



















Order of draw

Recommendation according to Gurr ¹	Recommendation according to CLSI ²
Blood culture	Blood culture
 Serum / Serum Gel	 Citrate*
 Citrate*	 Serum / Serum Gel
 Heparin / Heparin Gel	 Heparin / Heparin Gel
 EDTA	 EDTA
 Fluoride	 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, GP41 ED7:2017 7th Edition April 2017
 * If a citrate sample is collected first using a Safety-Multifly needle, it is recommended to first draw a discard tube.

Preparation & centrifugation conditions*

Additive	Fields of application
 Serum	Clinical chemistry The S-Monovette® Serum CAT contains plastic beads coated with a coagulation activator (silicate). As a result of this coagulant Blood coagulation is usually complete within 20-30 minutes, after which the sample can be centrifuged.
 Serum Gel**	Clinical chemistry In addition to the coated beads, the S-Monovette® Serum-Gel CAT contains a polymer-based gel. Due to its density, this gel forms a stable layer separating the coagulum and the serum during centrifugation and acts as a barrier during transport and storage of the sample.
 Lithium-Heparin	Clinical chemistry The S-Monovette® Heparin contains plastic beads coated with the anticoagulant heparin (generally 16 IU of heparin/ml of blood), or heparin is present in spray-dosed form (generally 19 IU/ml of blood). The S-Monovette® Lithium-Heparin-Gel/-Gel* also contains a polymer-based gel which settles between blood cells and plasma after centrifugation.
 Lithium-Heparin-Gel**	
 EDTA	Hematology The S-Monovette® EDTA K3E contains the anticoagulant K3 EDTA in spray-dosed form (1.6 mg EDTA/ml blood).
 EDTA-Gel**	Molecular virus diagnostics In addition to EDTA (1.6 mg/ml blood), the S-Monovette® EDTA Gel K2E also contains a polymer-based gel for a stable layer separating blood cells and plasma.
 Trisodium Citrate 1:10	Coagulation The S-Monovette® Citrate 9NC contains the anticoagulant trisodium citrate as a 0.106 molar solution (= 3.13 % trisodium citrate solution; often rounded up to 3.2 %) and amounts to 10 % of the nominal volume. The mixing ratio 1:10 (1 volume fraction of citrate and 9 volume fractions of blood) must be observed (= correct filling).
 Fluoride	Glucose The S-Monovette® Fluoride/EDTA contains fluoride (1.0 mg/ml blood) as glycolysis inhibitor and EDTA (1.2 mg/ml blood) as anticoagulant.

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 This document may contain information on products that may not be available in particular countries
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** For S-Monovettes prepared with gel, we recommend using swing-out rotors only.
 To convert g-force to speed/min, use the centrifugation calculator at <https://www.sarstedt.com/service/zentrifugation/>

S-Monovette®	2000 x g	2500 x g	3000 x g*	3500 x g*	4000 x g*
Serum	10 min	10 min	6 min	4 min	4 min
Serum Gel	15 min	10 min	4 min	4 min	4 min
Li-Heparin	10 min	10 min	7 min	7 min	7 min
Li-Heparin-Gel	15 min	15 min	10 min	7 min	7 min
Li-Heparin-Gel*	8 min	7 min	5 min	4 min	4 min
EDTA	n.v.	n.v.	7 min	6 min	5 min
EDTA Gel	15 min	10 min	10 min	7 min	7 min
Citrate	9 min	8 min	7 min	6 min	5 min
Fluoride	9 min	8 min	7 min	6 min	5 min
Citrate PBM 1.8 ml Rotor Ø > 17 cm	9 min	8 min	7 min	6 min	5 min
Citrate PBM 1.8 ml Rotor Ø > 9 cm or < 17 cm	n.v.	n.v.	10 min	n.v.	n.v.

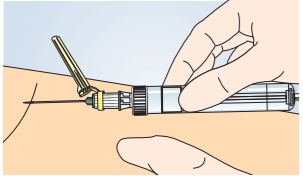
n.v. = not validated
 Conditions apply to a temperature of 20°C
 * Conditions apply to all S-Monovettes with the exception of 8 mm diameter (S-Monovettes for pediatrics)

S-Monovette®

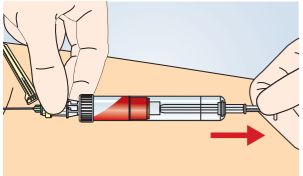
Safety starts with choosing the right system



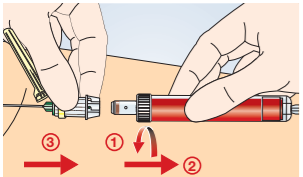
Aspiration technique



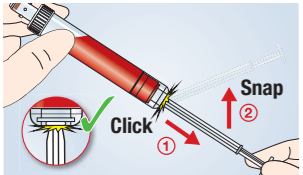
1. The safety needle is assembled with the S-Monovette® immediately prior to blood collection. This is followed by the puncture.



2. Slow retraction of the plunger results in a gentle blood flow. For multiple blood collections, additional S-Monovettes are connected to the safety needle and blood samples are collected as described above.

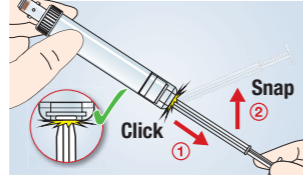


3. Once blood collection is complete, the last S-Monovette® is released from the safety needle and the needle is withdrawn from the vein.

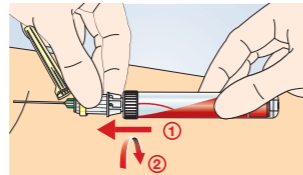


4. For safety during transport and centrifugation, the piston is locked in place at the bottom of the S-Monovette® (click) and the plunger is broken off (snap).

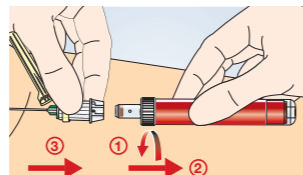
Vacuum technique



1. We recommend filling the first S-Monovette® using the aspiration technique in order to start the blood collection gently. By retracting and locking the plunger into place at the bottom of the S-Monovette® (click), a fresh vacuum is produced directly before the blood is collected. The plunger is broken off (snap).

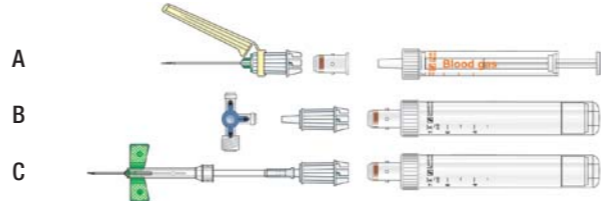


2. The evacuated S-Monovette® is connected and filled with the safety needle / Safety-Multify® needle already in the vein. For multiple blood collections, repeat this procedure accordingly.



3. Once blood collection is complete, the last S-Monovette® is released from the safety needle / Safety-Multify® needle and the needle is withdrawn from the vein.

Combination options



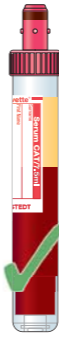
- a. If, in exceptional cases, blood is to be collected with a Luer-Monovette® (e.g. Blood Gas-Monovette®), the membrane adapter (A) can be used.
- b. With the multi-adapter (B), the S-Monovette® can be used for blood collection through Luer connections (3-way stopcock, butterfly, etc.).
- c. For veins in poor condition, the Safety-Multify® needle (C) with integrated multi-adapter can be used.

Handling the S-Monovette® Serum/Serum-Gel

To achieve a better serum yield, it is essential to observe the following after blood collection with the S-Monovette® Serum/Serum Gel:

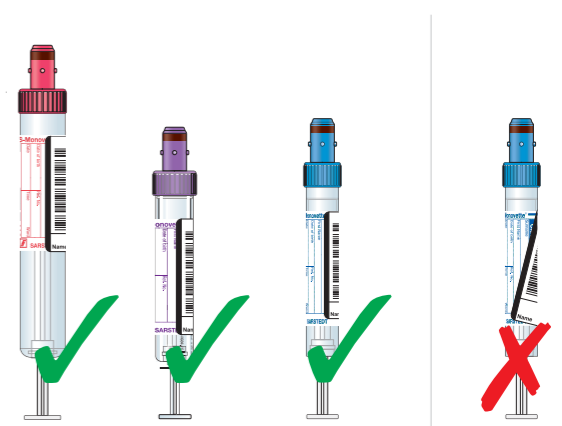


After blood collection: Store S-Monovettes upright for 30 min



During the clotting phase (the first 30 minutes after blood collection), the S-Monovettes must be stored in an upright position to ensure a distinct separating layer after centrifugation and to avoid irregular clot shapes.

Affix the barcode label along the barcode line.



Right

Wrong

Carefully inverting the S-Monovettes prepared with anticoagulants prevents clot formation:

