

## INSTRUCTIONS FOR USE

Protein Plus BCT™ is a direct draw whole blood collection tube intended for the stabilization of draw time concentrations of plasma proteins. **This product has not been cleared by the U.S. Food and Drug Administration for In Vitro Diagnostic Use. The product is for Research Use Only. Not for use in diagnostic procedures.**

## SUMMARY AND PRINCIPLES

Accurate analysis of plasma proteins, such as cytokines, can be compromised by ex vivo hemolysis and platelet activation. The deterioration of blood components due to delayed processing, handling, and shipping can alter the concentration of plasma proteins leading to inconsistent results. The preservative reagent contained in Protein Plus BCT minimizes ex vivo hemolysis and platelet activation in the collected sample, limits interference of proteins released from blood cells, and maintains the draw-time concentrations of plasma proteins during whole blood storage at ambient temperature. Samples collected in Protein Plus BCT are stable for up to 5 days\* at ambient temperature, allowing convenient sample collection, transport, and storage.

\*Depending on protein.

## REAGENTS

Protein Plus BCT contains an anticoagulant and proprietary preservatives in a liquid medium.

## PRECAUTIONS

### 1. For Research Use Only. Not for use in diagnostic procedures.

- Do not freeze specimens in glass Protein Plus BCT as breakage could result.
- Do not use tubes after the expiration date.
- Do not use tubes for the collection of materials to be injected into patients.
- The product is intended for use as supplied. Do not dilute or add other components to Protein Plus BCT.
- Overfilling or underfilling of tubes will result in an incorrect blood-to-additive ratio and may lead to incorrect analytic results or poor product performance.

### CAUTION

- Glass has the potential for breakage; precautionary measures should be taken during handling.
  - All biological specimens and materials coming in contact with them are considered biohazards and should be treated as if capable of transmitting infection. Dispose of in accordance with federal, state, and local regulations. Avoid contact with skin and mucous membranes.
  - Unused tubes should be disposed of with infectious medical waste.
  - Remove and reinsert the stopper by either gently rocking the stopper from side to side or by grasping with a simultaneous twisting and pulling action. A "thumb roll" procedure for stopper removal is NOT recommended as tube breakage and injury may result.
7. SDS can be obtained at [streck.com](http://streck.com) or by calling 800-843-0912.

## STORAGE AND STABILITY

- When stored at 2 °C to 25 °C, unfilled Protein Plus BCT is stable through expiration date. Do not freeze unfilled Protein Plus BCT.
- If unfilled Protein Plus BCT is stored at refrigerated temperature, equilibrate the unfilled tube to room temperature before use.
- Blood samples collected in Protein Plus BCT are stable for up to 5 days when stored at room temperature. Do not store blood samples in refrigerated temperatures.
- Ship tubes filled with blood in a protected ambient shipping package to limit exposure to temperature extremes.

## INSTRUCTIONS FOR USE

**For best practice in sample collection, refer to the BCT Phlebotomy Resource on the product page.**

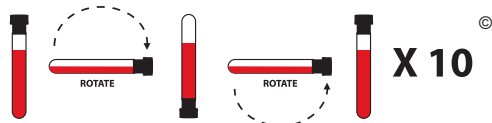
**For a video demonstration, visit [streck.com/mixing](http://streck.com/mixing).**

- Collect specimens by venipuncture according to CLSI GP41<sup>1</sup>.

**Prevention of Backflow** - Since Protein Plus BCT contains chemical additives, it is important to avoid possible backflow from the tube.

To guard against backflow, observe the following precautions:

- Keep patient's arm in the downward position during the collection procedure.
  - Hold the tube with the stopper in the uppermost position so that the tube contents do not touch the stopper or the end of the needle during sample collection.
  - Release tourniquet once blood starts to flow in the tube, or within 2 minutes of application.
- Follow recommendations for order of draw outlined in CLSI GP41<sup>1</sup>. Protein Plus BCT can be drawn after the EDTA tube and before the fluoride oxalate (glycolytic inhibitor) tube. If a Protein Plus BCT tube immediately follows a heparin tube in the draw order, Streck recommends collecting a non-additive or EDTA tube as a waste tube prior to collection in the Protein Plus BCT.
  - Fill the tube completely.
  - Remove the tube from the adapter and immediately mix by gentle inversion 10 times. Inadequate or delayed mixing may result in incorrect analytical results or poor product performance. One inversion is a complete turn of the wrist, 180 degrees, and back per the figure below:



- After collection, transport and store tubes within the recommended temperature range.

### Note:

- For best results, a 21G or 22G needle is advised. Slower fill times, ex vivo platelet activation and hemolysis may be observed when using a smaller gauge needle.
- When using a winged (butterfly) collection set for venipuncture and the Protein Plus BCT is the first tube drawn, a non-additive or EDTA discard tube should be partially drawn first in order to eliminate air or "dead space" from the tubing.
- As is the case with most clinical laboratory specimens, hemolysis, icterus, and lipemia may affect the results obtained on blood samples preserved with Protein Plus BCT.
- Mishandling of collected samples such as dropping or excessive agitation may result in ex vivo platelet activation and hemolysis.

## PLASMA ISOLATION

**Note: Before isolating plasma, re-mix the blood sample by gentle inversion 10 times.**

- To separate plasma, centrifuge whole blood at 1800 x g for 15 minutes at room temperature.
- Remove the upper plasma layer and transfer to a new conical tube (not provided).
- Centrifuge the plasma at 2800 x g for 15 minutes at room temperature.

## FREEZING AND THAWING PLASMA

- To Freeze: For long-term storage, after the second spin, collect and transfer the plasma to a cryogenic tube (not provided) and freeze at -20 °C or -80 °C as specified in your protocol.
- To Thaw: Thaw cryogenic tubes at an appropriate temperature as specified in your protocol.
- As a general good practice for plasma protein analysis, it is recommended to aliquot plasma before freezing and avoid multiple freeze-thaw cycles.

## LIMITATIONS

- For single use only.
- Tube is designed for direct draw with a standard needle holder and single use collection. Collection using other means, such as a syringe, or collection and transfer from other devices is not advised.
- Specimen transport via pneumatic tube system is not advised.
- As the intrinsic stability of plasma proteins varies, and the analytical methods for protein analysis may differ, validating the compatibility of samples collected in Protein Plus BCT and your protein analysis protocol is highly recommended. Refer to technical notes at [streck.com](http://streck.com) for more details.

## REFERENCES

- Clinical and Laboratory Standards Institute, GP41, Procedures for the collection and diagnostic blood specimens by venipuncture. Approved Standard - Seventh Edition.

## ORDERING INFORMATION

Please call our Customer Service Department at 800-228-6090 for assistance. Additional information can be found online at [streck.com](http://streck.com).

## TECHNICAL SUPPORT

Please call Streck Technical Services at 800-843-0912 for assistance. Additional information can be found online at [streck.com](http://streck.com).

## GLOSSARY OF SYMBOLS

See the Instructions (IFU) tab under Resources on the product page at [streck.com](http://streck.com).

See [streck.com/patents](http://streck.com/patents) for patents that may be applicable to this product.



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