



sartorius stedim
biotech

Minisart® Syringe Filters



turning science **into solutions**



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Sartorius Stedim Biotech brings more than 70 years of worldwide experience in membrane technology to each application. As a leading international supplier, we provide innovative products, cost-effective solutions, certified quality and superior technical support.

create innovative products and systems that meet customer needs and exceed customer expectations. Today, in cooperation with our partners and accredited science and research institutes at industrial centers throughout the world, Sartorius Stedim Biotech is developing international standards of technology for tomorrow.

Company Profile

Increasing our high quality standard

We place our highest priority on quality. From product design, testing and production to marketing and administration, quality assurance is our most important parameter. Sartorius Stedim Biotech is also an accredited institution, playing a major role in quality assurance issues, including the development of new standards.

Innovative manufacturing processes

Our casting equipment for manufacturing filter membranes have set new process and environmental standards in Germany and throughout the world. We recycle 99% of the solvents used in production and reuse 96% of the recycled material in our production processes.

Application research and development

Sartorius Stedim Biotech relies on their customers for input and experience to help guide our new product development. This interaction helps the R&D team to

Up-to-date expertise through training

We stress continuous training and qualification of our employees in all areas. We also offer standard or customized training programs for our customers employees who work with Sartorius Stedim Biotech products.

cGMP Quality and its assurance

Consistently high quality of our Membrane Filters, Minisart® syringe filters are assured by careful selection of the raw materials. The production process and the efficient Quality Assurance procedure is well-planned and validated, all of which results in high batch-to-batch reproducibility. The test procedures used are based both on external standard methods, such as the USP, EP and ASTM, and on in-house methods which are the result of Sartorius Stedim Biotech's experience over the past 70 years.



BIOCOMPATIBILITY CERTIFICATE

Test material: Minisart High-Flow type, representing syringe filter with MBS housing and PES membrane
Order No.: 16532 - QUK
Lot No.: 16532 008736

Supplier: Sartorius AG
Wendlinger Landstraße 64-66, D-37075 Göttingen

Studies performed: The following studies were performed in order to determine the biocompatibility of the device. The material was produced according to the manufacturing process of Sartorius AG.

**CYTOTOXICITY
HAEMOLYSIS TEST
USP BIOLOGICAL TESTS
(CLASSIFICATION VV121 °C)**

Results: The test item did not show any effect in the performed studies and meets the criteria of USP Biological Tests Classification VI. No leachables substances with cytotoxic or haemolytic potential were released from the test item.

BIL BIOSERVICE Scientific Laboratories GmbH
Sartoriusstraße 9
D-42110 Plönning

Dr. Daniela Brummer
Dr. Daniela Brummer
Biological Safety Testing
Date: October 08, 2020





BIOCOMPATIBILITY CERTIFICATE

Test material: Minisart type, representing syringe filter with MBS housing and PTFE membrane
Order No.: 16506 - HYK
Lot No.: 16506 000757

Supplier: Sartorius AG
Wendlinger Landstraße 64-66, D-37075 Göttingen

Studies performed: The following studies were performed in order to determine the biocompatibility of the device. The material was produced according to the manufacturing process of Sartorius AG.

**CYTOTOXICITY
HAEMOLYSIS TEST
USP BIOLOGICAL TESTS
(CLASSIFICATION VV121 °C)**

Results: The test item did not show any effect in the performed studies and meets the criteria of USP Biological Tests Classification VI. No leachables substances with cytotoxic or haemolytic potential were released from the test item.

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D-42110 Plönning

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Biological Safety Testing
Date: October 08, 2020



Minisart® 

Directions for Use



Certificate of Quality

Minisart High-Flow (manufactured in a Sartorius/Minisart facility) is compliant with ISO 13485 requirements. Special attention has been placed on strict design and manufacturing control conditions.

<p>100% Final testing</p> <p>Manufacturer Each lot is tested for sterility and housing integrity during manufacturing. A Leachate according to USP Class II.</p> <p>Quality Assurance and Release Each manufacturing lot has been analyzed, tested and released for the Sartorius/Minisart World Quality Standard according to the following characteristics:</p> <p>100% Final testing Each lot is tested for sterility and housing integrity during manufacturing. A Leachate according to USP Class II.</p> <p>Quality Assurance and Release Each manufacturing lot has been analyzed, tested and released for the Sartorius/Minisart World Quality Standard according to the following characteristics:</p>	<p>Final Process Testing of the Housing Pressure, Dead End, Bubble Point Test, Flow Rate Performance, Particle Retention Capability, Bleeding/Challenge Test, Leachate, Pyrogen Test.</p> <p><i>Dr. Daniela Brummer</i> Dr. Daniela Brummer Biological Safety Testing Date: October 08, 2020</p> 
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CE 0297 mark models, which sterile package
16534-QUK
16534-K
16555-QUK
16555-K
16506-HYK
17507-K
17508-K

CE mark of the models available
16534-Q
16555-Q
16506-HYQ
17507-Q
17508-Q

Applications

- Sterile filter 0.2 µm por
- Particulate reduction 1 from dry a

Minisart® ca and particula medical purp

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To ensure ster if the individ reuse a Minis for single use to filter in it. However, one direction, do

Dr. Daniela Brummer
Dr. Daniela Brummer
Biological Safety Testing
Date: October 08, 2020



Declaration of Conformity CE According to EU Directive 93/42/EEC

Company:	Sartorius Stedim GmbH
Address:	Amper-Siedler-Strasse 11 D-37075 Göttingen Federal Republic of Germany
Model:	We hereby declare that the device specified below fulfill the relevant fundamental safety requirements and health requirements specified in the annexes of the directive, with regard to its design and construction and to the manner in which it is manufactured.
Designation of device:	Syringe Filter units
Model number:	Minisart according to classification VI
CE No.:	0297-0297-01, 0297-0297-02, 0297-0297-03, 0297-0297-04, 0297-0297-05, 0297-0297-06, 0297-0297-07, 0297-0297-08, 0297-0297-09, 0297-0297-10, 0297-0297-11, 0297-0297-12, 0297-0297-13, 0297-0297-14, 0297-0297-15, 0297-0297-16, 0297-0297-17, 0297-0297-18, 0297-0297-19, 0297-0297-20, 0297-0297-21, 0297-0297-22, 0297-0297-23, 0297-0297-24, 0297-0297-25, 0297-0297-26, 0297-0297-27, 0297-0297-28, 0297-0297-29, 0297-0297-30, 0297-0297-31, 0297-0297-32, 0297-0297-33, 0297-0297-34, 0297-0297-35, 0297-0297-36, 0297-0297-37, 0297-0297-38, 0297-0297-39, 0297-0297-40, 0297-0297-41, 0297-0297-42, 0297-0297-43, 0297-0297-44, 0297-0297-45, 0297-0297-46, 0297-0297-47, 0297-0297-48, 0297-0297-49, 0297-0297-50, 0297-0297-51, 0297-0297-52, 0297-0297-53, 0297-0297-54, 0297-0297-55, 0297-0297-56, 0297-0297-57, 0297-0297-58, 0297-0297-59, 0297-0297-60, 0297-0297-61, 0297-0297-62, 0297-0297-63, 0297-0297-64, 0297-0297-65, 0297-0297-66, 0297-0297-67, 0297-0297-68, 0297-0297-69, 0297-0297-70, 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0297-0297-271, 0297-0297-272, 0297-0297-273, 0297-0297-274, 0297-0297-275, 0297-0297-276, 0297-0297-277, 0297-0297-278, 0297-0297-279, 0297-0297-280, 0297-0297-281, 0297-0297-282, 0297-0297-283, 0297-0297-284, 0297-0297-285, 0297-0297-286, 0297-0297-287, 0297-0297-288, 0297-0297-289, 0297-0297-290, 0297-0297-291, 0297-0297-292, 0297-0297-293, 0297-0297-294, 0297-0297-295, 0297-0297-296, 0297-0297-297, 0297-0297-298, 0297-0297-299, 0297-0297-300, 0297-0297-301, 0297-0297-302, 0297-0297-303, 0297-0297-304, 0297-0297-305, 0297-0297-306, 0297-0297-307, 0297-0297-308, 0297-0297-309, 0297-0297-310, 0297-0297-311, 0297-0297-312, 0297-0297-313, 0297-0297-314, 0297-0297-315, 0297-0297-316, 0297-0297-317, 0297-0297-318, 0297-0297-319, 0297-0297-320, 0297-0297-321, 0297-0297-322, 0297-0297-323, 0297-0297-324, 0297-0297-325, 0297-0297-326, 0297-0297-327, 0297-0297-328, 0297-0297-329, 0297-0297-330, 0297-0297-331, 0297-0297-332, 0297-0297-333, 0297-0297-334, 0297-0297-335, 0297-0297-336, 0297-0297-337, 0297-0297-338, 0297-0297-339, 0297-0297-340, 0297-0297-341, 0297-0297-342, 0297-0297-343, 0297-0297-344, 0297-0297-345, 0297-0297-346, 0297-0297-347, 0297-0297-348, 0297-0297-349, 0297-0297-350, 0297-0297-351, 0297-0297-352, 0297-0297-353, 0297-0297-354, 0297-0297-355, 0297-0297-356, 0297-0297-357, 0297-0297-358, 0297-0297-359, 0297-0297-360, 0297-0297-361, 0297-0297-362, 0297-0297-363, 0297-0297-364, 0297-0297-365, 0297-0297-366, 0297-0297-367, 0297-0297-368, 0297-0297-369, 0297-0297-370, 0297-0297-371, 0297-0297-372, 0297-0297-373, 0297-0297-374, 0297-0297-375, 0297-0297-376, 0297-0297-377, 0297-0297-378, 0297-0297-379, 0297-0297-380, 0297-0297-381, 0297-0297-382, 0297-0297-383, 0297-0297-384, 0297-0297-385, 0297-0297-386, 0297-0297-387, 0297-0297-388, 0297-0297-389, 0297-0297-390, 0297-0297-391, 0297-0297-392, 0297-0297-393, 0297-0297-394, 0297-0297-395, 0297-0297-396, 0297-0297-397, 0297-0297-398, 0297-0297-399, 0297-0297-400, 0297-0297-401, 0297-0297-402, 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Quality Assurance

Adherence to cGMP requirements (clean-room conditions, gowning and employee hygiene, etc.) which are monitored by documented in-process-controls, ensures optimal quality control in standard operating procedures for production. Finished Minisart® syringe filters undergo final product quality control. This involves 100% non-destructive testing of each individual product and other individual tests carried out on a representative number of samples. A lot is not released until all in-process and final quality control data are available and within their specifications.

Complete Traceability

The product name, product description, article code, pore size, sterilization method, expiration date, product lot number and the CE mark is printed on each individual blister lid. In addition, the pack size and the barcodes for article code and lot number are printed on the outer packaging. The traceable lot number allows convenient retrieval of all data compiled on the materials used, production steps and QC tests.

DIN ISO 9001 Certificates

Sartorius Stedim Biotech implemented Quality Management Systems to assure consistently high quality of Membrane Filters, Ultra Filters, Filter Cartridges and Disposables.

Exemplary Quality Systems Certificates:

- Global Quality Systems Certificates/
Quality Certificates (ISO 9001:2000)

- Global Quality Systems Certificates/
Quality Certificates for Medical Devices
(ISO 13485:2003 and directive
93/42/EEC)

The complete Quality Systems Certificates are continuously updated and can be downloaded on our website www.sartorius-stedim.com/qm-certificates

Certificate of product

The certificate in every package of Minisart® syringe filters documents passing of quality assurance tests as well as compliance with HPLC instruments for Minisart® RC and SRP.

Declaration as Medical Devices

In addition, the Sartorius Stedim Biotech Quality Management System fulfills the requirements of the DIN EN ISO 13485, the harmonized standard for Quality Systems for Medical Devices.

Declaration of Conformity CE

As part of the CE-marking Procedure, the Sartorius Stedim Biotech Quality Management system fulfills and is certified according to EU Guideline 93/42/EEC Annex II, setting specific requirements for medical devices. On the basis of this certification as well as appropriate documentation, the declaration of conformity for Minisart® syringe filters was obtained.

Biocompatibility

Minisart® syringe filters are free of cytotoxic and haemolytic effects, they pass the USP Biological Tests (classification VI|121°C), Haemolysis Tests and the Cytotoxicity Tests.



Sterile Filtration

For sterilization of liquids, sterile filtration is the optimal method. It removes all microorganisms and particles reliably, without any influence of their ingredients, due to adsorption or decomposition. Beyond the sterility of pharmaceutical products, the absence of particles or dead microorganisms which may release pyrogens is very important. For optimal sterilization of liquids, syringe filters must provide high flow rates and low adsorption characteristics.

Sterile Filtration

Reliable removal of microorganisms and particles from liquids with Minisart® syringe filters with pore sizes $\leq 0.2 \mu\text{m}$

Applications

- Sterile filtration of small volume liquids
- Drug development studies
- Product compatibility and recovery studies
- Filterability testing
- Separation of virus | bacteria suspension
- Medical applications (see also page 43)

Minisart® Features

- Low adsorption
- Superior flow rate
- High total throughput
- Low hold-up volume
- Particulate-free
- Minimum extractables
- Scalable
- Integrity testable
- 100% integrity tested
- Easy pore size identification
- PVC-free



Additional Minisart® Features

- Pre-sterilized or non-sterile
- Gamma irradiated or EO sterilized
- Fully validated
- Certified quality
- Maximum chemical compatibility
- Various membrane diameters available
- Various outlet connectors available
- Bi-directional use
- CE-marked

Media Types

- Tissue culture-, nutrient-, cell line- and bone marrow media
- Additives for tissue culture and nutrient media
- Pharmaceuticals and cosmetics
- Diagnostics
- Buffers and emulsifiers
- Biological- and dilution solutions

How do the Minisarts® meet my needs for my sterile filtration?

My Requirements are...

No interaction with the media

The composition of the ingredients of my media must stay the same prior to filtration

The syringe filter must not release any particles into my media

There should be no chemicals released from the syringe filter into my media

Any possible residues from Ethylene oxide must be avoided

The syringe filter should not be decomposed by solvents and aggressive solutions

The plastic materials must be carefully selected and should not contain any softening agent

The Minisart® Features are...

The Minisart® type should have the lowest adsorption of proteins and preservatives

The Minisart® type must be particulate-free

The Minisart® type should be extractable-free

The Minisart® type should be gamma irradiated

The Minisart® type should have a high chemical compatibility

The Minisart® type must be PVC-free

Superior performance

My filtration must be completed as fast as possible

I don't want to change the filter within one filtration campaign

The Minisart® type must have the highest flow rate

The Minisart® type must have the highest total throughput

Flexibility

The small volume filtration must easily transition to my pilot or production scale

The syringe filter must have an optimal ratio between speed and hold-up volume

I want to be flexible in the future to decide which connectors are ideal for my application

I don't want to be worry about the syringe filter orientation

The membrane within Minisart® must be available in filter units with larger filtration areas

The Minisart® type should be available with various diameters

The Minisart® type should be available with different outlet connectors

The Minisart® type should be used bi-directional

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your sterile filtration with our **Application Guide Disc**.

Reliability & less validation work

My main prerequisite is the sterility of my media after filtration

The integrity of every single Minisart® unit is tested during manufacturing

I want to check the integrity of the syringe filter unit after use

The Minisart® type must be integrity testable

The syringe filter must provide documents to support my validation procedure

The Minisart® type must be validated and a Validation Guide should be available

I have to file a certificate which certifies the high quality of the syringe filter

The Minisart® type must have a certificate in each box

The pore size of the syringe filter must be clearly visible to me

The Minisart® type is color-coded or the pore size is printed on the housing

Any loss of my expensive media must be avoided

The design of the Minisart® type guarantees the lowest hold-up volume

The syringe filter is used for a medical application

The Minisart® type must have the CE mark

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your sterile filtration with our **Application Guide Disc**.

Sterile Filtration: Minisart® Syringe Filters individually, sterile packaged

■ Minisart® high flow Syringe Filters,

for fastest sterile filtration and low binding, individually, sterile packaged, Polyethersulfone membrane, MBS² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® high flow	0.1	EO	dark red	Male Luer Lock	28	100 ml	16553-----K
Minisart® high flow	0.2 ⁷	GI	royal blue	Male Luer Lock	28	100 ml	16532-----GUK
Minisart® high flow	0.2 ⁷	EO	royal blue	Male Luer Lock	28	100 ml	16532-----K
Minisart® high flow	0.2 ⁷	EO	royal blue	Male Luer Slip	28	100 ml	16541-----K

■ Minisart® NML Syringe Filters,

for fast sterile filtration and lowest binding, individually, sterile packaged, surfactant-free Cellulose Acetate membrane, MBS² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® NML	0.2 ⁷	GI	blue	Male Luer Lock	28	100 ml	16534-----GUK
Minisart® NML	0.2 ⁷	EO	blue	Male Luer Lock	28	100 ml	16534-----K
Minisart® NML	0.2 ⁷	EO	blue	Male Luer Slip	28	100 ml	17597-----K
Ophthalsart	0.2	EO	pink	Male Luer Slip	28	100 ml	17528-----K

■ Minisart® plus Syringe Filters,

for fast sterile filtration of high particulate liquids, individually, sterile packaged, surfactant-free Cellulose Acetate membrane and GF² depth filter, MBS² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® plus	0.2	GI	blue	Male Luer Lock	28	100 ml	17823-----GUK
Minisart® plus	0.2	EO	blue	Male Luer Lock	28	100 ml	17823-----K

■ Minisart® NY25 Syringe Filters,

for fast sterile filtration and high chemical compatibility, individually, sterile packaged, Nylon membrane, PP² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® NY25	0.2	EO	printed ⁸	Male Luer Slip	28	100 ml	17845-----ACK

■ Minisart® SRP Syringe Filters,

for sterile filtration and maximum chemical compatibility, individually, sterile packaged, PTFE² membrane, PP² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® SRP15	0.2	EO	printed ⁸	Male Luer Slip	15	20 ml	17573-----ACK
Minisart® SRP25	0.2	EO	printed ⁸	Male Luer Slip	25	100 ml	17575-----ACK

Sterile Filtration: Minisart® Syringe Filters non-sterile

■ Minisart® Syringe Filters,

for diverse sterile filtrations, non-sterile, 0.2 µm membranes, connector inlet: Female Luer Lock, 500 units

Type	MF Housing ²	Feasible sterilization ¹	Color code	Connector outlet	MF Ø Process volume ⁶	Order number
Minisart® high flow	PES MBS	EO, GI	royal blue	Male Luer Lock	28 100 ml	16532-----Q
Minisart® high flow	PES MBS	EO, GI	royal blue	Male Luer Slip	28 100 ml	16541-----Q
Minisart® NML	SFCA MBS	EO, GI	blue	Male Luer Lock	28 100 ml	16534-----Q
Minisart® NML	SFCA MBS	EO, GI	blue	Male Luer Slip	28 100 ml	17597-----Q
Minisart® plus	SFCA+GF MBS	EO, GI	blue	Male Luer Lock	28 100 ml	17823-----Q
Minisart®NY25	Nylon PP	EO, AU	printed ⁸	Male Luer Slip	25 100 ml	17845-----Q ⁵
Minisart® SRP4	PTFE PP	EO, AU	blue ⁸	Male Luer Slip	4 1 ml	17844-----Q
Minisart® SRP15	PTFE PP	EO, AU	printed ⁸	Male Luer Slip	15 20 ml	17573-----Q ³
Minisart® SRP15	PTFE PP	EO, AU	printed ⁸	Male Spike	15 20 ml	17558-----Q ³
Minisart® SRP25	PTFE PP	EO, AU	printed ⁸	Male Luer Slip	25 100 ml	17575-----Q ^{3,4}

For sterile filtration of larger volumes we recommend the use of Sartolab® P filter units, capsules and cartridge filters. Minisart® syringe filters with pore sizes > 0.2 µm are described under the section „Clarification“.

1) Sterilization

EO: Ethylene oxide | GI: Gamma irradiation | AU: Autoclave 121°C, 30 min

2) Materials

MBS: Meta acrylate butadiene styrene polymerisate | PP: Polypropylene

GF: Binder-free glass fiber depth filter | Nylon: Polyamide | PES: Polyethersulfone | PTFE: Polytetra-fluorethylene (hydrophobic material, hydrophilic after wetting with IPA) | SFCA: Surfactant-free Cellulose Acetate

3) Also available as box with 50 units: ----- Q replaced by -----K

4) Also available as box with 200 units: ----- Q replaced by -----S

5) Also available as box with 1,000 units: ----- Q replaced by -----R

6) The process volume is a recommended value and depends on the ratio of retentive substances

7) These Minisart® syringe filters are fully validated (Validation Guide can be obtained for Order No. SL-5707e)

8) The pore size and the type of membrane of 15 mm and 25 mm syringe filters is printed on the housing, 4 mm filter units are packaged in a color coded tray (blue for 0.2 µm, yellow for 0.45 µm)



Sterile Venting

For sterilization and removal of particles from air and other gases, filtration with PTFE membranes is the optimal method. It removes all microorganisms and particles reliably, in order to vent containers, fermenters and tubing systems in medical devices. The 100% hydrophobic character of the membrane ensures the availability of 100% of the filtration area at any time, because the membrane area could not cut down by wetting with aqueous solutions. Additionally the Minisart® syringe filters can be used bi-directional, which makes in-line use a lot easier.

Sterile Venting

Reliable removal of microorganisms and particles from air and gases with Minisart® syringe filters with pore sizes 0.2 µm and 0.45 µm

Applications

- Sterile venting of fermenters
- Sterile venting of containers
- General sterile filtration of gases and air
- Medical applications (see also page 43)

Minisart® Features

- Superior flow rate
- High total throughput
- Bi-directional use
- Certified quality
- Integrity testable
- 100% integrity tested
- Minimum extractables
- Scalable
- Easy pore size identification
- Various outlet connectors available
- Particulate-free
- PVC-free



Additional Minisart® Features

- Pre-sterilized or non-sterile
- Gamma irradiated or EO sterilized
- Fully validated
- Maximum chemical compatibility
- Various membrane diameters available
- CE-marked

How do the Minisarts® meet my needs for my sterile venting?

My Requirements are...

No reduction in effective filtration area

The Minisart® Features are...

The Minisart® type must have a 100 % hydrophobic membrane

No interaction with the media

The syringe filter must not release any irritating particles into my container

The Minisart® type must be particulate-free

There should be no chemicals released from the syringe filter into my container

The Minisart® type should be extractable-free

Any possible residues from Ethylene oxide must be avoided

The Minisart® type should be gamma irradiated

The syringe filter should not be decomposed by solvents and aggressive solutions

The Minisart® type should have a high chemical compatibility

The plastic materials must be carefully selected and should not contain any softening agent

The Minisart® type must be PVC-free

Superior performance

The pressure compensation of my container must be completed as fast as possible

The Minisart® type must have the highest flow rate

I don't want to change the filter within one filtration campaign

The Minisart® type must have the highest total throughput

Flexibility

The small volume filtration must easily transition to my pilot or production scale

The membrane within the Minisart® must be available in filter units with larger filtration areas

The syringe filter must have an optimal ratio between speed and hold-up volume

The Minisart® type should be available with various diameters

I want to be flexible in the future to decide which connectors are ideal for my application

The Minisart® type should be available with different outlet connectors

I don't want to be worry about the syringe filter orientation, it should be optimal for in-line use

The Minisart® type should be used bi-directional

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your sterile venting with our **Application Guide Disc**.

Reliability & less validation work

My main prerequisite is the sterility of the air or gas after filtration

The integrity of every single Minisart® unit is tested during manufacturing

I want to check the integrity of the syringe filter unit after use

The Minisart® type must be integrity testable

The syringe filter must provide documents to support my validation procedure

The Minisart® type must be validated and a Validation Guide should be available

I have to file a certificate which certifies the high quality of the syringe filter

The Minisart® type must have a certificate in each box

The pore size of the syringe filter must be clearly visible to me

The Minisart® type is color-coded or the pore size is printed on the housing

The syringe filter is used for a medical application

The Minisart® type must have the CE mark

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your sterile venting with our **Application Guide Disc**.

Sterile Venting: Minisart® Syringe Filters individually, sterile packaged

■ Minisart® HY Syringe Filters,

for sterile venting, individually, sterile packaged, PTFE membrane, MBS⁴ housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Order number
Minisart® HY	0.2	EO	transparent	Male Luer Lock	26	16596-----HYK

■ Minisart® Air,

with connected needle, for sterile venting, individually, double packaged, sterile, optimal for use in isolators, PTFE membrane, MBS⁴ housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Order number
Minisart® Air	0.2 ⁵	GI	yellow	Male Luer Slip + needle	15	16596-----HNK

■ Minisart® SRP Syringe Filters,

for sterile venting, individually, sterile packaged, PTFE membrane, PP⁴ housing (pore size printed on), connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Order number
Minisart® SRP	0.2	EO	printed ⁶	Male Luer Slip	15	17573-----ACK
Minisart® SRP	0.2	EO	printed ⁶	Male Luer Slip	25	17575-----ACK

Sterile Venting: Minisart® Syringe Filters non-sterile

■ Minisart® Syringe Filters,

for sterile venting, non-sterile, PTFE membrane, 500 units

Type	Housing material ⁴	Pore size [µm]	Feasible sterilization ¹	Connector inlet	Connector outlet	MF Ø [mm]	Order number
Minisart® HY	MBS	0.2	E0	Female Luer Lock	Male Luer Lock	26	16596-----HYQ
Minisart® HY	MBS	0.2	E0	Female Luer Lock	Male Luer Slip	26	17595-----HYQ
Minisart® HY	MBS	0.2	E0	Male Luer Slip	Male Luer Lock	26	16599-----HYQ
Minisart® SRP4	PP ⁶	0.2	E0, AU	Female Luer Lock	Male Luer Slip	4	17844-----Q
Minisart® SRP15	PP ⁶	0.2	E0, AU	Female Luer Lock	Male Luer Slip	15	17573-----Q ²
Minisart® SRP15	PP ⁶	0.2	E0, AU	Female Luer Lock	Male Spike	15	17558-----Q ²
Minisart® SRP25	PP ⁶	0.2	E0, AU	Female Luer Lock	Male Luer Slip	25	17575-----Q ^{2,3}
NEW Minisart® HY	MBS	0.2	E0	Tube Connector Ø 5 mm	Tube Connector Ø 5 mm	26	40078-----Q
NEW Minisart® HY Res ⁷	MBS	0.45	E0	Tube Connector Ø 5 mm	Tube Connector Ø 5 mm	26	40080-----Q
Minisart® SRP4	PP ⁶	0.45	E0, AU	Female Luer Lock	Male Luer Slip	4	17820-----Q ²
Minisart® SRP15	PP ⁶	0.45	E0, AU	Female Luer Lock	Male Luer Slip	15	17574-----Q ²
Minisart® SRP15	PP ⁶	0.45	E0, AU	Female Luer Lock	Male Spike	15	17559-----Q ²
Minisart® SRP25	PP ⁶	0.45	E0, AU	Female Luer Lock	Male Luer Slip	25	17576-----Q ^{2,3}

■ Minisart® Air,

for sterile venting and gas filtration, non-sterile, gamma-irradiatable PTFE membrane, color code: yellow, 500 units

Type	Housing material ⁴	Pore size [µm]	Feasible sterilization ¹	Connector inlet	Connector outlet	MF Ø [mm]	Order number
Minisart® Air	MBS	0.2 ⁵	EO GI	Female Luer Lock	Male Luer Slip	15	1751A-----Q

For higher flow rates of gases we recommend the use of Midisart® filter units, Sartofluor® capsules and cartridge filters.

1) Sterilization: EO: Ethylene oxide | GI: Gamma irradiation | AU: Autoclave 121°C, 30 min

2) Also available as box with 50 units: -----Q replaced by -----K

3) Also available as box with 200 units: -----Q replaced by -----S

4) Materials: MBS: Meta acrylate butadiene styrene polymerisate | PP: Polypropylene
PTFE: Polytetra-fluorethylene

5) Minisart® Air is part of the fully validated Sterisart® NF system

6) The pore size and the type of membrane of 15 mm and 25 mm syringe filters is printed on the housing, 4 mm filter units are packaged in a color coded tray (blue for 0.2 µm, yellow for 0.45 µm)

7) Minisart® HY Res is a liquid barrier with reservoir. For technical information, please refer to the Technical Specification Disc under "Actiosart", with two exceptions: The connectors are tube connectors Ø 5 mm and Minisart® HY Res has no sealed 5 µm PTEE on the inlet.



Chromatography Sample Preparation

Reliable elimination of particles and microorganisms prior to chromatographic analysis is essential in order to protect your chromatography columns from fine particles or from premature plugging. The result spectrum must be free of ghost peaks, which may be influenced by the filter unit. Syringe filters for these applications must provide the maximum chemical compatibility and minimum extractables combined with a low hold-up volume.

Chromatography Sample Preparation

Reliable ultra-cleaning of small volume samples for HPLC | IC | GC with Minisart® syringe filters with pore sizes 0.2 μm and 0.45 μm

Applications

- Protection of columns and chromatography instruments
- Dissolution testing

Minisart® Features

- Low adsorption
- Particulate-free
- Maximum chemical compatibility
- Minimum extractables
- Superior flow rate
- High total throughput
- Low hold-up volume
- Certified quality
- Integrity testable
- 100% integrity tested
- Easy pore size identification
- PVC-free
- Bi-directional use



Additional Minisart® Features

- Pre-sterilized or non-sterile
- Various membrane diameters available
- Various outlet connectors available
- Scalable

Media Types

- Aqueous solutions
- Solvents
- Hydrocarbons

How do the Minisarts® meet my needs for my sample preparation?

My Requirements are...

No interaction with the media

The composition of the ingredients of my sample must stay the same prior to filtration

The syringe filter must not release any premature plugging particles into my sample

There should be no UV-absorbing chemicals released from the syringe filter into my sample (to avoid ghost peaks)

The syringe filter should not be decomposed by solvents and aggressive solutions

The plastic materials must be carefully selected and should not contain any softening agent

The Minisart® Features are...

The Minisart® type should have the lowest adsorption of proteins and preservatives

The Minisart® type must be particulate-free

The Minisart® type should be extractable-free

The Minisart® type should have a high chemical compatibility

The Minisart® type must be PVC-free

Superior performance

My filtration must be completed as fast as possible

I don't want to change the filter within one filtration step

The Minisart® type must have the highest flow rate

The Minisart® type must have the highest total throughput

Flexibility

The small volume filtration must easily transition to my pilot or production scale

The syringe filter must have an optimal ratio between speed and hold-up volume

I want to be flexible in the future to decide which connectors are ideal for my application

I don't want to be worry about the syringe filter orientation

The membrane within Minisart® must be available in filter units with larger filtration areas

The Minisart® type should be available with various diameters

The Minisart® type should be available with different outlet connectors

The Minisart® type should be used bi-directional

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your sample preparation with our **Application Guide Disc**.

Reliability & less validation work

My main prerequisite is reliable particle removal from my sample	The integrity of every single Minisart® unit is tested during manufacturing
I want to check the integrity of the syringe filter unit after use	The Minisart® type must be integrity testable
I have to file a certificate which certifies the high quality of the syringe filter	The Minisart® type must have a certificate in each box
The pore size of the syringe filter must be clearly visible to me	The Minisart® type is color-coded or the pore size is printed on the housing
Any loss of my expensive sample must be avoided	The design of the Minisart® type guarantees the lowest hold-up volume

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your sample preparation with our **Application Guide Disc**.

Sample preparation: Minisart® Syringe Filters non-sterile

■ Minisart® RC Syringe Filters,

for fastest sample preparation and high chemical compatibility, regenerated Cellulose membrane, PP⁵ housing, connector inlet: Female Luer Lock, non-sterile¹

Type	Pore size [µm]	MF Ø [mm]	Process volume ⁴	Connector outlet	Pack size	Order number
Minisart® RC4	0.2	4 1 ml		Male Luer Slip	50	17821-----K
Minisart® RC4	0.2	4 1 ml		Male Luer Slip	500	17821-----Q
Minisart® RC15	0.2	15 20 ml		Male Luer Slip	50	17761-----K ²
Minisart® RC15	0.2	15 20 ml		Male Luer Slip	100	17761-----N
Minisart® RC15	0.2	15 20 ml		Male Luer Slip	500	17761-----Q
Minisart® RC15	0.2	15 20 ml		Male Luer Slip	1,000	17761-----R
Minisart® RC25	0.2	25 100 ml		Male Luer Slip	50	17764-----K ²
Minisart® RC25	0.2	25 100 ml		Male Luer Slip	200	17764-----S
Minisart® RC25	0.2	25 100 ml		Male Luer Slip	500	17764-----Q ³
Minisart® RC4	0.45	4 1 ml		Male Luer Slip	50	17822-----K
Minisart® RC4	0.45	4 1 ml		Male Luer Slip	500	17822-----Q ³
Minisart® RC15	0.45	15 20 ml		Male Luer Slip	50	17762-----K
Minisart® RC15	0.45	15 20 ml		Male Luer Slip	500	17762-----Q
Minisart® RC25	0.45	25 100 ml		Male Luer Slip	50	17765-----K
Minisart® RC25	0.45	25 100 ml		Male Luer Slip	200	17765-----S
Minisart® RC25	0.45	25 100 ml		Male Luer Slip	500	17765-----Q

■ Minisart® NY Syringe Filters,

for fast sample preparation and high chemical compatibility

Nylon membrane, PP⁵ housing, connector inlet: Female Luer Lock

Type	Pore size [μm]	MF Ø [mm]	Process volume ⁴	Connector outlet	Pack size	Order number
Minisart® NY15	0.2	15	20 ml	Male Luer Slip	50 non-sterile ¹	1776B-----K
Minisart® NY15	0.2	15	20 ml	Male Luer Slip	500 non-sterile ¹	1776B-----Q
Minisart® NY25	0.2	25	100 ml	Male Luer Slip	50 EO-sterile	17845-----ACK
Minisart® NY25	0.2	25	100 ml	Male Luer Slip	500 non-sterile ¹	17845-----Q
Minisart® NY25	0.2	25	100 ml	Male Luer Slip	1,000 non-sterile ¹	17845-----R
Minisart® NY15	0.45	15	20 ml	Male Luer Slip	50 non-sterile ¹	1776C-----K
Minisart® NY15	0.45	15	20 ml	Male Luer Slip	500 non-sterile ¹	1776C-----Q
Minisart® NY25	0.45	25	100 ml	Male Luer Slip	50 EO-sterile	17846-----ACK
Minisart® NY25	0.45	25	100 ml	Male Luer Slip	500 non-sterile ¹	17846-----Q
Minisart® NY25	0.45	25	100 ml	Male Luer Slip	1,000 non-sterile ¹	17846-----R

■ Minisart® NY25 X Plus Syringe Filters,

for fast sample preparation of high particulate liquids and high chemical compatibility

Nylon membrane and GF⁵ depth filter, PP⁵ housing, connector inlet: Female Luer Lock

Type	Pore size [μm]	MF Ø [mm]	Process volume ⁴	Connector outlet	Pack size	Order number
Minisart® NY25 X Plus	0.2	25	100 ml	Male Luer Slip	50 non-sterile ¹	1784B-----K
Minisart® NY25 X Plus	0.2	25	100 ml	Male Luer Slip	500 non-sterile ¹	1784B-----Q
Minisart® NY25 X Plus	0.45	25	100 ml	Male Luer Slip	50 non-sterile ¹	1784C-----K
Minisart® NY25 X Plus	0.45	25	100 ml	Male Luer Slip	500 non-sterile ¹	1784C-----Q

■ Minisart® SRP Syringe Filters,

for fast sample preparation and maximum chemical compatibility,
PTFE membrane, PP⁵ housing, connector inlet: Female Luer Lock, non-sterile¹

Type	Pore size [μm]	MF Ø [mm]	Process volume ⁴	Connector outlet	Pack size	Order number
Minisart® SRP4	0.2	4 1 ml		Male Luer Slip	500	17844-----Q
Minisart® SRP15	0.2	15 20 ml		Male Spike	50	17558-----K
Minisart® SRP15	0.2	15 20 ml		Male Spike	500	17558-----Q
Minisart® SRP15	0.2	15 20 ml		Male Luer Slip	50	17573-----K ²
Minisart® SRP15	0.2	15 20 ml		Male Luer Slip	500	17573-----Q
Minisart® SRP25	0.2	25 100 ml		Male Luer Slip	50	17575-----K ²
Minisart® SRP25	0.2	25 100 ml		Male Luer Slip	200	17575-----S
Minisart® SRP25	0.2	25 100 ml		Male Luer Slip	500	17575-----Q

■ Minisart® SRP Syringe Filters,

for fast sample preparation and maximum chemical compatibility,
PTFE membrane, PP⁵ housing, connector inlet: Female Luer Lock, non-sterile¹

Type	Pore size [μm]	MF Ø [mm]	Process volume ⁴	Connector outlet	Pack size	Order number
Minisart® SRP4	0.45	4	1 ml	Male Luer Slip	50	17820-----K
Minisart® SRP4	0.45	4	1 ml	Male Luer Slip	500	17820-----Q
Minisart® SRP15	0.45	15	20 ml	Male Spike	50	17559-----K
Minisart® SRP15	0.45	15	20 ml	Male Spike	500	17559-----Q
Minisart® SRP15	0.45	15	20 ml	Male Luer Slip	50	17574-----K
Minisart® SRP15	0.45	15	20 ml	Male Luer Slip	500	17574-----Q
Minisart® SRP25	0.45	25	100 ml	Male Luer Slip	50	17576-----K
Minisart® SRP25	0.45	25	100 ml	Male Luer Slip	200	17576-----S
Minisart® SRP25	0.45	25	100 ml	Male Luer Slip	500	17576-----Q

For particle removal from larger volumes (e.g. eluents) we recommend the use of Midisart® filter units, Sartofluor® and Sartolon® capsules or disc filters with all-glass filter holders.

1) Supplied non-sterile, feasible sterilization methods: By ethylene oxide or by autoclaving 121°C, 30 min

2) Also available as individually, sterile packaged (EO): -----K replaced by -----ACK

3) Also available as individually, sterile packaged (EO): -----Q replaced by -----ACQ

4) The process volume is a recommended value and depends on the ratio of retentive substances

5) Materials

Housing: Polypropylene, the pore size and the type of membrane of 15 mm and 25 mm syringe filters is printed on the housing, 4 mm filter units are packaged in a color coded tray (blue for 0.2 μm, yellow for 0.45 μm)

Membrane: GF: Binder-free glass fiber depth filter | Nylon: Polyamide | PTFE: Polytetra-fluorethylene (hydrophobic material, hydrophilic after wetting with IPA) |

RC: Regenerated Cellulose



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Clarification

Prior to sterile filtration steps or for general removal of particles and large microorganisms, such as yeasts and molds, Minisart® syringe filters, available in various pore sizes, are ideal for clarification, purification and ultra-cleaning of liquids. The filter units with their Luer Lock outlet can be screwed tightly to the inlet of the final filter. Syringe filters for these applications excel by high flow rates and low adsorption characteristics in order to fulfill your requirements.

Clarification

Reliable ultra-cleaning, purification and pre-filtration of liquids with Minisart® syringe filters with pore sizes $\geq 0.45 \mu\text{m}$

Applications

- Ultra-cleaning, purification, particulate removal and clarification of liquids
- Medical applications (see also page 43)

Minisart® Features

- Low adsorption
- Superior flow rate
- High total throughput
- Low hold-up volume
- Minimum extractables
- Easy pore size identification
- PVC-free



Additional Minisart® Features

- Pre-sterilized or non-sterile
- Gamma irradiated or EO sterilized
- Particulate-free
- Scalable
- Certified quality
- Integrity testable
- 100% integrity tested
- Maximum chemical compatibility
- Various membrane diameters available
- Various outlet connectors available
- Bi-directional use
- CE-marked

Media Types

- Tissue culture-, nutrient-, cell line- and bone marrow media
- Additives for tissue culture and nutrient media
- Pharmaceuticals and cosmetics
- Diagnostics
- Buffers and emulsifiers
- Biological- and dilution solutions

How do the Minisarts® meet my needs for my clarification?

My Requirements are...

No interaction with the media

The composition of the ingredients of my media must stay the same prior to filtration

The syringe filter must not release any particles into my media

There should be no chemicals released from the syringe filter into my media

Any possible residues from Ethylene oxide must be avoided

The syringe filter should not be decomposed by solvents and aggressive solutions

The plastic materials must be carefully selected and should not contain any softening agent

The Minisart® Features are...

The Minisart® type should have the lowest adsorption of proteins and preservatives

The Minisart® type must be particulate-free

The Minisart® type should be extractable-free

The Minisart® type should be gamma irradiated

The Minisart® type should have a high chemical compatibility

The Minisart® type must be PVC-free

Superior performance

My filtration must be completed as fast as possible

I don't want to change the filter within one filtration campaign

The Minisart® type must have the highest flow rate

The Minisart® type must have the highest total throughput

Flexibility

The small volume filtration must easily transition to my pilot or production scale

The syringe filter must have an optimal ratio between speed and hold-up volume

I want to be flexible in the future to decide which connectors are ideal for my application

I don't want to be worry about the syringe filter orientation

The membrane within Minisart® must be available in filter units with larger filtration areas

The Minisart® type should be available with various diameters

The Minisart® type should be available with different outlet connectors

The Minisart® type should be used bi-directional

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your clarification with our **Application Guide Disc**.

Reliability & less validation work

The syringe filter is used for a medical application

I want to check the integrity of the syringe filter unit after use

My main prerequisite is reliable elimination of any substances which are larger than the nominal pore size from my media

The syringe filter must provide documents to support my validation procedure

I have to file a certificate which certifies the high quality of the syringe filter

The pore size of the syringe filter must be clearly visible to me

Any loss of my expensive media must be avoided

The Minisart® type must have the CE mark

The Minisart® type must be integrity testable

The integrity of every single Minisart® unit is tested during manufacturing

The Minisart® type must be validated and a Validation Guide should be available

The Minisart® type must have a certificate in each box

The Minisart® type is color-coded or the pore size is printed on the housing

The design of the Minisart® type guarantees the lowest hold-up volume

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your clarification with our **Application Guide Disc**.

Clarification: Minisart® Syringe Filters individually, sterile packaged

■ Minisart® high flow Syringe Filters,

for fastest pre-filtration and low binding, individually, sterile packaged,
Polyethersulfone membrane, MBS⁵ housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® high flow	0.45	E0	yellow	Male Luer Lock	28	100 ml	16537-----K
Minisart® high flow	0.45	G1	yellow	Male Luer Slip	28	100 ml	16533-----GUK
Minisart® high flow	0.45	E0	yellow	Male Luer Slip	28	100 ml	16533-----K

■ Minisart® NML Syringe Filters,

for fast pre-filtration and lowest binding, individually, sterile packaged,
surfactant-free Cellulose Acetate membrane, MBS⁵ housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® NML	0.45	G1	yellow	Male Luer Lock	28	100 ml	16555-----GUK
Minisart® NML	0.45	E0	yellow	Male Luer Lock	28	100 ml	16555-----K
Minisart® NML	0.45	E0	yellow	Male Luer Slip	28	100 ml	17598-----K
Minisart® NML	0.65	E0	pink	Male Luer Slip	28	100 ml	16569-----K
Minisart® NML	0.8	G1	green	Male Luer Lock	28	100 ml	16592-----GUK
Minisart® NML	0.8	E0	green	Male Luer Lock	28	100 ml	16592-----K
Minisart® NML	1.2	G1	red	Male Luer Lock	28	100 ml	17593-----GUK
Minisart® NML	1.2	E0	red	Male Luer Lock	28	100 ml	17593-----K
Minisart® NML	5	E0	brown	Male Luer Lock	28	100 ml	17594-----K
Minisart® PA	20 µm Nylon gauze	E0	transparent	Male Luer Lock	28	100 ml	17710-----TUK

■ Minisart® plus Syringe Filters,

for fast pre-filtration and high throughput, individually, sterile packaged, surfactant-free Cellulose Acetate membrane and GF⁵ depth filter, MBS⁵ housing, color code: yellow, connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® plus	0.45	GI	Male Luer Lock	28 100 ml		17829-----GUK
Minisart® plus	0.45	EO	Male Luer Lock	28 100 ml		17829-----K

■ Minisart® NY25 Syringe Filters,

for fast pre-filtration and high chemical compatibility, individually, sterile packaged, Nylon membrane, PP⁵ housing (pore size printed on), connector inlet: Female Luer Lock, 50 units

Type	Pore size [μm]	Sterilization ¹	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® NY25	0.45	EO	Male Luer Slip	25 100 ml		17846-----ACK

Clarification: Minisart® Syringe Filters non-sterile

■ Minisart® Syringe Filters,

for various pre-filtrations, non-sterile, connector inlet: Female Luer Lock, 500 units

Type	Pore size [µm]	MF Housing ⁵	Feasible sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® high flow	0.45	PES MBS	EO, GI	yellow	Male Luer Lock	28 100 ml		16537-----Q
Minisart® high flow	0.45	PES MBS	EO, GI	yellow	Male Luer Slip	28 100 ml		16533-----Q
Minisart® NML	0.45	SFCA MBS	EO, GI	yellow	Male Luer Lock	28 100 ml		16555-----Q
Minisart® NML	0.45	SFCA MBS	EO, GI	yellow	Male Luer Slip	28 100 ml		17598-----Q
Minisart® plus	0.45	SFCA+GF MBS	EO, GI	yellow	Male Luer Lock	28 100 ml		17829-----Q
Minisart® RC4	0.45	RC PP	EO, AU	yellow ⁷	Male Luer Slip	4 1 ml		17822-----Q ²
Minisart® RC15	0.45	RC PP	EO, AU	printed ⁷	Male Luer Slip	15 20 ml		17762-----Q ²
Minisart® RC25	0.45	RC PP	EO, AU	printed ⁷	Male Luer Slip	25 100 ml		17765-----Q ^{2,3}
Minisart® NY15	0.45	Nylon PP	EO, AU	printed ⁷	Male Luer Slip	15 20 ml		1776B-----Q ²
Minisart® NY25	0.45	Nylon PP	EO, AU	printed ⁷	Male Luer Slip	25 100 ml		17846-----Q ⁴
Minisart® NY25 X Plus	0.45	Nylon+GF PP	EO, AU	printed ⁷	Male Luer Slip	25 100 ml		1784C-----Q ²
Minisart® SRP4	0.45	PTFE PP	EO, AU	yellow ⁷	Male Luer Slip	4 1 ml		17820-----Q ²
Minisart® SRP15	0.45	PTFE PP	EO, AU	printed ⁷	Male Spike	15 20 ml		17559-----Q ²
Minisart® SRP15	0.45	PTFE PP	EO, AU	printed ⁷	Male Luer Slip	15 20 ml		17574-----Q ²
Minisart® SRP25	0.45	PTFE PP	EO, AU	printed ⁷	Male Luer Slip	25 100 ml		17576-----Q ^{2,3}
Minisart® GF	-	GF MBS	EO	white	Male Luer Lock	28 100 ml		17824-----Q ²

■ Minisart® Syringe Filters,

for various pre-filtrations, non-sterile, connector inlet: Female Luer Lock, 500 units

Type	Pore size [µm]	MF Housing ⁵	Feasible sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ⁶	Order number
Minisart® NML	0.8	SFCA MBS	EO, GI	green	Male Luer Lock	28 100 ml		16592-----Q
Minisart® NML	1.2	SFCA MBS	EO, GI	red	Male Luer Lock	28 100 ml		17593-----Q
Minisart® plus	1.2	SFCA+GF MBS	EO, GI	red	Male Luer Lock	28 100 ml		17825-----Q
Minisart® NML	5	SFCA MBS	EO, GI	brown	Male Luer Lock	28 100 ml		17594-----Q
Minisart® GF	-	GF MBS	EO, GI	white	Male Luer Lock	28 100 ml		17824-----Q
Minisart® GF	-	GF MBS	EO, GI	white	Male Luer Slip	28 100 ml		17856-----Q

Minisart® syringe filters with pore sizes < 0.45 µm are described under the section „Sterile Filtration“.

1) Sterilization

EO: Ethylene oxide | GI: Gamma irradiation | AU: Autoclave 121°C, 30 min

2) Also available as box with 50 units: -----Q replaced by -----K

3) Also available as box with 200 units: -----Q replaced by -----S

4) Also available as box with 1,000 units: -----Q replaced by -----R

5) Materials

MBS: Meta acrylate butadiene styrene polymerisate | PP: Polypropylene

GF: Binder-free glass fiber depth filter | Nylon: Polyamide | PES: Polyethersulfone | PTFE: Polytetra-fluorethylene (hydrophobic material, hydrophilic after wetting with IPA) | RC: Regenerated Cellulose | SFCA: Surfactant-free Cellulose Acetate

6) The process volume is a recommended value and depends on the ratio of retentive substances

7) The pore size and the type of membrane of 15 mm and 25 mm syringe filters is printed on the housing, 4 mm filter units are packaged in a color coded tray (blue for 0.2 µm, yellow for 0.45 µm)



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Medical Applications

Sterile filtration of liquids or gases | air in hospitals, pharmacies and direct patient care are the optimal method for the preparation of pharmaceuticals, infusion solutions and blood | urine samples for laboratory tasks. More than 15 different types of Minisart® syringe filters are **CE**-marked and available with various types of membranes, connectors and housing materials.

Medical Applications

Minisart® syringe filters with various pore sizes for use in hospitals, pharmacies and for direct patient care

Applications

- Filtration of serum and urine samples
- Filtration of patient serum (IVF)
- Filtration of buffer solutions
- Filtration of infusion- and parenteral solutions
- Filtration of pharmaceuticals and chemotherapeutics
- Filtration of diagnostics and anesthetics

Minisart® Features

- Low adsorption
- Superior flow rate
- High total throughput
- Low hold-up volume
- Particulate-free
- Minimum extractables
- Easy pore size identification
- PVC-free



Additional Minisart® Features

- Pre-sterilized or non-sterile
- Gamma irradiated or EO sterilized
- CE-marked
- Certified quality
- Fully validated
- Integrity testable
- 100% integrity tested
- Easy to stick to other plastic parts
- Scalable
- Bi-directional use
- Various membrane diameters available
- Various outlet connectors available
- Maximum chemical compatibility

Additional Applications

- Total parenteral nutrition
- Sterile venting of containers
- Sterile venting of tubing | infusion systems

How do the Minisarts® meet my needs for my medical applications?

My Requirements are...

No interaction with the media

The composition of the ingredients of my media must stay the same prior to filtration

The syringe filter must not release any particles into my media

There should be no chemicals released from the syringe filter into my media

Any possible residues from Ethylene oxide must be avoided

The syringe filter should not be decomposed by solvents and aggressive solutions

The plastic materials must be carefully selected and should not contain any softening agent

The Minisart® Features are...

The Minisart® type should have the lowest adsorption of proteins and preservatives

The Minisart® type must be particulate-free

The Minisart® type should be extractable-free

The Minisart® type should be gamma irradiated

The Minisart® type should have a high chemical compatibility

The Minisart® type must be PVC-free

Superior performance

My filtration must be completed as fast as possible

I don't want to change the filter within one filtration campaign

The Minisart® type must have the highest flow rate

The Minisart® type must have the highest total throughput

Flexibility

The small volume filtration must easily transition to my pilot or production scale

The syringe filter must have an optimal ratio between speed and hold-up volume

I want to be flexible in the future to decide which connectors are ideal for my application

I don't want to be worry about the syringe filter orientation

The membrane within Minisart® must be available in filter units with larger filtration areas

The Minisart® type should be available with various diameters

The Minisart® type should be available with different outlet connectors

The Minisart® type should be used bi-directional

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your medical application with our **Application Guide Disc**.

Easy to process

The syringe filter housing must be easily stick to other plastic parts i.e. tubes, cannulae

The Minisart® type must have a styrene housing

Reliability & less validation work

The syringe filter is used for a medical application

The Minisart® type must have the **CE** mark

I want to check the integrity of the syringe filter unit after use

The Minisart® type must be integrity testable

My main prerequisite is reliable elimination of microorganisms or any other substances which are larger than the nominal pore size from my media

The integrity of every single Minisart® unit is tested during manufacturing

The syringe filter must provide documents to support my validation procedure

The Minisart® type must be validated and a Validation Guide should be available

I have to file a certificate which certifies the high quality of the syringe filter

The Minisart® type must have a certificate in each box

The pore size of the syringe filter must be clearly visible to me

The Minisart® type is color-coded or the pore size is printed on the housing

Any loss of my expensive media must be avoided

The design of the Minisart® type guarantees the lowest hold-up volume

You can fold out the last page of this brochure to easily select your optimal Minisart® type for your medical application with our **Application Guide Disc**.

Medical Applications: Minisart® Syringe Filters individually, sterile packaged

■ Minisart® NML Syringe Filters,

mostly CE-marked, for fast liquid filtration and lowest binding, individually, sterile packaged, surfactant-free Cellulose Acetate membrane, MBS² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ³	Order number	
Minisart® NML	0.2 ⁴	GI	blue	Male Luer Lock	28	100 ml	16534-----GUK	CE
Minisart® NML	0.2 ⁴	EO	blue	Male Luer Lock	28	100 ml	16534-----K	CE
Minisart® NML	0.2 ⁴	EO	blue	Male Luer Slip	28	100 ml	17597-----K	CE
Ophthalsart	0.2	EO	pink	Male Luer Slip	28	100 ml	17528-----K	CE
Minisart® NML	0.45	GI	yellow	Male Luer Lock	28	100 ml	16555-----GUK	CE
Minisart® NML	0.45	EO	yellow	Male Luer Lock	28	100 ml	16555-----K	CE
Minisart® NML	0.45	EO	yellow	Male Luer Slip	28	100 ml	17598-----K	CE
Minisart® NML	0.65	EO	pink	Male Luer Slip	28	100 ml	16569-----K	
Minisart® NML	0.8	GI	green	Male Luer Lock	28	100 ml	16592-----GUK	
Minisart® NML	0.8	EO	green	Male Luer Lock	28	100 ml	16592-----K	
Minisart® NML	1.2	GI	red	Male Luer Lock	28	100 ml	17593-----GUK	
Minisart® NML	1.2	EO	red	Male Luer Lock	28	100 ml	17593-----K	
Minisart® NML	5	EO	brown	Male Luer Lock	28	100 ml	17594-----K	
Minisart® PA	20 µm Nylon gauze	EO	transparent	Male Luer Lock	28	100 ml	17710-----TUK	

■ Minisart® Air,

with connected needle, for sterile venting, validated, individually, double packaged, sterile, optimal for use in isolators, PTFE membrane, MBS² housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Order number
Minisart® Air	0.2	GI	yellow	Male Luer Slip + needle	15	16596-----HNK

■ Minisart® HY and SRP Syringe Filters,

mostly CE-marked, for sterile venting and gas filtration, individually, sterile packaged, PTFE membrane, pore size 0.2 µm, connector inlet: Female Luer Lock, 50 units

Type	Housing material ²	Sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Order number
Minisart® HY	MBS	EO	white	Male Luer Lock	26	16596-----HYK CE
Minisart® SRP25	PP	EO	pore size printed on	Male Luer Slip	25	17575-----ACK CE

Medical Applications: Minisart® Syringe Filters non-sterile

■ Minisart® NML Syringe Filters,

mostly CE-marked, for fast liquid filtration and lowest binding, non-sterile surfactant-free Cellulose Acetate membrane, MBS² housing, connector inlet: Female Luer Lock, 500 units

Type	Pore size [µm]	Feasible sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Process volume ³	Order number
Minisart® NML	0.2	EO, GI	blue	Male Luer Lock	28	100 ml	16534-----Q CE
Minisart® NML	0.2	EO, GI	blue	Male Luer Slip	28	100 ml	17597-----Q CE
Minisart® NML	0.45	EO, GI	yellow	Male Luer Lock	28	100 ml	16555-----Q CE
Minisart® NML	0.45	EO, GI	yellow	Male Luer Slip	28	100 ml	17598-----Q CE
Minisart® NML	0.8`	EO, GI	green	Male Luer Lock	28	100 ml	16592-----Q
Minisart® NML	1.2	EO, GI	red	Male Luer Lock	28	100 ml	17593-----Q
Minisart® NML	5	EO, GI	brown	Male Luer Lock	28	100 ml	17594-----Q

■ Minisart® Air,

for sterile venting and gas filtration, validated, non-sterile, gamma-irradiatable PTFE membrane, pore size 0.2 µm, connector inlet: Female Luer Lock, 500 units

Type	Housing material ²	Feasible sterilization ¹	Color code	Connector outlet	MF Ø [mm]	Order number
Minisart® Air	MBS	EO GI	yellow	Male Luer Slip	15	1751A-----Q

■ Minisart® HY Syringe Filters,

mostly CE-marked, for sterile venting and gas filtration, non-sterile, PTFE membrane, 500 units

Type	Housing material ²	Pore size [µm]	Feasible sterilization ¹	Connector inlet	Connector outlet	MF Ø [mm]	Order number
Minisart® HY	MBS	0.2	EO	Female Luer Lock	Male Luer Lock	26	16596-----HYQ CE
Minisart® HY	MBS	0.2	EO	Female Luer Lock	Male Luer Slip	26	17595-----HYQ
Minisart® HY	MBS	0.2	EO	Male Luer Slip	Male Luer Lock	26	16599-----HYQ CE
Minisart® HY	MBS	0.2	EO	Tube Connector Ø 5 mm	Tube Connector Ø 5 mm	26	40078-----Q
Minisart® HY Res ⁵	MBS	0.45	EO	Tube Connector Ø 5 mm	Tube Connector Ø 5 mm	26	40080-----Q

■ Acticosart active carbon filter unit,

for ultra-cleaning of gases, e.g. to adsorb unpleasant smells, non-sterile, MBS housing with high-adsorptive active carbon filling, two PTFE membranes, 500 units

Type	Housing material ²	Pore size [µm]	Feasible sterilization ¹	Connector inlet	Connector outlet	MF Ø [mm]	Order number
Acticosart	MBS	inlet 5 µm outlet 0.45 µm	EO	Male Luer Slip	Male Luer Slip	26	17840-----Q

Other filter unit types with different, membranes, connectors and housing on request.

1) Sterilization

EO: Ethylene oxide | GI: Gamma irradiation

2) Materials

MBS: Meta acrylate butadiene styrene polymerisate | PP: Polypropylene

Nylon: Polyamide | PTFE: Polytetra-fluorethylene | SFCA: Surfactant-free Cellulose Acetate

3) The process volume is a recommended value and depends on the ratio of retentive substances

4) These Minisart® syringe filters are fully validated (Validation Guide can be obtained foc. Order No. SL-5707-e)

5) Minisart® HY Res is a liquid barrier with reservoir. For technical information, please refer to the Technical Specification Disc under "Actiosart", with two exceptions: The connectors are tube connectors Ø 5 mm and Minisart® HY Res has no sealed 5 µm PTEE on the inlet.



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■ Chemical Compatibility

	PES membrane	SFCA membrane	PTFE membrane	RC membrane	Nylon membrane	Nylon gauze	GF depth filter	Housing MBS	Housing PP	Mimisart® High Flow	Mimisart® NML Ophthalsart	Mimisart® plus	Mimisart® GF	Mimisart® HY	Mimisart® PA	Acticosart	Mimisart® Air	Mimisart® RC	Mimisart® NY	Mimisart® SRP
Filter	PES	SFCA	PTFE	RC	PA	PA	GF			PES	SFCA	SFCA + GF	GF	PTFE	PA	PTFE	PTFE	RC	PA	PTFE
Housing								MBS	PP	MBS	MBS	MBS	MBS	MBS	MBS	MBS	MBS	PP	PP	PP
Sterilization																				
Ethylene oxide	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Gamma irradiation	++	++	- ¹	++	-	-	++	++	-	++	++	++	++	-	-	-	+	-	-	-
Autoclaving 121 °C, 30 min	++	++	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Solvents																				
Acetone	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Acetonitrile	-	-	++	++	n.a.	n.a.	++	-	++	-	-	-	-	-	-	-	-	++	n.a.	++
Gasoline	+	+	++	++	++	++	++	++	++	+	+	+	++	++	++	++	++	++	++	++
Benzene	-	+	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Benzyl alcohol	-	-	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
n-Butyl acetate	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
n-Butanol	+	+	++	++	++	++	++	++	++	+	+	+	++	++	++	++	++	++	++	++
Cellosolve	++	-	++	++	++	++	++	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Cyclohexane	-	+	++	++	++	++	++	+	+	-	+	+	+	+	+	+	+	+	+	+
Cyclohexanone	-	+	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Diethylacetamide	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Diethyl ether	-	+	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Dimethyl formamide	-	-	++	+	+	+	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Dimethylsulfoxide	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Dioxane	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Ethanol, 98%	++	+	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Ethyl acetate	-	-	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Ethylene glycol	++	+	++	++	++	++	++	++	++	++	+	+	++	++	++	++	++	++	++	++
Formamide	++	-	++	+	++	++	++	++	++	++	-	-	++	++	++	++	++	+	++	++
Glycerin	++	+	++	++	++	++	++	+	+	+	+	+	+	+	+	+	+	+	+	+
n-Heptane	++	+	++	++	++	++	++	+	++	+	+	+	+	+	+	+	+	++	++	++
n-Hexane	++	+	++	++	++	++	++	+	+	+	+	+	+	+	+	+	+	+	+	+
Isobutanol	++	+	++	++	++	++	++	++	-	++	+	+	++	++	++	++	++	-	-	-
Isopropanol	++	+	++	++	++	++	++	-	++	-	-	+	-	-	-	-	-	++	++	++

	PES membrane	SFCA membrane	PTFE membrane	RC membrane	Nylon membrane	Nylon gauze	GF depth filter	Housing MBS	Housing PP	Mimisart® High Flow	Mimisart® NML Ophthalsart	Mimisart® plus	Mimisart® GF	Mimisart® HY	Mimisart® PA	Acticosart	Mimisart® Air	Mimisart® RC	Mimisart® NY	Mimisart® SRP
Filter	PES	SFCA	PTFE	RC	PA	PA	GF			PES	SFCA	SFCA + GF	GF	PTFE	PA	PTFE	PTFE	RC	PA	PTFE
Housing								MBS	PP	MBS	MBS	MBS	MBS	MBS	MBS	MBS	MBS	PP	PP	PP
Sterilization																				
Isopropyl acetate	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Methanol, 98%	+	-	++	++	++	++	++	++	+	+	-	+	++	++	++	++	++	+	+	+
Methyl acetate	-	-	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Methylene chloride	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Methyl ethyl ketone	-	-	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Methyl isobutyl ketone	-	-	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Monochlorobenzene	-	-	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Nitrobenzene	-	-	++	++	+	+	++	-	+	-	-	+	-	-	-	-	-	+	+	+
n-Pentane	++	+	++	++	++	++	++	+	++	+	+	+	+	+	+	+	+	++	++	++
Perchloroethylene	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Pyridine	-	-	++	++	++	++	++	-	++	-	-	-	-	-	-	-	-	++	++	++
Carbon tetrachloride	-	-	++	++	++	++	++	-	-	-	-	++	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	++	++	++	++	++	-	++	-	-	++	-	-	-	-	-	++	++	++
Toluene	-	+	++	++	++	++	++	-	++	-	-	++	-	-	-	-	-	++	++	++
Trichloroethane	-	-	++	++	++	++	++	-	n.a.	-	-	-	-	-	-	-	-	n.a.	n.a.	n.a.
Trichloroethylene	-	+	++	++	++	++	++	-	++	-	-	++	-	-	-	-	-	++	++	++
Xylene	-	+	++	++	++	++	++	-	+	-	-	-	-	-	-	-	-	+	+	+
Acids																				
Acetic acid, 25%	+	+	++	++	-	-	++	-	+	-	-	-	-	-	-	-	-	+	-	+
Acetic acid, 80%	n.a.	-	++	++	-	-	++	-	+	-	-	-	-	-	-	-	-	+	-	+
Hydrofluoric acid, 25%	+	-	++	+	-	-	++	+	+	+	-	-	+	+	-	+	+	+	-	+
Hydrofluoric acid, 50%	+	-	++	+	-	-	++	+	+	+	-	-	+	+	-	+	+	+	-	+
Perchloric acid, 25%	-	-	++	-	-	-	++	n.a.	+	-	-	-	n.a.	n.a.	-	n.a.	n.a.	-	-	+
Phosphoric acid, 1%	++	+	++	-	-	-	++	+	+	+	+	+	+	+	-	+	+	-	-	+
Phosphoric acid, 86%	++	+	++	-	-	-	++	+	+	+	+	+	+	+	-	+	+	-	-	+
Nitric acid, 30%	+	-	++	-	-	-	++	+	+	+	-	-	+	+	-	+	+	-	-	+
Nitric acid, conc.	-	-	++	-	-	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrochloric acid, 15%	++	+	++	-	-	-	++	+	+	+	+	+	+	+	-	+	+	-	-	+
Hydrochloric acid, 20%	++	-	++	-	-	-	++	+	+	+	-	-	+	+	-	+	+	-	-	+

■ Chemical Compatibility

	PES membrane	SFCA membrane	PTFE membrane	RC membrane	Nylon membrane	Nylon gauze	GF depth filter	Housing MBS	Housing PP	Mimisart® High Flow	Mimisart® NML Ophthalsart	Mimisart® plus	Mimisart® GF	Mimisart® HY	Mimisart® PA	Acticosart	Mimisart® Air	Mimisart® RC	Mimisart® NY	Mimisart® SRP
Filter	PES	SFCA	PTFE	RC	PA	PA	GF			PES	SFCA	SFCA + GF	GF	PTFE	PA	PTFE	PTFE	RC	PA	PTFE
Housing								MBS	PP	MBS	MBS	MBS	MBS	MBS	MBS	MBS	MBS	PP	PP	PP
Sterilization																				
Acids																				
Sulfuric acid, 25%	+	-	++	+	-	-	++	+	++	+	-	-	+	+	-	+	+	+	-	++
Sulfuric acid, 98%	-	-	++	-	-	-	++	-	+	-	-	-	-	-	-	-	-	-	-	+
Trichloroacetic acid, 25%	n.a.	-	++	++	-	-	++	-	+	-	-	-	-	-	-	-	-	+	-	+
Bases																				
Ammonia, 1N	++	-	++	+	++	++	++	-	++	-	-	-	-	-	-	-	-	+	++	++
Ammonium hydroxide, 25%	+	+	++	+	++	++	+	-	+	-	NML	-	-	-	-	-	-	+	+	+
Potassium hydroxide, 32%	++	-	++	-	+	+	+	-	++	-	-	-	-	-	-	-	-	-	+	++
Sodium hydroxide, 32%	++	-	++	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	+	+
Sodium hydroxide, 1N	++	-	++	+	++	++	+	-	++	-	-	-	-	-	-	-	-	+	++	++
Aqueous solutions																				
Formalin, 30%	+	++	++	+	++	++	++	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium hypochlorite, 5%	++	-	++	-	-	-	++	+	+	+	-	-	+	+	-	+	+	-	-	+
Hydrogen peroxide, 35%	++	-	++	-	-	-	++	+	++	+	-	-	+	+	-	+	+	-	-	++
pH range																				
pH 1-14	-	-	++	-	-	-	++	-	++											
pH 1-13	++	-	++	-	-		++	-	++											
pH 3-14	+	-	++	+	++	++	++	-	++											
pH 3-12	++	-	++	++	++	++	++	+	++											
pH 4-8	++	++	++	++	++	++	++	++	++											

Legend:

Compatible	++
Limited compatibility	+
Not compatible	-
not analyzed	n.a.

1) gamma irradiation feasible for Minisart® Air

Contact time: 24 hours at 20 °C

Chemical compatibilities can be influenced by various factors.

Therefore, we recommend that you confirm compatibility with the liquid you want to filter by performing a trial filtration run before you start your actual filtration.

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Minisart® GF	17856	-	40
Minisart® high flow	16553	0.1 µm	11
Minisart® high flow	16532	0.2 µm	11, 13
Minisart® high flow	16541	0.2 µm	11, 13
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Minisart® HY	40078	0.2 µm	20, 50
Minisart® HY Res	40080	0.45 µm	20, 50
Minisart® NML	16534	0.2 µm	11, 13, 47, 49
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Minisart® NML	16555	0.45 µm	37, 39, 47, 49
Minisart® NML	17598	0.45 µm	37, 39, 47, 49
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Minisart® NML	16592	0.8 µm	37, 40, 47, 49
Minisart® NML	17593	1.2 µm	37, 40, 47, 49
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Minisart® NY25	17845	0.2 µm	12, 13, 28
Minisart® NY25	17846	0.45 µm	28, 38, 39
Minisart® NY25 X Plus	1784B	0.2 µm	28
Minisart® NY25 X Plus	1784C	0.45 µm	28, 39
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Minisart® RC25	17764	0.2 µm	27
Minisart® RC25	17765	0.45 µm	27, 39
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16541	Minisart® high flow	0.2 µm	11, 13
16553	Minisart® high flow	0.1 µm	11
16555	Minisart® NML	0.45 µm	37, 39, 47, 49
16569	Minisart® NML	0.65 µm	37, 47
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17573	Minisart® SRP15	0.2 µm	12, 13, 19, 20, 29
17574	Minisart® SRP15	0.45 µm	20, 30, 39
17575	Minisart® SRP25	0.2 µm	12, 13, 19, 20, 29, 48
17576	Minisart® SRP25	0.45 µm	20, 30, 39
17593	Minisart® NML	1.2 µm	37, 40, 47, 49
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17595	Minisart® HY	0.2 µm	20, 50
17597	Minisart® NML	0.2 µm	11, 13, 47, 49
17598	Minisart® NML	0.45 µm	37, 39, 47, 49
17710	Minisart® PA	20 µm	37, 47
1776B	Minisart® NY15	0.2 µm	28
1776C	Minisart® NY15	0.45 µm	28, 39
17761	Minisart® RC15	0.2 µm	27
17762	Minisart® RC15	0.45 µm	27, 39
17764	Minisart® RC25	0.2 µm	27
17765	Minisart® RC25	0.45 µm	27, 39
17820	Minisart® SRP4	0.45 µm	20, 30, 39
17821	Minisart® RC4	0.2 µm	27
17822	Minisart® RC4	0.45 µm	27, 39
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17824	Minisart® GF	-	38, 40
17825	Minisart® plus	1.2 µm	40
17829	Minisart® plus	0.45 µm	38, 39
1784B	Minisart® NY25 X Plus	0.2 µm	28
1784C	Minisart® NY25 X Plus	0.45 µm	28, 39
17840	Acticosart	0.45 µm	50
17844	Minisart® SRP4	0.2 µm	13, 20, 29
17845	Minisart® NY25	0.2 µm	12, 13, 28
17846	Minisart® NY25	0.45 µm	28, 38, 39
17856	Minisart® GF	-	40
40078	Minisart® HY	0.2 µm	20, 50
40080	Minisart® HY Res	0.45 µm	20, 50

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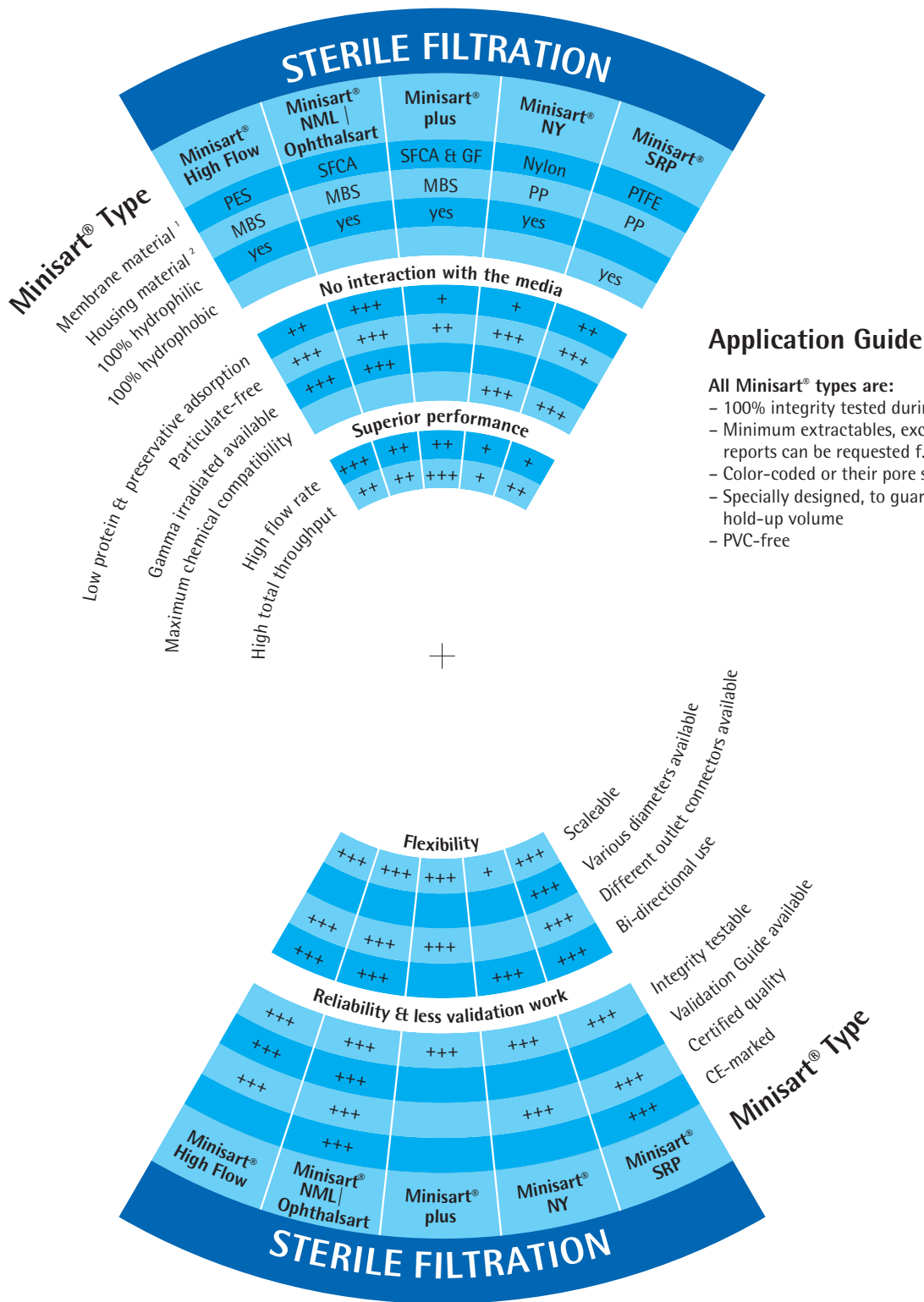
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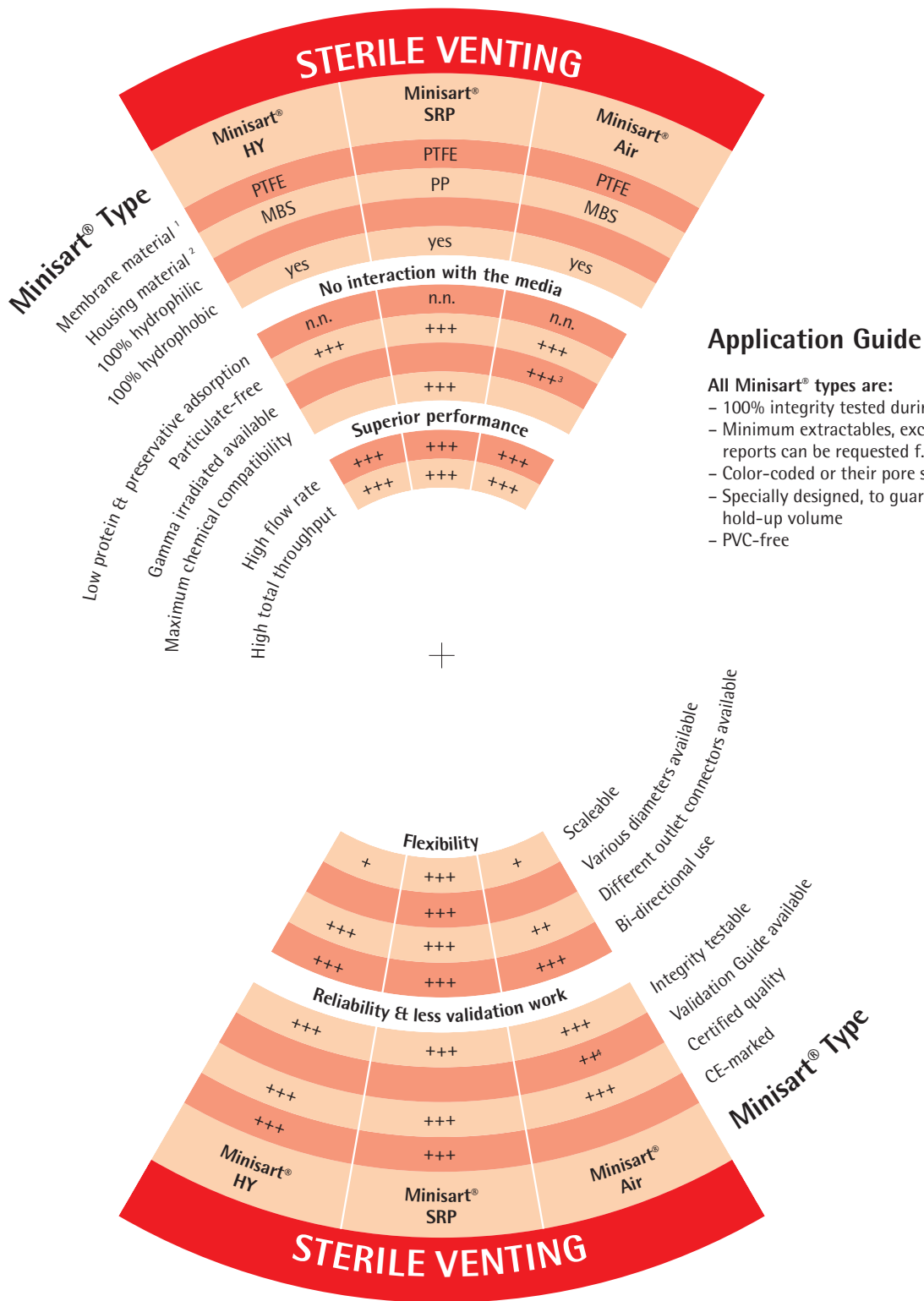
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Legend:

- 1) GF: Binder-free glass fiber depth filter | Nylon: Polyamide | PES: Polyethersulfone | PTFE: Polytetra-fluorethylene (hydrophobic material, hydrophilic after wetting with IPA) | RC: Regenerated Cellulose | SFCA: Surfactant-free Cellulose Acetate
- 2) MBS: Meta acrylate butadiene styrene | PP: Polypropylene
- 3) Non-sterile versions could be gamma irradiated
- 4) Minisart® Air is part of the fully validated Sterisart® NF system

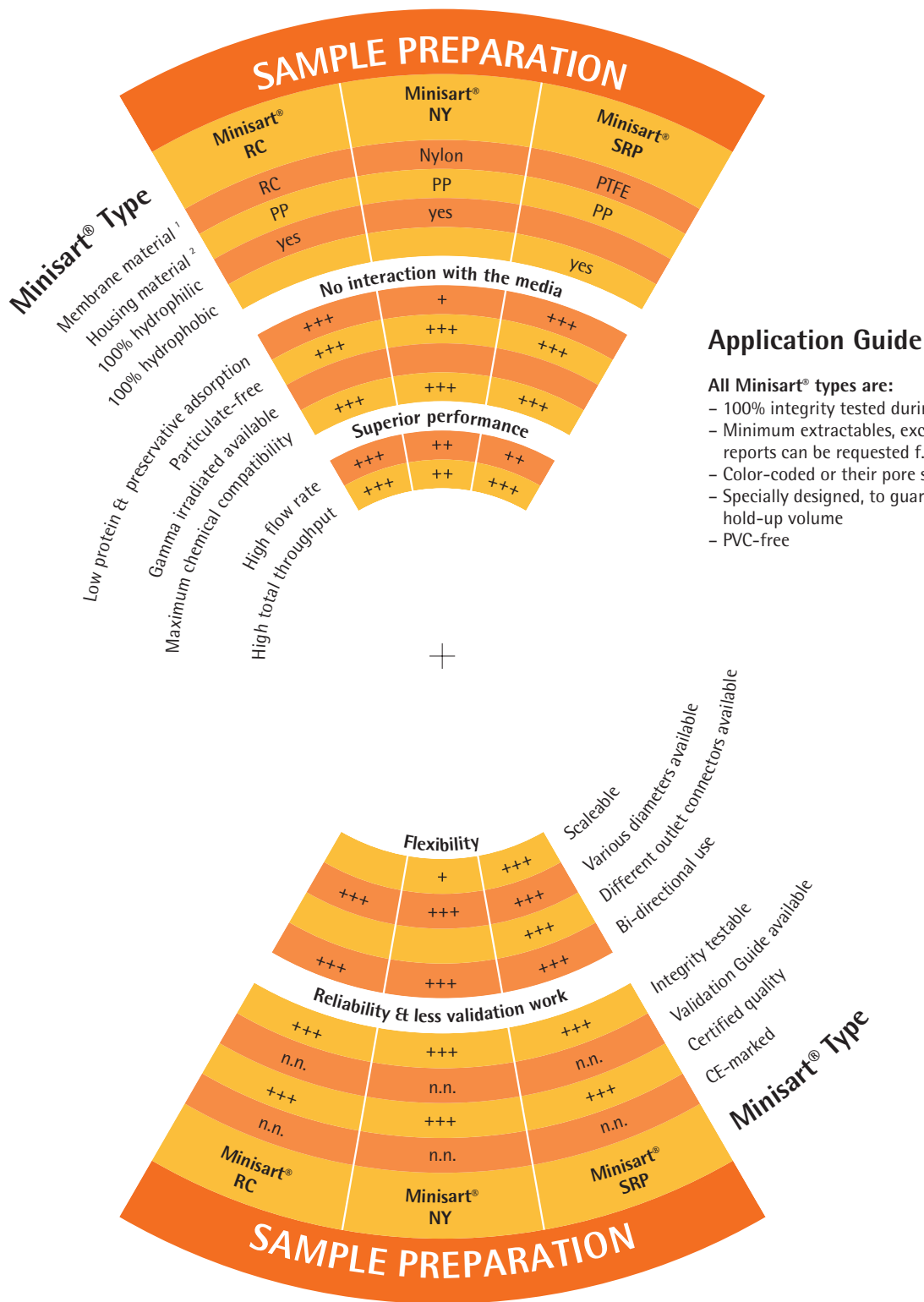
- + = good performance
- ++ = better performance
- +++ = best performance
- n.n. = not necessary



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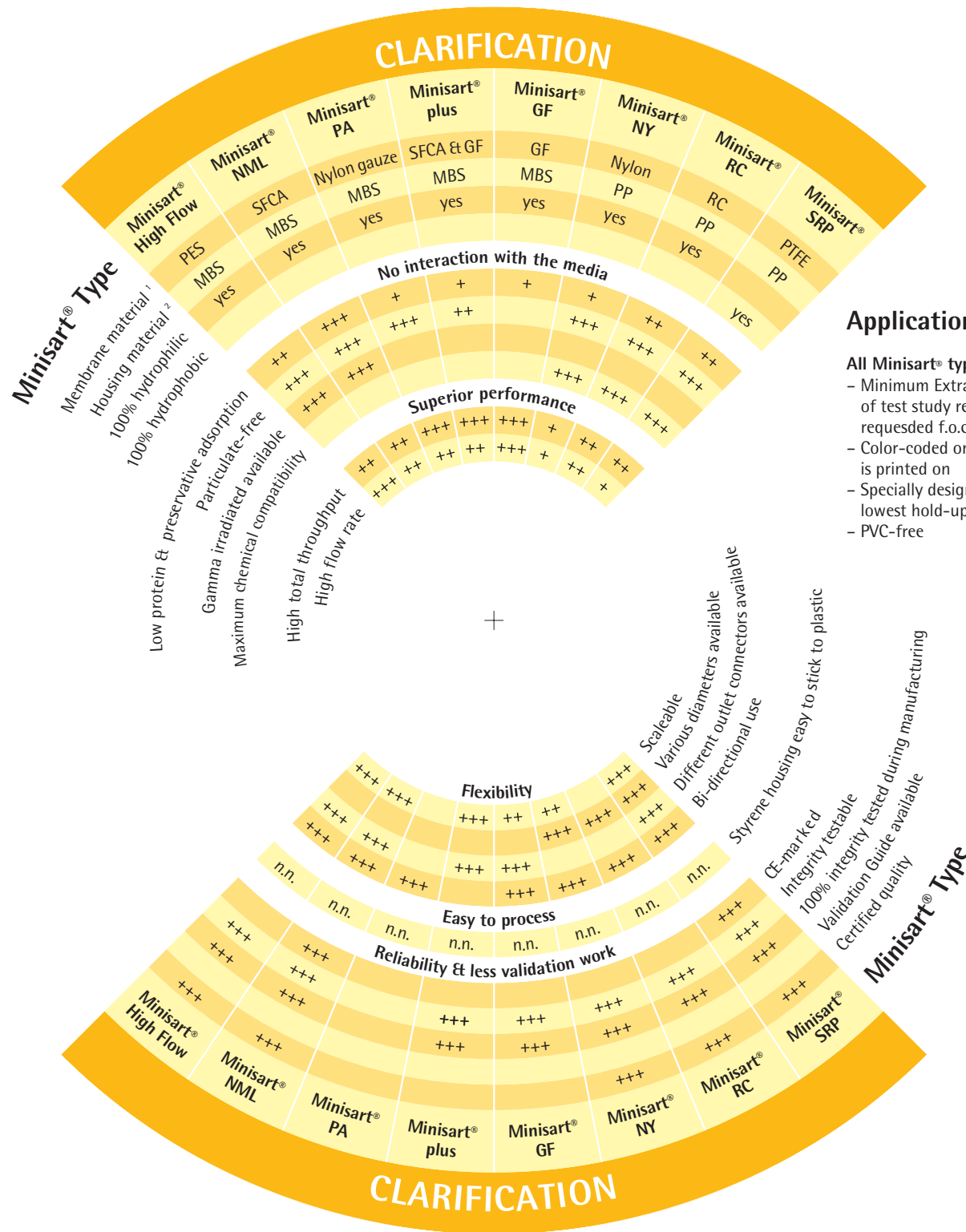
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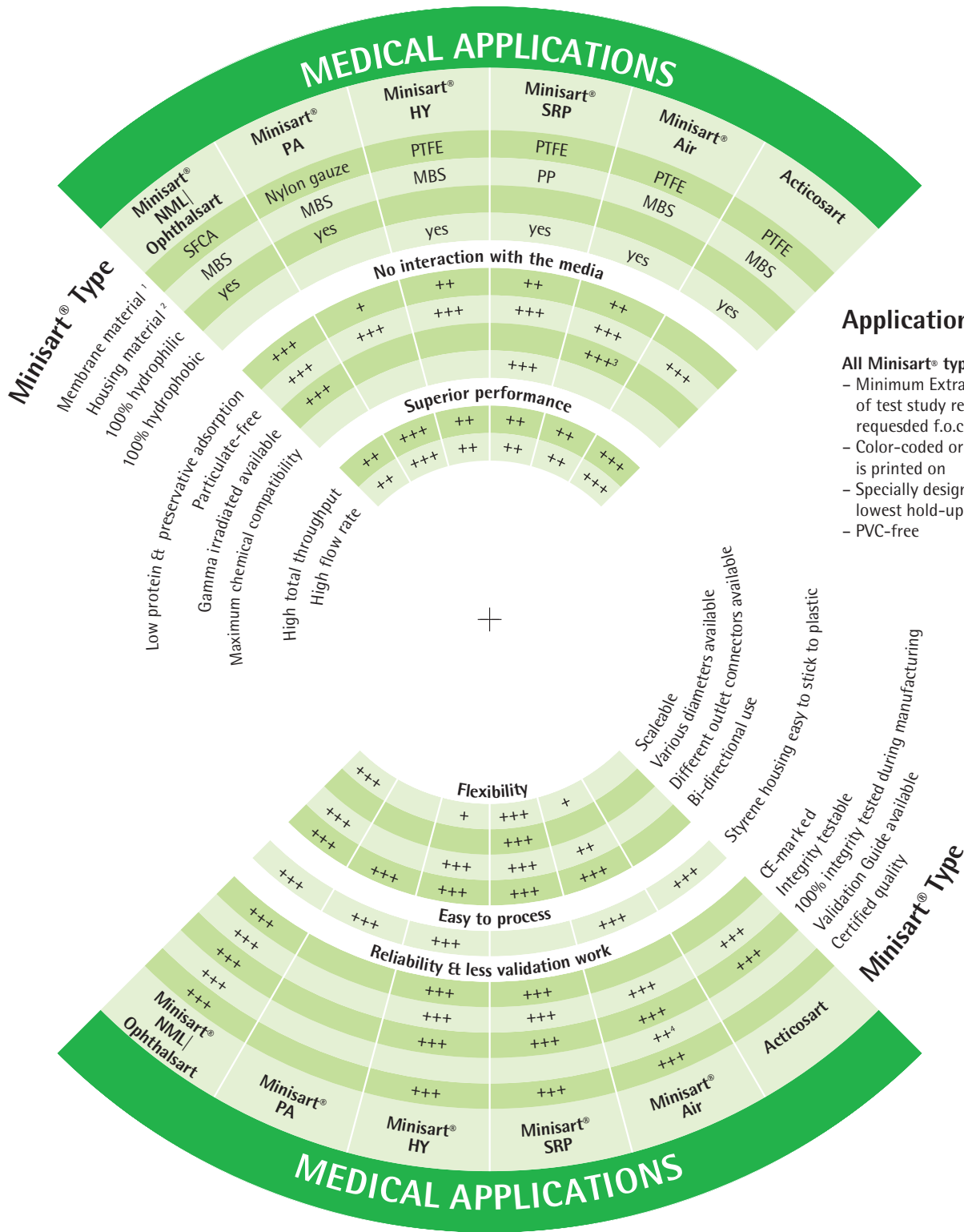
Application Guide

- All Minisart® types are:
- Minimum Extractables, excerpts of test study reports can be requested f.o.c.
 - Color-coded or their pore size is printed on
 - Specially designed, to guarantee lowest hold-up volume
 - PVC-free

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Application Guide

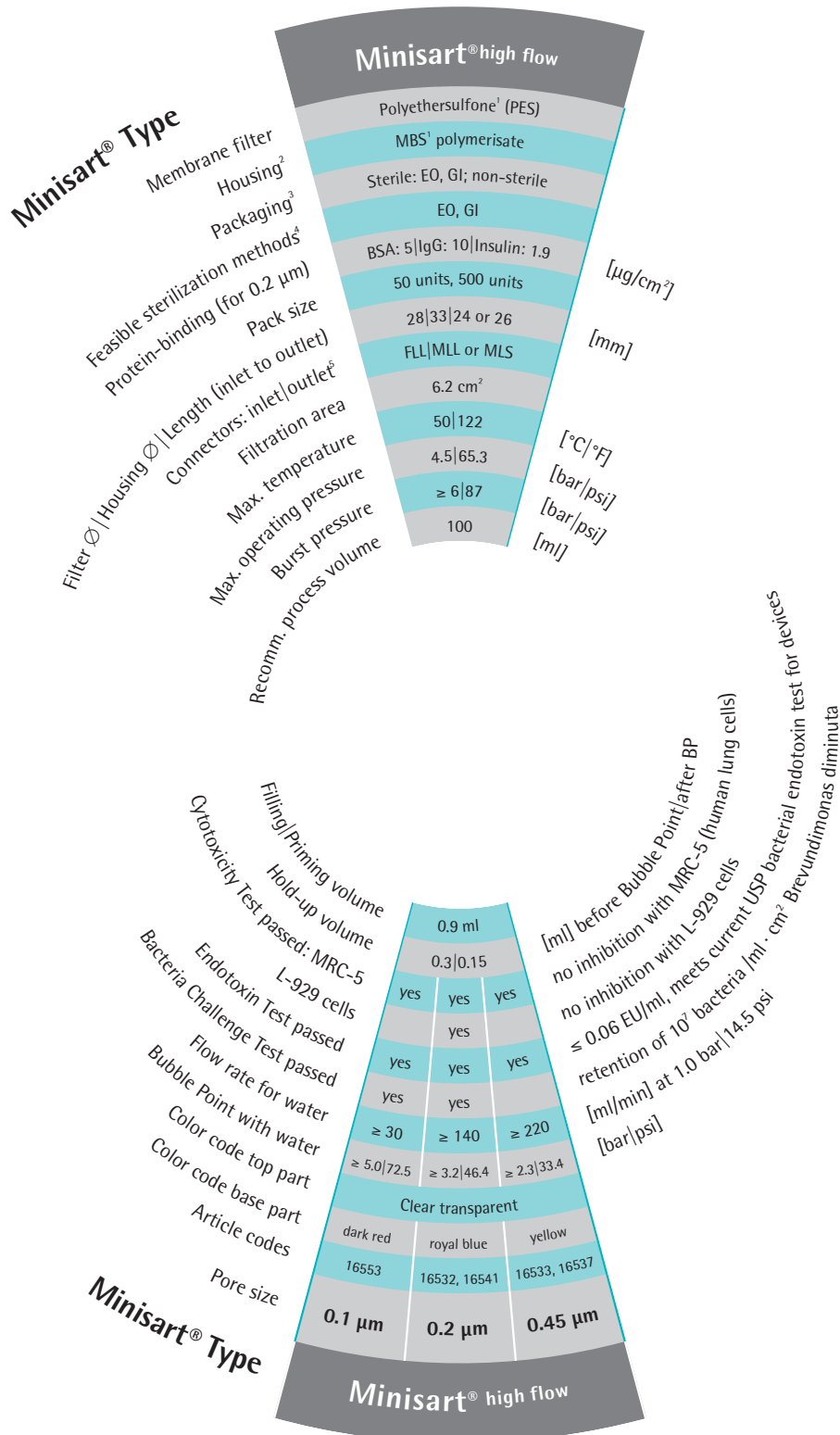
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 2) MBS: Meta acrylate butadiene styrene | PP: Polypropylene
 3) Non-sterile versions could be gamma irradiated
 4) Minisart® Air is part of the fully validated Sterisart® NF system

- + = good performance
 ++ = better performance
 +++ = best performance
 n.n. = not necessary

Specification Guide

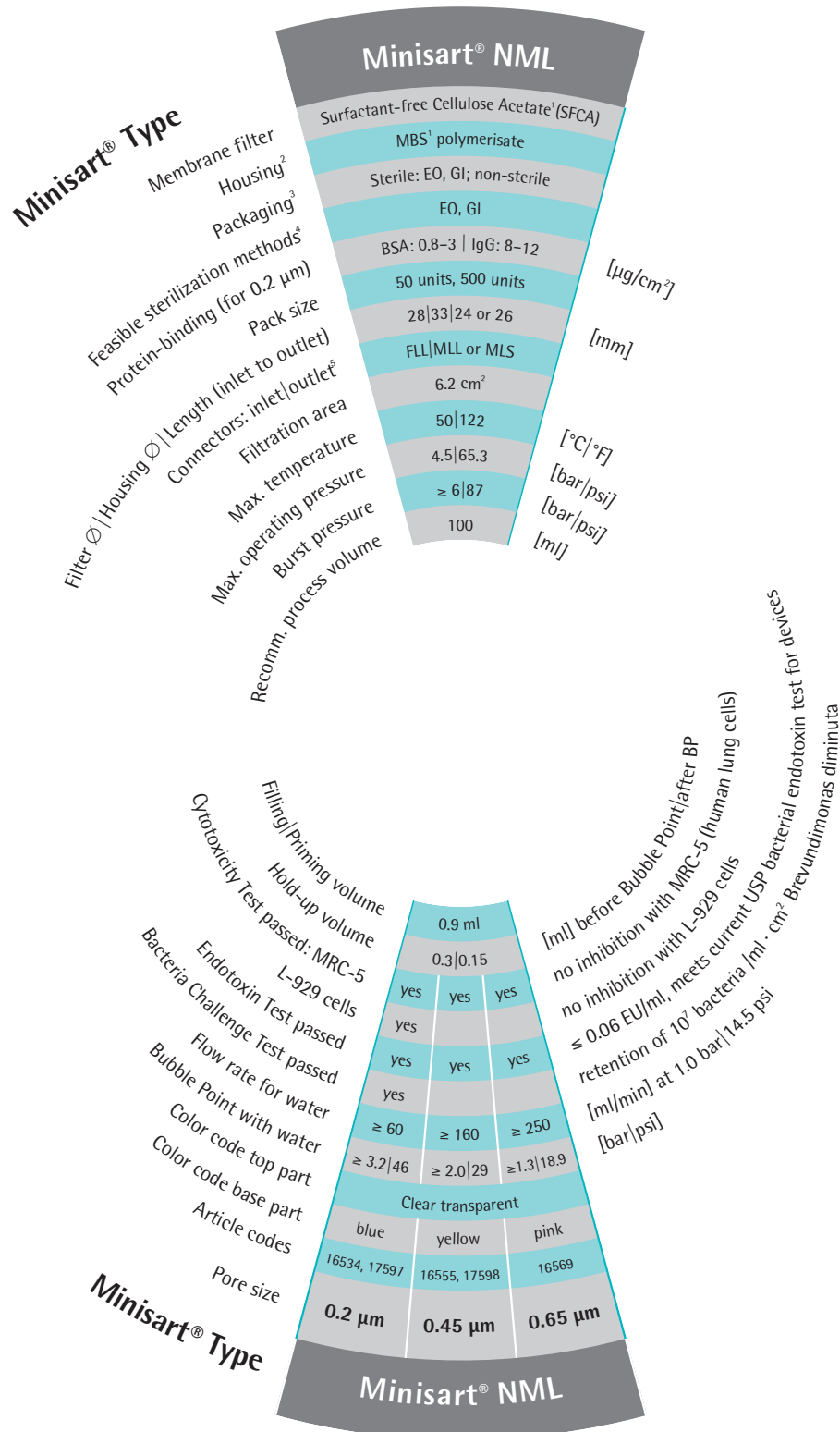


Legend:
 n.n. = not necessary

1) The material meets the FDA requirements as defined in Title 21 Code of Federal Regulations. Biosafety testing, such as the Class VI Plastics Testing as described in the current USP, are also met and exceeded.
 2) MBS = Meta acrylate butadiene styrene

3) Sterile = individually, sterile packaged; EO = Ethylene oxide; GI = Gamma irradiation; non-sterile = bulk-packaged in PE bag
 4) EO = Ethylene oxide; GI = Gamma irradiation
 5) FLL = Female Luer Lock; MLL = Male Luer Lock; MLS = Male Luer Slip (cone)

Specification Guide

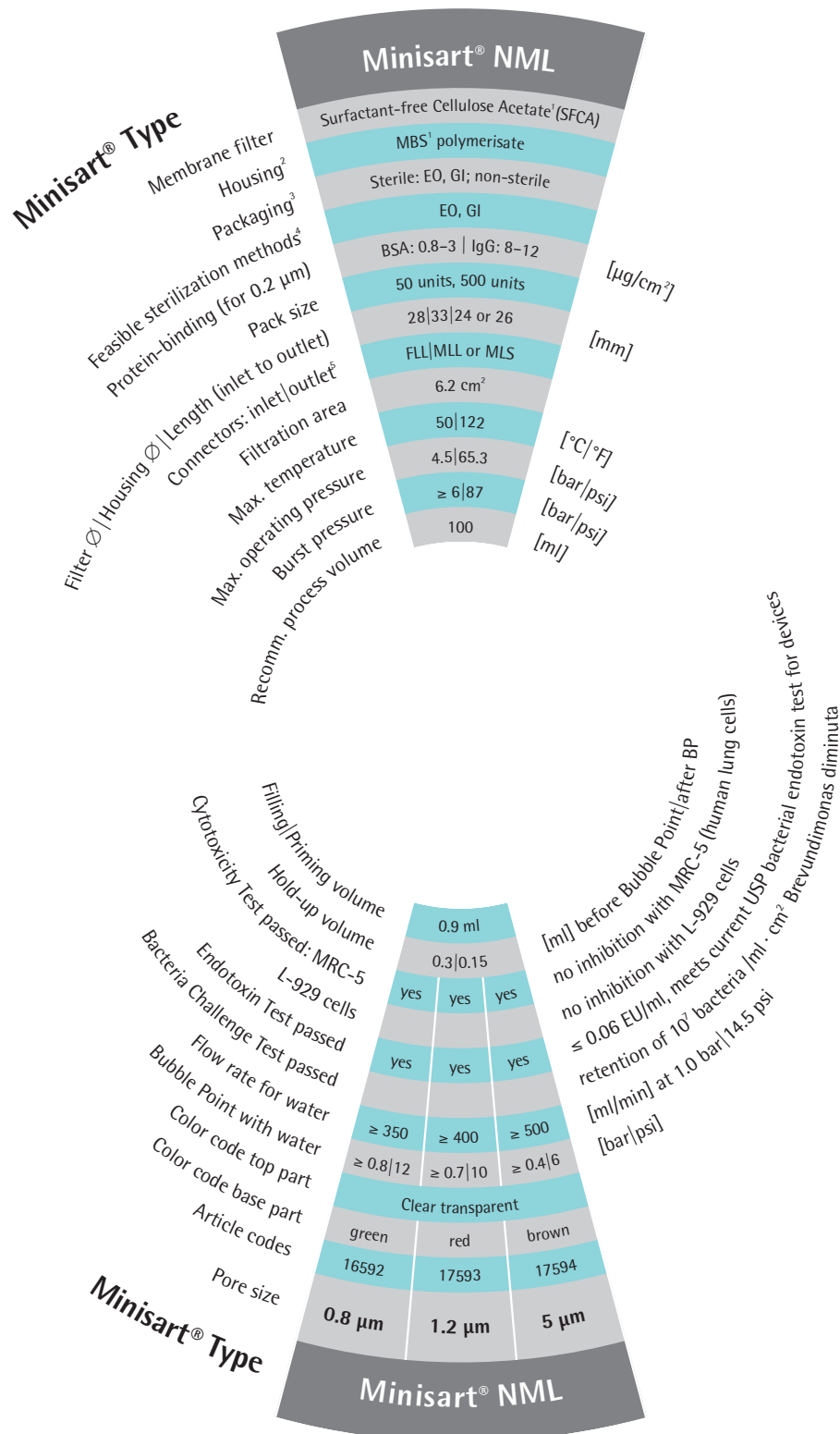


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Specification Guide



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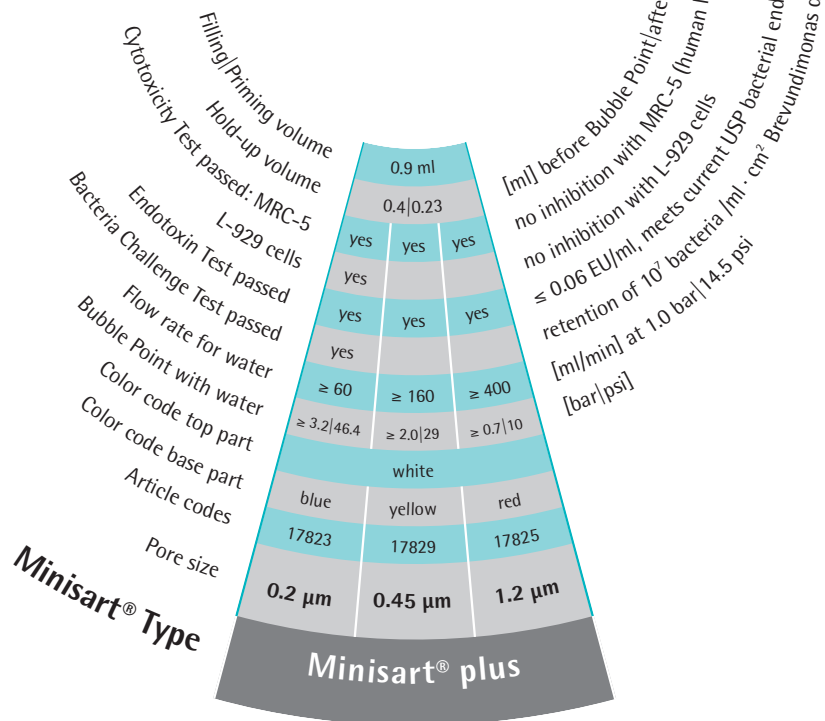
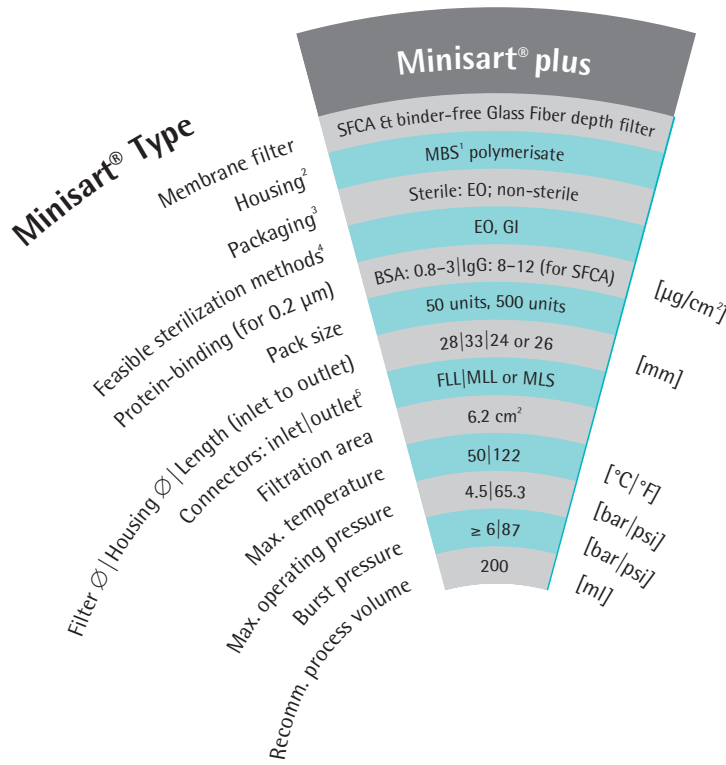
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Specification Guide

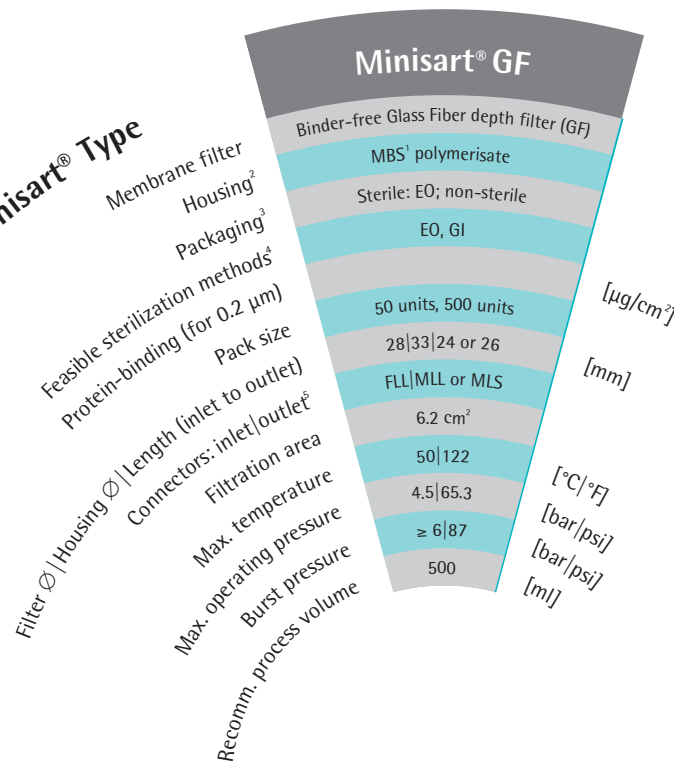


Legend:
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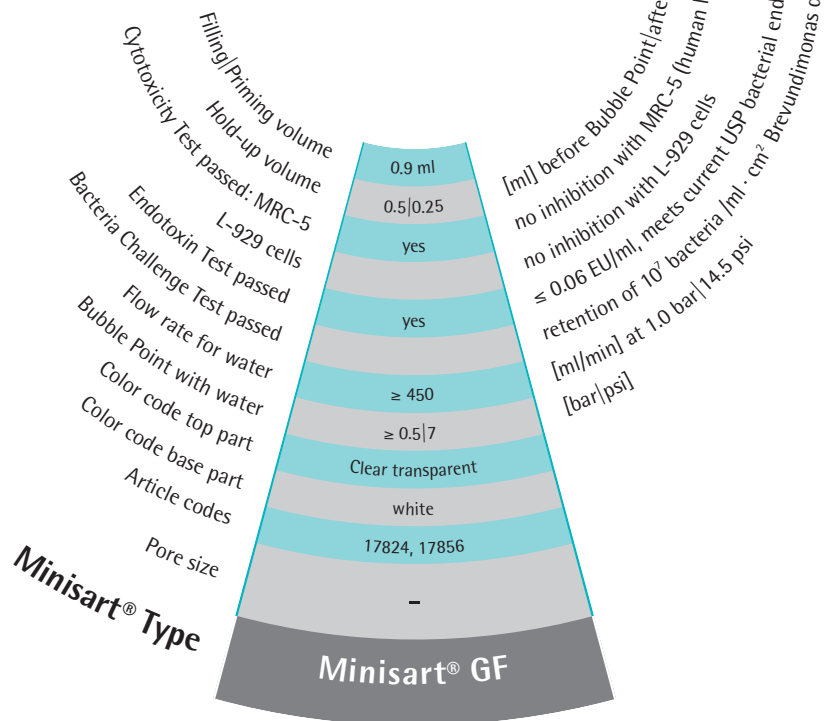
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Minisart® Type



Specification Guide



Legend:
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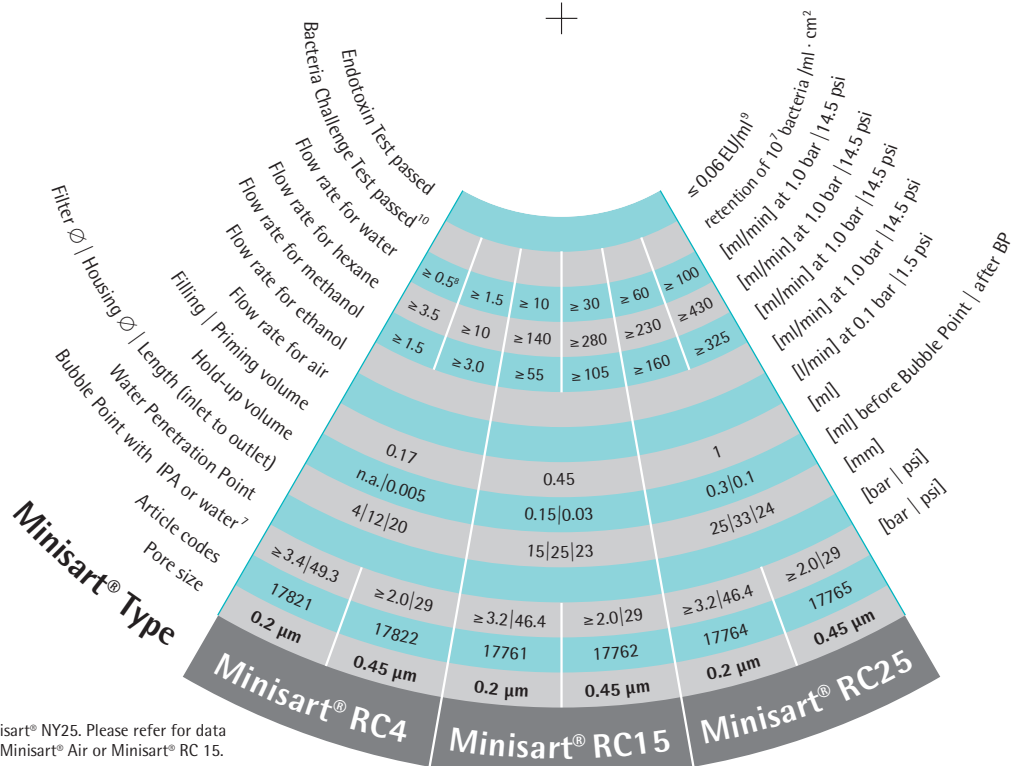
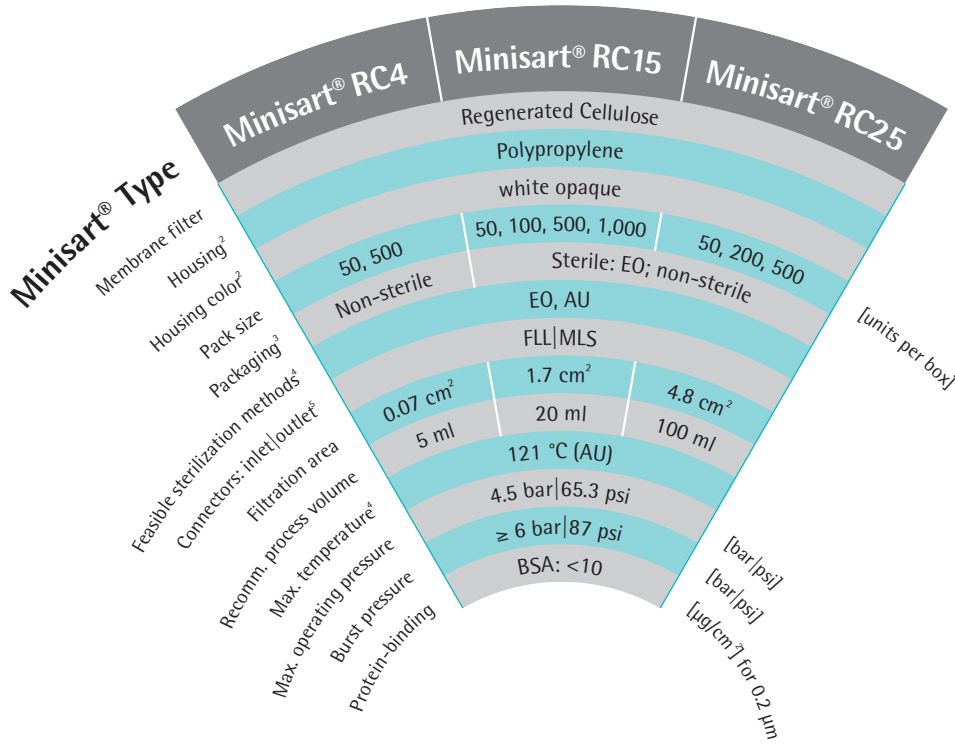
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Specification Guide



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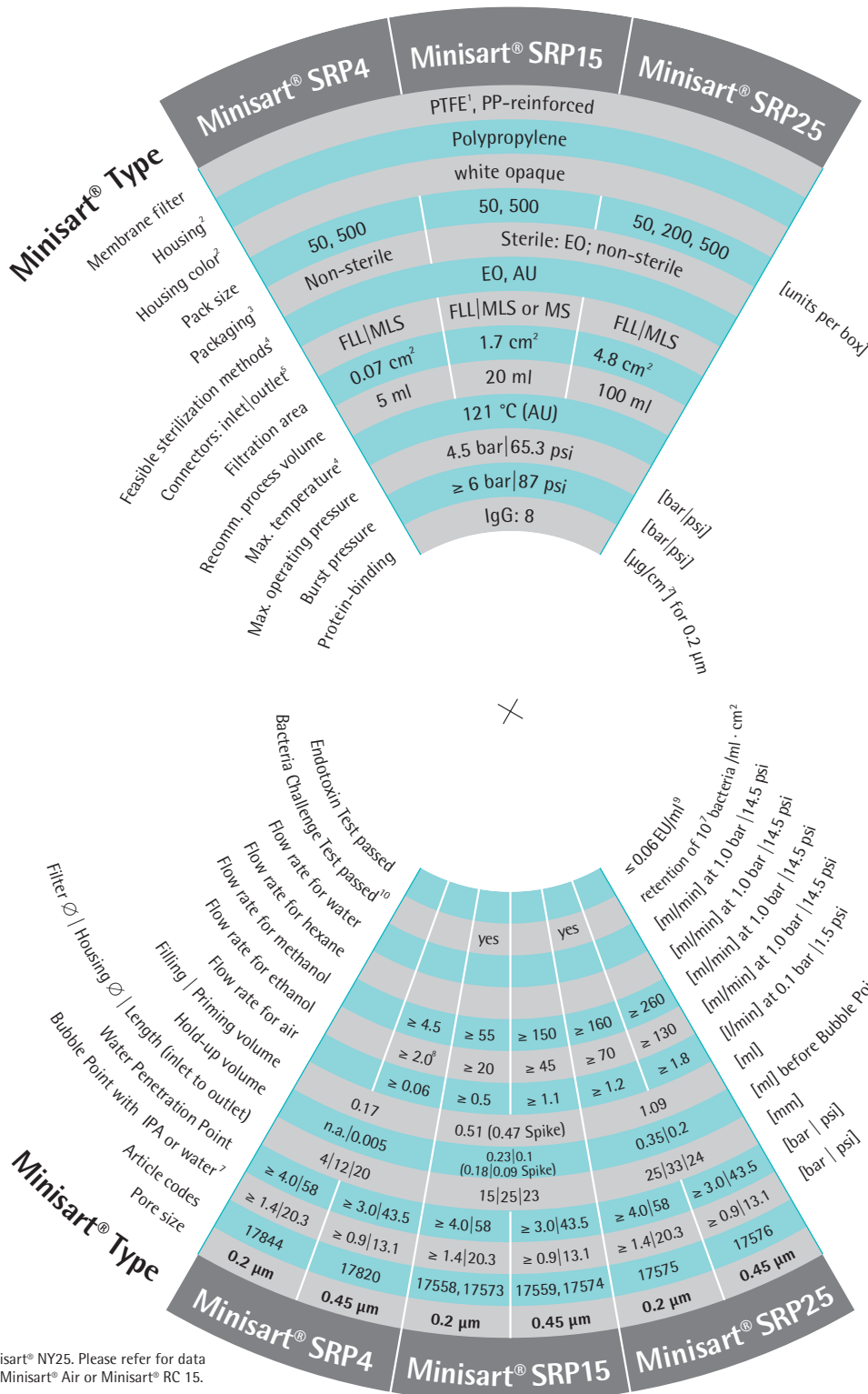
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* = This data is for Minisart® NY25. Please refer for data of Minisart® NY15 to Minisart® Air or Minisart® RC 15.

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- MBS = Meta acrylate butadiene styrene. The color of the housing identifies the pore size.
 - On white opaque polypropylene housings the pore size is printed on.
 - For Minisart® RC4 and SRP4 the tray is color coded (blue = 0.2 μm, yellow = 0.45 μm)
- Sterile = individually, sterile packaged; EO = Ethylene oxide;
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- EO = Ethylene oxide; GI = Gamma irradiation; AU = autoclaving at 121 °C | 250 °F for 30 min
- FLL = Female Luer Lock; MLL = Male Luer Lock; MLS = Male Luer Slip (cone); MS = Male Spike; TC = Tube connector
- After gamma irradiation: 0.5 bar | 7.3 psi
- Wetting fluid: IPA = Isopropyl alcohol (for hydrophobic membranes); water for hydrophilic membranes
- At 3 bar | 43.5 psi; 9) Meets current USP bacterial endotoxin test for devices
- Bacteria = Brevundimonas diminuta

Specification Guide



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Specification Guide

Minisart® Type	Minisart® NY	Minisart® HY	Acticosart	Minisart® Air
Membrane filter	Nylon (polyamide)	PTFE ¹ , PP-reinforced	PTFE ¹ & active carbon	PTFE ¹ , PP-reinforced
Housing ²	Polypropylene	MBS ¹ polymerisate	MBS ¹ polymerisate	MBS ¹ polymerisate
Housing color ²	white opaque	Clear transparent	Clear transparent blue	yellow
Pack size	50, 500, 1,000	50, 500	500	500
Packaging ³	Sterile: EO; non-sterile	Sterile: EO; non-sterile	Non-sterile	Sterile: GI; non-sterile
Feasible sterilization methods ⁴	EO, AU	EO	EO	EO, GI
Connectors: inlet/outlet ⁵	FLL/MLS	FLL, MLS, TC MLL, MLS, TC	MLS/MLS	FLL/MLS or needle
Filtration area	4.8 cm ² *	5.3 cm ²	5.3 cm ²	1.7 cm ²
Recomm. process volume	100 ml*	n.n.	n.n.	n.n.
Max. temperature ⁶	121°C (AU)	50°C 122°F	50°C 122°F	50°C 122°F
Max. operating pressure	4.5 65.3	4.5 65.3	1 14.5	1.5 21.8 ⁸
Burst pressure	≥ 6 87	≥ 6 87	≥ 6 87	≥ 6 87
Protein-binding	BSA: 100	IgG: 8	IgG: 8	IgG: 8

[units per box]

[bar/psi]

[bar/psi]

[µg/cm²] for 0.2 µm

Minisart® Type	Minisart® NY	Minisart® HY	Acticosart	Minisart® Air
Filter Ø Housing Ø Length (inlet to outlet)	1.0*	≥ 1.4 ≥ 23	≥ 2.3	≥ 1.1
Bubble Point with IPA or water ⁷	0.3 0.1*	0.57 - 0.9	4.6	0.51
Water Penetration Point	25 33 24*	0.28 - 0.38 0.12 - 0.2	3 2.8	0.23 0.1
Article codes	≥ 3.0 43.5	26 33 24 or 26	26 33 51	≥ 4.0 58
Pore size	17845, 1776B	≥ 4.0 58 ≥ 3.0 43.5	n.n.	≥ 1.4 20.3
	0.2 µm	≥ 1.4 20.3 ≥ 0.9 13.1	n.n.	16596, 1751A
	0.45 µm	16596, 16599, 17595, 40078	17840	0.2 µm
	0.2 µm 0.45 µm		0.45 µm (inlet 5 µm)	
				0.2 µm

Endotoxin Test passed

Bacteria Challenge Test passed¹⁰

Flow rate for water

Flow rate for hexane

Flow rate for methanol

Flow rate for ethanol

Filling | Priming volume

Hold-up volume

Water Penetration Point

Article codes

Pore size

retention of 10⁷ bacteria [ml · cm²]

[ml/min] at 1.0 bar | 14.5 psi

[ml/min] at 1.0 bar | 14.5 psi

[ml/min] at 1.0 bar | 14.5 psi

[ml/min] at 0.1 bar | 1.5 psi

[ml] before Bubble Point | after BP

[mm]

[bar | psi]

[bar | psi]

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