Recommendations on Centrifugation

Order of draw*			
Blood culture (if required)			
Citrate 1:10	10 min.	1,800 x g	22°C
Citrate 1:5			
Serum	10 min.	2,000 x g	20°C
Serum Gel	10 min.	2,500 x g	20°C
Heparin	10 min.	2,000 x g	20°C
Heparin Gel	10 min.	3,000 x g	20°C
	or 15 min.	2,500 x g	20°C
EDTA	10 min.	2,000 x g	20°C
EDTA K_2 Gel	10 min.	2,500 x g	20°C
Fluoride	10 min.	2,000 x g	20°C

* From: 'CLSI H3-A6 (Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture, Approved Standard - Sixth Edition)'

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Notes Caps	Preparations and Applications	
Serum	**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	**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	**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.
Potassium EDTA	**Hematology**	EDTA K_2 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.
Fluoride	**Glucose**	The S-Monovette® for glucose determination contains fluoride (1.0 mg/ml blood) as a glycolysis inhibitor and EDTA (1.2 mg/ml blood) as an anticoagulant in a liquid preparation. The glucose concentration in the sample is stabilized for a period of 24 hours.
Tri-Sodium Citrate 1:10	**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.
Tri-Sodium Citrate 1:5	**ESR**	Citrate, pre-dosed as a 0.106 trisodium citrate molar solution, is used for ESR determination. A mixing ratio of 1:5 (1 part citrate + 4 parts blood) must be strictly observed. For ESR, we recommend the S-Monovette® Sediplus® system (Westergren method) or the enclosed S-Sedivette® system (modified Westergren method).

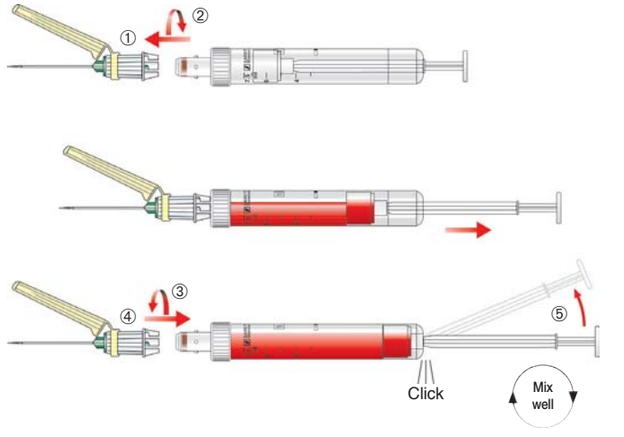
S-Monovette®

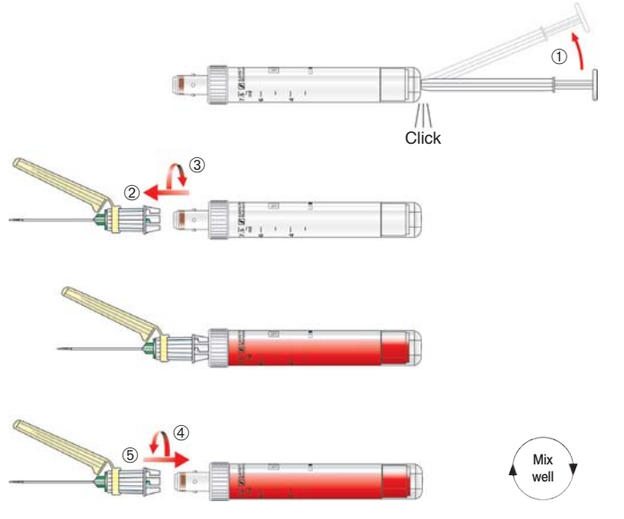
Safety begins with choosing the right system

SARSTEDT

S-Monovette®

User Guide





Aspiration Principle

a. Immediately prior to venous puncture, push S-Monovette® onto Safety-Needle and secure by slightly twisting clockwise (①+②).

b. Puncture vein, loosen tourniquet and withdraw plunger slowly. Wait until blood flow stops.

c. Remove S-Monovette® from Safety-Needle by slightly twisting counter-clockwise (③+④). Safety-Needle remains in vein.

d. 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+④) first, then withdraw Safety-Needle. Place the needle protector on a stable, flat surface and slightly press the needle downwards until it locks into the needle protector with a noticable and audible "Click".*

e. Gently invert several times to mix sample(s) with anticoagulant(s)!

f. For transportation and centrifugation, lock piston into S-Monovette® base and break off plunger (⑤).

Vacuum Principle

Prior to blood collection, the S-Monovette® Safety-Needle must already be in the vein. Either puncture the vein directly with the Safety-Needle or collect the first sample using the aspiration principle – then apply the vacuum principle.

a. Prior to blood collection, lock piston into S-Monovette® base. Once secured, the plunger must be snapped off (①).

b. Push S-Monovette® onto the Safety-Needle and secure by slightly twisting clockwise (②+③). Loosen tourniquet.

c. Wait until blood flow stops.

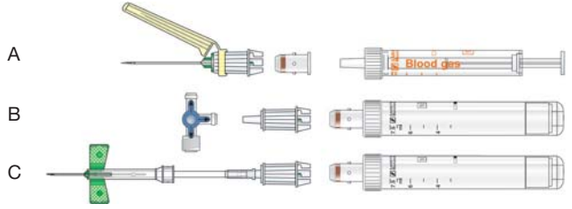
d. Remove S-Monovette® from Safety-Needle by slightly twisting counter-clockwise (④+⑤). Safety-Needle remains in vein.

e. 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+⑤) first, then withdraw Safety-Needle from the vein. Place the needle protector on a stable, flat surface and slightly press the needle downwards until it locks into the needle protector with a noticable and audible "Click".*

f. Gently invert several times to mix sample(s) with anticoagulant(s)!

Special Applications



a. The membrane adapter (A) can be used if, in exceptional cases, blood is to be collected with a Luer-Monovette® (e.g. blood gas).

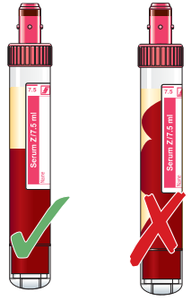
b. The S-Monovette® can be used for blood collection from Luer connections (3-way-tap, Butterfly, etc.) by means of the multi adapter (B).

c. For difficult vein conditions, we recommend to use the Safety-Multifly® (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:

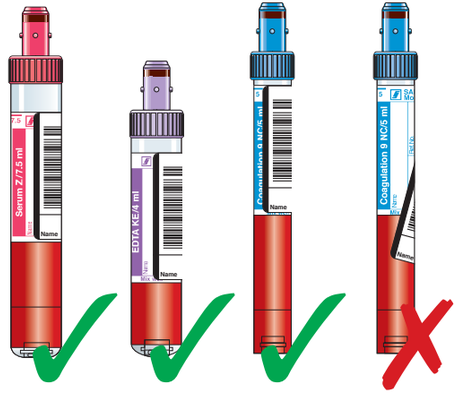
After blood collection: Store S-Monovette® in an upright position for 30 minutes



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!

Barcode Labelling & Mixing

Carefully align barcode labels:



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