

## Centrifugation

Caution: Do not centrifuge glass tubes at forces above 2200 RCF in a horizontal head (swinging bucket) centrifuge as breakage may occur. Glass tubes may break if centrifuged above 1300 RCF in fixed angle centrifuge heads. BD Vacutainer® Plus Tubes will withstand up to 10,000 RCF in a balanced centrifuge. Always use appropriate carriers or inserts. Use of tubes with cracks or chips or excessive centrifugation speed may cause tube breakage, with release of sample, droplets, and an aerosol into the centrifuge bowl. Release of these potentially hazardous materials can be avoided by using specially designed sealed containers in which tubes are held during centrifugation. Centrifuge carriers and inserts should be of the size specific to the tubes used. Use of carriers too large or too small for the tube may result in breakage.

RCF is related to centrifuge speed setting (rpm) using the following equation:

$$\text{rpm} = \sqrt{\frac{\text{RCF} \times 10^5}{1.12 \times r}}$$

where “r”, expressed in cm, is the radial distance from the center of the centrifuge head to the bottom of the tube.

The following table gives recommended centrifuge RCF and time:

Centrifugation RCF and Time*		
PRODUCT	RCF (g)	TIME (min)
BD SST™ and BD PST™ Tubes (glass)	1000 - 1300	10
BD SST™ Plus and BD PST™ Plus Tubes - 13mm	1100 - 1300	10
BD SST™ Plus and BD PST™ Plus Tubes - 16mm	1000 - 1300	10
BD SST™ Transport Tubes	1100 - 1300	15
BD SST™ II <i>Advance</i> and BD PST™ II Tubes	1300 - 2000	10
All Non-gel Tubes	≤ 1300	10
Citrate Tubes	1500**	15**

15 minutes for all gel tubes in a fixed angle centrifuge

RCF = Relative Centrifuge Force, g's

\*Use of alternate centrifugation conditions (e.g., higher RCF and shorter spin time) may also provide acceptable performance; this should be evaluated and validated by the laboratory.

\*\*Unless otherwise specified on product labeling. Citrate tubes should be centrifuged at a speed and time to consistently produce platelet-poor plasma (platelet count <10,000/uL) per CLSI Guidelines.

Ensure that tubes are properly seated in the centrifuge carrier. Incomplete seating could result in separation of the BD Hemogard™ Closures from the tube or extension of the tube above the carrier. Tubes extending above the carrier could catch on centrifuge head, resulting in breakage. Balance tubes to minimize the chance of glass breakage. Match tubes to tubes of the same fill level, glass tubes to glass, tubes with BD Hemogard™ Closures to others with the Closure, gel tubes to gel tubes, BD Vacutainer® Plus Tubes with Plus Tubes, and tube size to tube size.

Always allow centrifuge to come to a complete stop before attempting to remove tubes. When centrifuge head has stopped, open the lid and examine for possible broken tubes. If breakage is indicated, use mechanical device such as forceps or hemostat to remove tubes.

**Caution: Do not remove broken tubes by hand.**

See centrifuge instruction manual for disinfection instructions.