Minisart®-RC | SRP | NY | PES

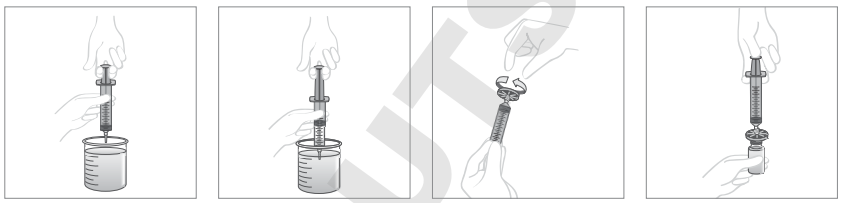
Sartorius Syringe Filters: Reliable and Ultrapure

Sartorius ultrapure Minisart® filters are ideal for preparation of analytical samples. Minisart® filters are manufactured at our own plant in Goettingen, Germany, and are required to meet the strictest quality standards. As a result, Sartorius sets the standards in both high flow rates and total throughput. At the same time, these syringe filters are virtually free of extractables, delivering an ultrapure filtrate.

Choose the right Minisart® syringe filter to optimize preparation of your samples for HPLC, UHPLC, LC/MS or a different analytical method. All Minisart® syringe filters listed below are certified for HPLC. Our recommended syringe filters for LC/MS and other analytical procedures are identified accordingly.

Applications
- **Minisart® RC** for ultracleaning of aqueous and organic solutions
- **Minisart® NY** for ultracleaning of aqueous and organic solutions
- **Minisart® PES** specially designed for ultracleaning of aqueous protein solutions (containing up to 30% MeOH)
- **Minisart® SRP** with a hydrophobic PTFE membrane for ultracleaning of aggressive liquids and gases
- **Minisart® RC|SRP|NY**, individually sterile-packaged (identified by suffix –ACK), for immediate sterile filtration of liquids

Instructions for Use



a) b) c) d)

If possible, draw a slight amount of air (at least 1 ml) into a syringe (a). Then fill the syringe with the liquid to be filtered: pull the plunger upwards to draw this liquid from a suitable container into the syringe (b). If required, remove any remaining liquid from the tip of the syringe and attach a Minisart® to the luer lock or luer slip connector on the filled syringe (c). Apply consistent pressure to press in the plunger of the syringe in order to filter the liquid through the Minisart® filter into a suitable vial for collection (d). Afterwards, press the plunger all the way in so that the air cushion initially created will discharge any liquid remaining in the inlet and outlet of the filter. As a result, this will reduce the hold-up volume.

Caution!
1. Take care when using syringes with a volume of less than 10 ml, as they can easily generate a pressure greater than the maximum recommended pressure resistance of 6 bar (87 psi) for Minisart®. Therefore, slowly press in the plunger on a syringe with a volume of less than 10 ml. As soon as you detect considerable resistance (= max. filter pressure capacity), do not use force while continuing to press the plunger. Otherwise, you can damage the filter, and filtration will no longer guarantee an ultrapure filtrate.
2. Minisart® is designed for bidirectional use. However, once you have selected one direction of filtration, be sure to maintain this direction. Never use the same syringe filter for both directions! For sterile filtration according to the BCT (see Table 1), you MUST use Minisart® RC in the following direction only: from the female luer inlet to which the syringe is attached to the male luer slip outlet.

Note
1. If you would like to achieve maximum recovery of your sample to be filtered, detach the syringe from the syringe filter and draw air once more into the syringe. After reconnecting the syringe and filter, use the air cushion created in this way to press out the remaining liquid. To do so, you will have to apply pressure beyond the bubble point of the particular Minisart® membrane incorporated (see Table 1). This will reduce the hold-up volume to the lowest possible amount.
2. Our filters are leading in terms of purity (see also recommendation for various analytical procedures), so prerinsing is usually not necessary. For extremely sensitive analytical methods, you may need to additionally prerinse the particular syringe filter you use with 0.5–2 ml of ultrapure water or ultrapure running buffer or wash buffer. This way, you can be sure that you have removed even the slightest traces of extractables. To avoid diluting exceptionally small sample volumes as far as possible, apply the technique described (step 1 above) to press out the remaining traces of rinse liquid using the air cushion before performing actual filtration.
3. Use a Minisart® for only one sample to reliably prevent carrying over residues of one sample to the next.
4. You will find an overview of chemical compatibilities in the 'Minisart® Chemical Compatibility Guide' on our website.

Table 1

Specifications for Minisart® RC|SRP|NY|PES with 4|15|25 mm membrane filtration area ∅								
Housing material	Polypropylene (PP)							
Membranes	– RC = Regenerated Cellulose – NY = Polyamide – SRP: hydrophobic PTFE = Polytetrafluoroethylene – PES = Polyethersulfone							
Application limits	Max. recommended operating pressure 4.5 bar | 65 psi							
Housing burst pressure	>7 bar | 102 psi							
Max. temperature	121°C, 30 min (autoclavable)							
Sterilization	Non-sterile Minisart® can be autoclaved or sterilized by ethylene oxide sterilization (EO)							
Minisart® type	**RC 0.2 µm**	**RC 0.2 µm**	**RC 0.45 µm**	**SRP 0.2 µm**	**SRP 0.45 µm**	**NY 0.2 µm**	**NY 0.45 µm**	**PES 0.2 µm**
– Non-sterile packs: 50 (K), 200 (S), 500 (Q), 1000 (R) – sterile packs: individually packaged, 50 (ACK)	K | S | Q | R	ACK	K | S | Q | R	K | S | Q | ACK	K | S | Q | ACK	K | Q | R | ACK	K | Q | R | ACK	K | Q | ACK
Bubble point (≥)	with water 3.0 bar | 44 psi	with water 4.6 bar | 67 psi	with water 2.0 bar | 29 psi	with ethanol 1.4 bar | 20 psi	with ethanol 0.9 bar | 13 psi	with water 3.0 bar | 44 psi	with water 2.0 bar | 29 psi	with water 3.2 bar | 46 psi
Flow rate, 4 mm ∅ = 0.07 cm² filter area | Hold-up volume[1]: 5–10 µl (▶ ml/min)								
with water at 1 bar	0.5	–	1.5	–	–	–	–	1.5
with methanol at 1 bar	1.5	–	3.0	2.0	4.5	–	–	–[4]
with air at 0.1 bar	–[2]	–	–[2]	30	60	–	–	–[2]
Flow rate, 15 mm ∅ = 1.7 cm² filter area | Hold-up volume[1]: 30–100 µl (▶ ml/min)								
with water at 1 bar	20	10	40	–	–	20	40	40
with methanol at 1 bar	55	25	105	55	150	40	110	–[4]
with air at 0.1 bar	–[2]	–[2]	–[2]	800	1600	–[2]	–[2]	–[2]
Flow rate, 25 mm ∅ = 4.8 cm² filter area | Hold-up volume[1]: 100–200 µl (▶ ml/min)								
with water at 1 bar	80	50	160	–	–	50	100	100
with methanol at 1 bar	160	90	325	160	260	70	200	–[4]
with air at 0.1 bar	–[2]	–[2]	–[2]	1800	3000	–[2]	–[2]	–[2]
Water penetration point	–	–	–	>4.0 bar | 58 psi[3]	>3.0 bar | 44 psi[3]	–	–	–
Sterile filtration capability[5] acc. to BCT	no	yes	no	yes	no	yes	no	yes
Main applications	universal hydrophilic filter with very low non-specific binding, compatible with many aggressive hydrophilic solutions			universal hydrophobic filter with very low non-specific binding suitable for almost all aggressive solutions, air and gases		hydrophilic filter with low non-specific binding, higher compatibility with bases than RC		hydrophilic filter mainly for protein solutions, limited chemical compatibility

[1] Hold-up volume after air purge. For minimum hold-up please see "Note|Hinweis|Remarques|Nota|Note 1"
[2] Hydrophilic membranes can filter dry air or gas but become impermeable to air or gas when wetted!
[3] Hydrophobic membranes cannot be wetted with aqueous solutions unless you overcome their water penetration point or pre-wet them using an organic solvent (e.g. ethanol)
[4] PES is suitable for solutions only containing up to 30% MeOH
[5] According to bacterial challenge test (BCT) with 10^7 *Brevundimonas diminuta*. Non-sterile RC Minisart® types are optimized for sample preparation and are not suitable for sterile filtration according to the BCT. All other non-sterile Minisart® types listed above can be sterilized by autoclaving or EO before use for sterile filtration.

Item Numbers | Artikelnummern | Numéro d'article
Número de artículo | Numero di articolo

Table 2

∅ mm	Pore Size	Qty. | Pk	Order Number	HPLC	LC | MS
Minisart® RC (Regenerated Cellulose+PP)					
25 mm	0.2 µm	50	17764--------ACK	●	
25 mm	0.2 µm	50	17764----------K	●	
25 mm	0.2 µm	200	17764----------S	●	
25 mm	0.2 µm	500	17764----------Q	●	
25 mm	0.45 µm	50	17765----------K	●	
25 mm	0.45 µm	200	17765----------S	●	
25 mm	0.45 µm	500	17765----------Q	●	
25 mm	0.45 µm	1000	17765----------R	●	
15 mm	0.2 µm	50	17761--------ACK	●	
15 mm	0.2 µm	50	17761----------K	●	
15 mm	0.2 µm	500	17761----------Q	●	
15 mm	0.2 µm	1000	17761----------R	●	
15 mm	0.45 µm	50	17762----------K	●	
15 mm	0.45 µm	500	17762----------Q	●	
4 mm	0.2 µm	50	17821----------K	●	
4 mm	0.2 µm	500	17821----------Q	●	
4 mm	0.45 µm	50	17822----------K	●	
4 mm	0.45 µm	500	17822----------Q	●	
Minisart® NY (Polyamide+PP)					
25 mm	0.2 µm	50	17845--------ACK	●	
25 mm	0.2 µm	500	17845----------Q	●	
25 mm	0.2 µm	1000	17845----------R	●	
25 mm	0.45 µm	50	17846--------ACK	●	
25 mm	0.45 µm	500	17846----------Q	●	
25 mm	0.45 µm	1000	17846----------R	●	
15 mm	0.2 µm	50	1776B----------K	●	
15 mm	0.2 µm	500	1776B----------Q	●	
15 mm	0.45 µm	50	1776C----------K	●	
Minisart® SRP (PTFE+PP)					
25 mm	0.2 µm	50	17575--------ACK	●	
25 mm	0.2 µm	50	17575----------K	●	
25 mm	0.2 µm	200	17575----------S	●	
25 mm	0.2 µm	500	17575----------Q	●	
25 mm	0.2 µm	500	1757A----------Q	●	
25 mm	0.45 µm	50	17576----------K	●	
25 mm	0.45 µm	200	17576----------S	●	
25 mm	0.45 µm	500	17576----------Q	●	
15 mm	0.2 µm	50	17558----------K	●	
15 mm	0.2 µm	500	17558----------Q	●	
15 mm	0.2 µm	50	17573--------ACK	●	
15 mm	0.2 µm	50	17573----------K	●	
15 mm	0.2 µm	500	17573----------Q	●	
15 mm	0.45 µm	50	17559----------K	●	
15 mm	0.45 µm	500	17559----------Q	●	
15 mm	0.45 µm	50	17574----------K	●	
15 mm	0.45 µm	500	17574----------Q	●	
4 mm	0.2 µm	500	17844----------Q	●	
4 mm	0.45 µm	50	17820----------K	●	
4 mm	0.45 µm	500	17820----------Q	●	
Minisart® PES (Polyethersulfone+PP)					
15 mm	0.2 µm	50	1776D--------ACK	●	●

For higher sample volumes and special applications Sartorius recommends the following Minisart® syringe filter types:

- **Minisart® NY25 Plus** (Glass Fiber 1.2 µm + Polyamide membrane) for highly particle laden samples
- **Minisart® High Flow** (PES – Polyethersulfone) for ultrapure filtration and sterilization of protein solutions additives and cell culture buffers
- **Minisart® NML** (SFCA – Surfactant-free Cellulose Acetate) for ultrapure filtration and sterilization of aqueous solutions and drugs
- **Minisart® NML Plus** (Glass Fiber 1.2 µm + SFCA) for highly particle laden aqueous samples
- **Minisart® Ophthalsart** (SFCA – Cellulose Acetate) for aqueous filtration of eye solutions
- **Minisart® Air** (hydrophobic PTFE) for venting & gas filtration
- **Minisart® HY** (hydrophobic PTFE) for venting & gas filtration
- **Minisart® Acticosart** with dome reservoire + hydrophobic PTFE, venting & ultracleaning of gases

Quality Assurance Certificate

CE 0120 sartorius

Minisart is manufactured by Sartorius in accordance with the Applicable Good Manufacturing Practice Standards and in a facility whose Quality Management System is certified for compliance with the DIN EN ISO 9001 Quality System Standard and DIN EN ISO 13485.

Sterile, individually packed products were sterilized using a validated process following DIN/EN ISO 11135 regulations.

Each unit is tested 100% during manufacture for membrane and housing integrity by a leakage test under automatic conditions. The lot no. alone or lot no. with one of the following: pore size, ID no., material type, order no. are printed on top of the housing and/or Tyvek. Before packing each unit has been checked by visual inspection.

Minisart is biosafe according to the USP Class VI Biological tests for Plastics. It also complies with the Title 21 Code of Federal Regulations, Section 210.3(b)(6) and 211.72 for non-fiber-releasing filters.

Following 100% control, each lot has been sampled, tested and released by QA Department for the following characteristics:

Non-Sterile and Sterile Products
Burst Pressure Test
Bubble Point Test
Pressure Hold Test
Flow Rate Performance

Additional Tests for 0.2 µm Pore Size
Sterile Filtration Capability (Bacterial Challenge Test)

Additional Tests for Sterile Products
Sterility

09.03.2015
Date

Dr. Hartmut Hennig,
Site Manager QA Filtration Products

QA released
sartorius stedim biotech

Manufactured by
Sartorius Stedim Biotech GmbH
August-Spindler-Strasse 11
37079 Goettingen, Germany

www.sartorius.com

Symbols

Nicht zur Wiederverwendung
Single Use
Ne pas réutiliser
No reutilizable
Monouso

REF Bestellnummer
Order Number
Référence du catalogue
Número de referencia
Codice d'ordine

Achtung! | Warning!
Attention! | Atención!
Attenzione!

Hersteller | Manufacturer
Fabricant | Fabricante
Produttore

IVD In-Vitro-Diagnostika
In-Vitro-Diagnostics
Dispositif médical de diagnostic in vitro
Para uso en diagnóstico in vitro
Per uso diagnostico in vitro

verwendbar bis
Use before | Utiliser jusqu'au
Fecha caducidad
Data di scadenza

LOT Chargenbezeichnung
Lot Number | Code du lot
Número de lote
Numero di lotto

STERILE EO Sterilisation mit Ethylenoxid
sterilized, ETO
Méthode de stérilisation utilisant de l'oxyde d'éthyléne
Esterilización por ETO
Sterilizzazione con ETO

STERILE R Sterilisation durch Bestrahlung
sterilized, irradiated
Méthode de stérilisation utilisant l'irradiation
Esterilización por radiación
Sterilizzazione per irradiazione

STERILE Sterilisation mit Dampf
sterilized, hot steam
Méthode de stérilisation utilisant la vapeur ou la chaleur séche
Esterilización por vapor caliente
Sterilizzazione con vapore caldo

Gebrauchsanwesiung beachten
Consult instructions for use
Consulter le mode d'emploi
Consulte las instrucciones de uso
Consultare le istruzioni per l'uso

pyrogenfrei
non-pyrogenic
non pyrogène
Apirógeno
Apirogeno

Porengröße
Pore size
Taille de pore
Tamaño de poro
Porosità

Temperaturbegrenzung
maximum and minimum temperature
Limite de température
Temperatura máxima y mínima
Temperatura massima e minima

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