated or shaken for longer time if desired.

Make Antibody-PE-iFluor® 594 Conjugation

1. Add 50 µL of Buccutite™ FOL-Activated PE-iFluor® 594 working

© AAT Bioquest, Inc. Last revised November 2026. For more information and tools, please visit https://www.aatbio.com

solution with Antibody-Buccutite™ MTA solution, mix well by repeatedly pipetting for a few times or vortex the vial for a few seconds.

2. Incubate for 1 to 2 hours.

3. The antibody-PE-iFluor® 594 conjugate is now ready to use.

Note: For immediate use, the antibody-PE-iFluor® 594 conjugate must be diluted with the buffer of your choice.

Note: For longer term storage, antibody-PE-iFluor® 594 conjugate solution must be concentrated or freeze dried.

Storage of Antibody-PE-iFluor® 594 Conjugate

The antibody conjugate should be stored in the presence of a carrier protein (e.g., 0.1% bovine serum albumin) and 0.02-0.05% sodium azide. The Ab-PE-iFluor® 594 conjugate solution could be stored at 4 °C for two months without significant change and kept from light.

Table 1. Available fluorophores at AAT Bioquest Buccutite™ Rapid Antibody Labelling Kits

Cat#	Labels	Ex (nm)	Em (nm)
1325	PerCP	482	677
1310	PE	565	575
1318	PE-Texas Red	565	600
1356	PE-iFluor® 594	565	606
1322	PE-Cy5	565	674
1316	PE-Cy5.5	565	700
1358	PE-iFluor® 710	565	710
1317	PE-Cy7	565	780
1311	APC	651	662
1320	APC-Cy5.5	651	700
1319	APC-iFluor® 700	651	713
1321	APC-Cy7	651	780
1355	PE-iFluor® 594	565	606
1357	PE-iFluor® 710	565	747

EXAMPLE DATA ANALYSIS AND FIGURES

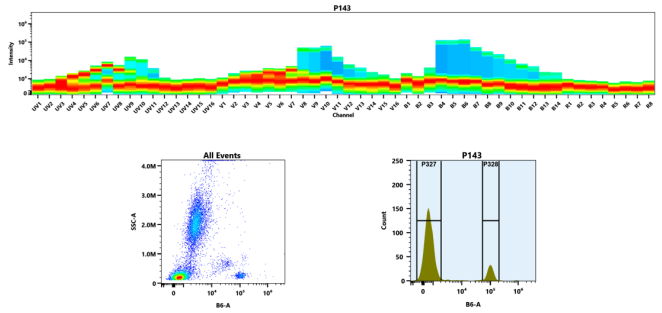


Figure 1. (Top) Spectral emission profiles generated using four spatially offset lasers (355 nm, 405 nm, 488 nm, and 640 nm). Each laser produced a distinct emission pattern, and their combination yielded the composite spectral signature of PE-iFluor® 594. (Bottom) Flow cytometry analysis of whole blood stained with anti-human CD4 antibody (clone RPA-T4; Cat. #10041000) conjugated to PE-iFluor® 594 using the Buccutite™ Rapid PE-iFluor® 594 Tandem Antibody Labeling Kit (Cat. #1355). The resulting conjugate was used at 0.5 µg/test. Fluorescence was analyzed using a Cytek Aurora spectral flow cytometer in the B6-A channel.

DISCLAIMER

AAT Bioquest provides high-quality reagents and materials for research use only. For proper handling of potentially hazardous chemicals, please consult the Safety Data Sheet (SDS) provided for the product. Chemical analysis and/or reverse engineering of any kit or its components is strictly prohibited without written permission from AAT Bioquest. Please call 408-733-1055 or email info@aatbio.com if you have any questions.

© AAT Bioquest, Inc. Last revised November 2026. For more information and tools, please visit https://www.aatbio.com