

Order of Draw

Source: Gurr ¹	Source: CLSI ²
Blood culture	Blood culture
 Serum / Serum-Gel	 Citrate*
 Citrate*	 Serum / Serum-Gel
 Heparin / Heparin-Gel	 Heparin / Heparin-Gel
 EDTA	 EDTA
 Fluoride/ Citrate-Fluoride	 Fluoride/ Citrate-Fluoride

¹ Gurr et al "Musterstandardarbeitsanweisung Präanalytik" J Lab Med 2011

² CLSI Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture, Approved Standard, 6th edition GP 41-A6 (former H3-A6), 27 (26) 2007

* It is recommended to draw a discard tube first when a citrate tube is the first tube needed.

Technical modifications reserved

This document may contain information on products that may not be available in particular countries

220h-207

Preparations & Recommendations on Centrifugation

Preparations		Time*	Standard	Alternative	Fields of Application
	Serum	10 min.	2,000 x g	1,800 - 2,500 x g	Clinical Chemistry S-Monovettes contain beads coated with a clotting activator (silicate). As a rule, this clotting additive enables the blood to clot within 20 to 30 minutes and the sample can be centrifuged. The beads form a layer between the blood clot and serum during centrifugation.
	Serum-Gel**	10 min.	2,500 x g	2,200 - 3,000 x g	Clinical Chemistry In addition to the beads, this S-Monovette® contains a polyacrylic ester gel that, due to its density, forms a stable separating layer between the blood clot and the serum during centrifugation and serves as a barrier during sample transport and storage. Compliance with the recommended storage conditions will keep most parameters stable for up to 48 hours.
	Lithium-Heparin	10 min.	2,000 x g	1,800 - 2,500 x g	Clinical Chemistry Heparin, at an average concentration of 16 I.U./ml blood, is used as an anticoagulant for plasma generation. Heparin is coated onto beads which form a layer between the plasma and the corpuscular components during centrifugation. The function of the plasma gel is identical to serum-gel.
	Lithium-Heparin-Gel**	10 min. or 15 min.	3,000 x g 2,500 x g	2,700 - 3,300 x g 2,300 - 3,000 x g	
	Potassium EDTA	—	—	—	Haematology EDTA K ₃ is pre-dosed as a liquid preparation in an average concentration of 1.6 mg EDTA/ml blood. The maximum dilution caused by the liquid preparation is lower than 1%. Although the EDTA preparation may dry during storage, this does not in any way impair its anticoagulant effect. An S-Monovette® with EDTA K ₂ and gel is available for use in molecular virus diagnostics.
	Potassium EDTA Gel	10 min.	2,500 x g	1,800 - 2,500 x g	Molecular Virus Diagnostics In addition to EDTA in a dry preparation (1.6 mg/ml blood), the S-Monovette® EDTA K ₂ gel also contains gel for a safe separating layer between the blood cells and the plasma.
	Tri-Sodium Citrate 1:10	10 min.	1,800 x g	1,800 - 2,300 x g	Coagulation Citrate, pre-dosed as a 0.106 molar solution (equivalent to 3.2% trisodium citrate), is used for all physiological coagulation studies (e.g. Quick, PTT, TZ, Fibrinogen). A mixing ratio of 1:10 (1 part citrate + 9 parts blood) must be strictly observed.
	Fluoride	10 min.	2,000 x g	1,800 - 2,500 x g	Glucose The S-Monovette® Glucose contains fluoride (1.0 mg/ml blood) as a glycolysis inhibitor, and liquid EDTA (1.2 mg/ml blood) as an anticoagulant.
	Citrate-Fluoride				The S-Monovette® GlucoExact contains fluoride and citrate as a glycolysis inhibitor, and liquid EDTA as an anticoagulant (multiplication factor 1.16). Optimal stabilization of the glucose concentration in the sample for up to 48h.

* Temperature: 18 - 25°C

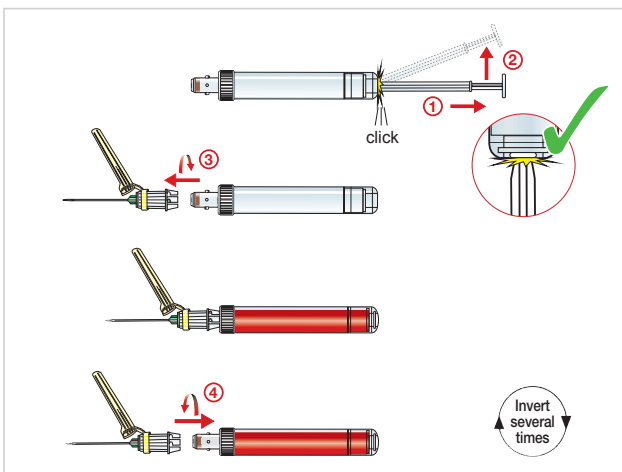
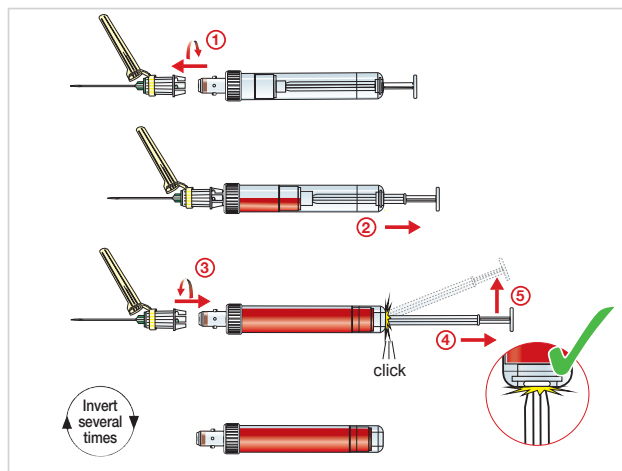
** We recommend processing of S-Monovettes with gel preparation in swing-out rotors only.

Refer to the centrifugation calculator at www.sarstedt.com / SERVICE-CONSULTATION / CENTRIFUGATION-CALCULATOR to convert the g-force into the number of revolutions per minute.

S-Monovette®

Safety begins with choosing the right system





Aspiration method

- Immediately prior to venous puncture, push the S-Monovette® onto Safety-Needle and secure by slightly twisting clockwise (①).
- Puncture vein, loosen tourniquet and withdraw plunger slowly (②). Wait until blood flow stops.
- Remove S-Monovette® from Safety-Needle by slightly twisting anti-clockwise (③). Safety-Needle remains in vein.
- For multiple sampling, secure subsequent S-Monovettes onto Safety-Needle and collect further samples as described above.

Completion of blood collection:

Remember: Detach S-Monovette® (③) first, then withdraw Safety-Needle. Either place the needle protector on a stable, flat surface and slightly press the needle downwards until it locks into the needle protector with a noticeable and audible "Click", or activate the protection device by pressing your index finger against the lower end of the needle protector.

- Gently invert several times sample(s) with anticoagulant(s)!
- For transportation and centrifugation, lock piston into S-Monovette® base (④) and break off plunger (⑤).

Vacuum method

Prior to blood collection, the S-Monovette® Safety-Needle must already be in the vein. The vein can be punctured directly with the Safety-Needle. To begin blood collection gently, we generally recommend using the first S-Monovette® with the aspiration method. Then continue with the vacuum method.

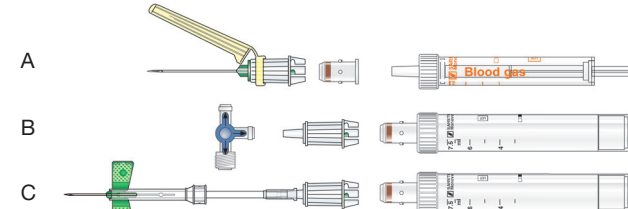
- Prior to blood collection, lock piston into S-Monovette® base (①). Once secured, the plunger must be snapped off (②).
- Push S-Monovette® onto the Safety-Needle and secure by slightly twisting clockwise (③). Loosen tourniquet.
- Wait until blood flow stops.
- Remove S-Monovette® from Safety-Needle by slightly twisting anti-clockwise (④). Safety-Needle remains in vein.
- For multiple sampling, secure subsequent S-Monovettes onto Safety-Needle and collect samples as described above.

Completion of blood collection:

Remember: Detach S-Monovette® (④) first, then withdraw Safety-Needle from the vein. Either place the needle protector on a stable, flat surface and slightly press the needle downwards until it locks into the needle protector with a noticeable and audible "Click", or activate the protection device by pressing your index finger against the lower end of the needle protector.

- Gently invert several times sample(s) with anticoagulant(s)!

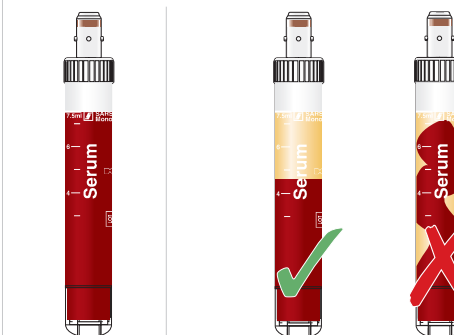
Special Applications



- The Membrane-Adapter (A) can be used if, in exceptional cases, blood is to be collected with a Luer-Monovette® (e.g. blood gas).
- The S-Monovette® can be used for blood collection from Luer connections (3-way-tap, Butterfly, etc.) by means of the Multi-Adapter (B).
- For difficult vein conditions, we recommend to use the Safety-Multifly®-Needle (C) with integral Multi-Adapter.

User Guide S-Monovette® Serum/Serum Gel

Make sure to observe the following instructions for optimal serum yield after blood collection using the S-Monovette® Serum:

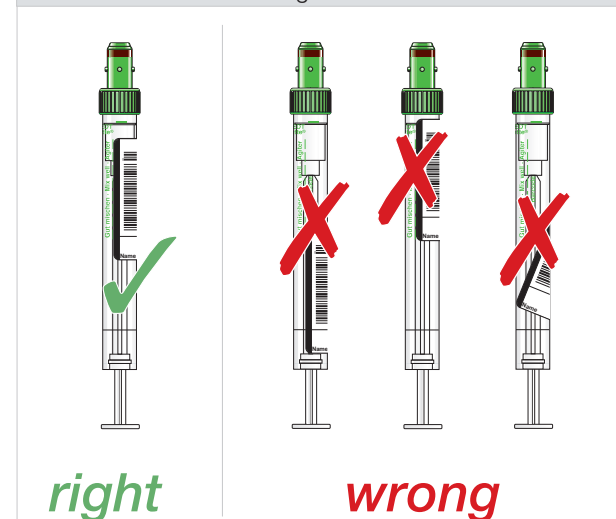


After blood collection:
Store S-Monovette® in an upright position for 30 minutes

During the clotting phase (i.e. the initial 30 minutes after blood collection), it is essential to store the S-Monovette® in an upright position to ensure a distinct separating layer after centrifugation and to avoid irregular effects (i.e. 'sausage' pattern)!

Barcode Labelling & Mixing

The barcode label must be attached to the barcode line below the logo!



Careful inverting of the S-Monovettes prepared with anticoagulants prevents the blood from clotting:

