

INTENDED USE:

BD Microtainer® Tubes are used to collect, transport and store skin puncture blood specimens for hematology tests, or for tests utilizing serum or heparinized plasma.

PRODUCT DESCRIPTION:

BD Microtainer® Tubes are unbreakable plastic tubes with FloTop collectors and color-coded closure plugs. The tubes contain additives in varying concentrations dependent upon the fill volumes and the required additive to blood ratio for the tube. Additive choice depends on the analytic test method, and is specified by the manufacturer of the test reagents and/or instrument on which the test is performed.

	Plug Color	Additive	Fill Volume
Hematology tube:	Lavender	(K ₂) EDTA	250-500µl
Serum tubes:			
No-additive	Red	None	As required
SST™	Gold	Polymer Gel	As required
Amber SST™	Gold	Polymer Gel	As required
Plasma tubes:			
Plasma	Green	Lithium Heparin	200-400µl
PST™	Lt. Green	Lithium Heparin & Polymer Gel	400-600µl

AMBER TINTED TUBE:

The tinting of the amber tube significantly reduces light transmission and is used when protection is required for light sensitive analytes.

ANTICOAGULANT:

Plasma and hematology tubes contain the optimum amount of additive to anticoagulate the specified volume of skin puncture blood.

STABILITY:

The product is stable if used before the expiration date and stored below 25°C.

LIMITATIONS:

The chemistry line system is designed for skin puncture blood collections. Chemistry values obtained from skin puncture plasma may differ from those obtained from skin puncture serum, venous plasma or venous serum. Chemistry values obtained from skin puncture serum may differ from those obtained from skin puncture plasma, venous plasma or venous serum. Specimens can be stored in BD Microtainer® Tubes with EDTA for up to four (4) hours prior to performing hematological determinations. Blood fill quantity must be within the specified range in tubes showing fill lines to ensure satisfactory anticoagulation and test results. Non-gel chemistry tube specimens should be centrifuged and processed immediately on arrival in the laboratory.

MATERIALS REQUIRED BUT NOT PROVIDED:

1. Gloves for the person performing the collections.
2. Alcohol swabs.
3. Dry sterile gauze pads.
4. Lancet as appropriate for site and volume of blood required.
5. Sharps and contaminated materials disposal containers.

OPTIONAL MATERIALS FOR SPECIMEN COLLECTION:

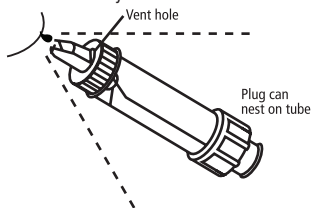
1. Warming device if required, dependent on the volume of blood and tests to be performed.
2. Adhesive bandage. Avoid use of bandages with patients likely to place fingers or feet in their mouths, as ingestion/aspiration may occur.

DIRECTIONS FOR USE:

Note: For plasma and hematology tubes, pre-assemble BD Microtainer® Tube by removing plug and replacing plug with FloTop collector.

DO NOT DISCARD PLUG.

1. Gloves must be worn during skin puncture collection.
2. Select puncture site, warm as appropriate, and cleanse with alcohol.
3. Allow site to dry. Do not dry by wiping, as disinfection occurs during air-drying.
4. Puncture skin with appropriate lancet, following instructions supplied by the manufacturer. Dispose of lancet in an approved sharps container. Wipe away first drop of blood with gauze.
5. Hold BD Microtainer® Tube with FloTop collector vent hole in upward position. Touch collector end of reservoir to drop of blood. Avoid scraping skin surface to collect blood sample. Blood will freely flow to bottom of tube. CAUTION: "Milking" of skin puncture site may cause hemolysis and adversely affect test result accuracy.



6. Fill plasma and hematology tube between fill marks. Over or underfilling of tube may result in clotting and/or erroneous test results. Fill serum tubes to required volume.
7. Twist off FloTop collector and replace with appropriate color-coded plug.
8. Plasma and hematology tubes: invert 8 to 10 times to assure anticoagulation. Serum tubes: allow blood to clot for a minimum of 30 minutes.

9. Hematology tube should be mixed thoroughly just prior to analysis. A minimum of twenty manual inversions (or 5 to 10 minutes on a mechanical mixer) is recommended.
10. Fill other BD Microtainer® Tubes as required. NOTE: If capillary blood gas testing is to be done, the capillary tubes used to collect samples must be filled before the other samples are collected. Otherwise, the EDTA samples for hematology testing should be filled first.
11. Dispose of used lancet into an approved sharps container if this has not been done. Dispose of any contaminated materials into appropriate container.

PROCEDURE FOR SERUM / PLASMA SEPARATION:

1. **Serum Separation:** allow blood to clot for a minimum of 30 minutes.
Plasma Separation: invert tube 8-10 times to assure anticoagulation.
2. Place sample in centrifuge or centrifuge adapter as necessary, taking care to balance the system.
3. Centrifuge as follows:

	Gel Tubes	Non-Gel Tubes
Minimum Time	90 seconds	3 minutes
Rate	6000-15000 g	Minimum 2000 g

4. Remove tube from centrifuge. Serum/Plasma is ready for use and may be pipetted directly into analyzer cup.

PRINCIPLE FOR SERUM / PLASMA GEL SEPARATION:

Each BD Microtainer® Gel Tube contains a polymer barrier material with a specific gravity between that of the serum/plasma and blood cells. During centrifugation of the clotted specimen, the polymer barrier material rises to the interface of the cells and the serum/plasma and forms a physical barrier separating the serum/plasma from the cells/clot. Speed in revolutions per minute (rpm) may be related to relative centrifugal force (g) by the following formula: $g = 1.12 \times 10^{-5} \times r \times (\text{rpm})^2$, where "r", expressed in cm, is the radial distance from the center of the centrifuge head to the bottom of the tube.

CAUTION:

1. Practice Universal Precautions. Use gloves, gowns, eye protection, other personal protective equipment, and engineering controls to protect from blood splatter, blood leakage, and potential exposure to bloodborne pathogens.
2. Handle all biologic samples and blood collection "sharps" (lancets, needles, luer adapters, and blood collection sets) according to the policies and procedures of your facility. Obtain appropriate medical attention in the event of any exposure to biologic samples (for example, through a puncture injury) since they may transmit viral hepatitis, HIV (AIDS), or other infectious diseases. Utilize any built-in used needle protector, if the blood collection device provides one. Becton Dickinson does not recommend resheilding used needles. However, the policies and procedures of your facility may differ and must always be followed.
3. Discard all blood collection "sharps" in biohazard containers approved for their disposal.
4. Transferring a sample from a syringe to a tube is not recommended. Additional manipulation of sharps increases the potential for needlestick injury. In addition, depressing the syringe plunger during transfer can displace the sample and cause a potential blood exposure. Using a syringe for blood transfer may also cause over or under filling of tubes, resulting in an incorrect blood-to-additive ratio and potentially incorrect analytic results.
5. If blood is collected through an intravenous (I.V.) line, ensure that line has been cleared of I.V. solution before beginning to fill blood collection tubes. This is critical to avoid erroneous laboratory data from I.V. fluid contamination.
6. Underfilling of tubes will result in an incorrect blood-to-additive ratio and may lead to incorrect analytic results or poor product performance.

ANALYTIC EQUIVALENCY

Evaluations of BD Microtainer® Tubes have been performed for an array of analytes over a variety of test methods and time periods. The Becton Dickinson Technical Service Department is available to answer questions regarding these studies. Please contact them to obtain references and technical reports on these evaluations and any other information regarding the use of BD Microtainer® Tubes with your instrument/reagent system.

Technical Question? Call 1-800-631-0174,

Or, write for information at:

BD Diagnostics, Preanalytical Systems
 Technical Service
 1 Becton Drive, Franklin Lakes, NJ 07417-1885
www.bd.com/vacutainer

It is the laboratory's ultimate responsibility to determine reference intervals for all analytes base upon the tubes used for skin puncture blood specimens by that laboratory. The clinical laboratory should establish/verify its reference ranges if changing specimen collection tube types and sizes, as this could potentially affect analytic results from patient samples.