sartorius stedim biotech

Minisart® Syringe Filters

turning science into solutions

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Minisart® product overview and user's application guide

Company Profile

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.

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 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.

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

Testmaterial: **Minisart High-Flow type, representing syringe filter with MBS housing and PES membrane**
Order No.: 16532 - GUK
Lot No.: 16532 060726

Supplier: SARTORIUS AG
Weender Landstraße 94-108, 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 VI/121 °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 leachable substances with cytotoxic or haemolytic potential were released from the test item.**

BSL BIOSERVICE Scientific Laboratories GmbH
Behringstraße 6
D-82152 Planegg

Dr. Daniela Brummer
Biological Safety Testing
Date: October 06, 2009

GLP ISO 17025

Minisart® CE/CE

Directions for Use

Certificate of Quality

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16534-K
16555-GUK
16555-K
16596-HYK
17507-K
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Applications
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Declaration of Conformity CE
According to EU Directive 93/42/EC

BIOCOMPATIBILITY

CERTIFICATE

Testmaterial: **Minisart type, representing syringe filter with MBS housing and PTFE membrane**
Order No.: 16596 - HYK
Lot No.: 16596 050757

Supplier: SARTORIUS AG
Weender Landstraße 94-108, 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 VI/121 °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 leachable substances with cytotoxic or haemolytic potential were released from the test item.**

BSL BIOSERVICE Scientific Laboratories GmbH
Behringstraße 6
D-82152 Planegg

Dr. Daniela Brummer
Biological Safety Testing
Date: October 06, 2009

GLP ISO 17025

BIOCOMPATIBILITY

CERTIFICATE

Testmaterial: **Minisart type, representing syringe filter with MBS housing and CA membrane**
Order No.: 16534 - K
Lot No.: 16534 060609

Supplier: SARTORIUS AG
Weender Landstraße 94-108, 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 VI/121 °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 leachable substances with cytotoxic or haemolytic potential were released from the test item.**

BSL BIOSERVICE Scientific Laboratories GmbH
Behringstraße 6
D-82152 Planegg

Dr. Daniela Brummer
Biological Safety Testing
Date: October 06, 2009

GLP ISO 17025

sartorius stedim

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

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 complied 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 ≤ 0.2 µm

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
- Scaleable
- 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...	The Minisart® Features are...
No interaction with the media	
The composition of the ingredients of my media must stay the same prior to filtration	The Minisart® type should have the lowest adsorption of proteins and preservatives
The syringe filter must not release any particles into my media	The Minisart® type must be particulate-free
There should be no chemicals released from the syringe filter into my media	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	
My filtration 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 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	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

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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, MBS[2] 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, MBS[2] 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 GF[2] depth filter, MBS[2] 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, PP[2] 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, PTFE[2] membrane, PP[2] 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 [mm] | 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 vaildated (Validation Guide can be obtained foc. 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
- Scaleable
- 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...	The Minisart® Features are...
No reduction in effective filtration area	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, MBS[4] housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [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, MBS[4] housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [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, PP[4] housing (pore size printed on), connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [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 ∅ [mm]	Order number
Minisart® HY	MBS	0.2	EO	Female Luer Lock	Male Luer Lock	26	16596--------HYQ
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
Minisart® SRP4	PP[6]	0.2	EO, AU	Female Luer Lock	Male Luer Slip	4	17844----------Q
Minisart® SRP15	PP[6]	0.2	EO, AU	Female Luer Lock	Male Luer Slip	15	17573----------Q[2]
Minisart® SRP15	PP[6]	0.2	EO, AU	Female Luer Lock	Male Spike	15	17558----------Q[2]
Minisart® SRP25	PP[6]	0.2	EO, AU	Female Luer Lock	Male Luer Slip	25	17575----------Q[2,3]
NEW Minisart® HY	MBS	0.2	EO	Tube Connector ∅ 5 mm	Tube Connector ∅ 5 mm	26	40078----------Q
NEW Minisart® HY Res[7]	MBS	0.45	EO	Tube Connector ∅ 5 mm	Tube Connector ∅ 5 mm	26	40080----------Q
Minisart® SRP4	PP[6]	0.45	EO, AU	Female Luer Lock	Male Luer Slip	4	17820----------Q[2]
Minisart® SRP15	PP[6]	0.45	EO, AU	Female Luer Lock	Male Luer Slip	15	17574----------Q[2]
Minisart® SRP15	PP[6]	0.45	EO, AU	Female Luer Lock	Male Spike	15	17559----------Q[2]
Minisart® SRP25	PP[6]	0.45	EO, 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 ∅ [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 ∅ 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 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
- Scaleable

Media Types
- Aqueous solutions
- Solvents
- Hydrocarbons

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

My Requirements are...	The Minisart® Features are...
No interaction with the media	
The composition of the ingredients of my sample must stay the same prior to filtration	The Minisart® type should have the lowest adsorption of proteins and preservatives
The syringe filter must not release any premature plugging particles into my sample	The Minisart® type must be particulate-free
There should be no UV-absorbing chemicals released from the syringe filter into my sample (to avoid ghost peaks)	The Minisart® type should be extractable-free
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	
My filtration 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 step	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 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	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 preperation: Minisart® Syringe Filters non-sterile

Minisart® RC Syringe Filters,

for fastest sample preperation and high chemical compatibility, regenerated Cellulose membrane, PP[5] housing, connector inlet: Female Luer Lock, non-sterile[1]

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, PP[5] 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 GF[5] depth filter, PP[5] 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, PP[5] housing, connector inlet: Female Luer Lock, non-sterile[1]

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, PP[5] housing, connector inlet: Female Luer Lock, non-sterile[1]

Type	Pore size [µm]	MF ∅ [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


PTFE 0.45 µm
NY 0.45µm
NY 0.20µm
RC 0.45µm
RC 0.20µm

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 ≥ 0.45 µm

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
- Scaleable
- 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...	The Minisart® Features are...
No interaction with the media	
The composition of the ingredients of my media must stay the same prior to filtration	The Minisart® type should have the lowest adsorption of proteins and preservatives
The syringe filter must not release any particles into my media	The Minisart® type must be particulate-free
There should be no chemicals released from the syringe filter into my media	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	
My filtration 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 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	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	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 any 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 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, MBS[5] housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [mm] | Process volume[6]	Order number
Minisart® high flow	0.45	EO	yellow	Male Luer Lock	28 | 100 ml	16537----------K
Minisart® high flow	0.45	GI	yellow	Male Luer Slip	28 | 100 ml	16533--------GUK
Minisart® high flow	0.45	EO	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, MBS[5] housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [mm] | Process volume[6]	Order number
Minisart® NML	0.45	GI	yellow	Male Luer Lock	28 | 100 ml	16555--------GUK
Minisart® NML	0.45	EO	yellow	Male Luer Lock	28 | 100 ml	16555----------K
Minisart® NML	0.45	EO	yellow	Male Luer Slip	28 | 100 ml	17598----------K
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® plus Syringe Filters,

for fast pre-filtration and high throughput, individually, sterile packaged, surfactant-free Cellulose Acetate membrane and GF[5] depth filter, MBS[5] housing, color code: yellow, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Connector outlet	MF ∅ [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, PP[5] housing (pore size printed on), connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Connector outlet	MF ∅ [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 ∅ [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)


SRP 25
RC 0.45µm
RC 0.45µm

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 chemotherapeuticals
- 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
- Scaleable
- 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...	The Minisart® Features are...
No interaction with the media	
The composition of the ingredients of my media must stay the same prior to filtration	The Minisart® type should have the lowest adsorption of proteins and preservatives
The syringe filter must not release any particles into my media	The Minisart® type must be particulate-free
There should be no chemicals released from the syringe filter into my media	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	
My filtration 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 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	The Minisart® type should be used bi-directional

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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, MBS[2] housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [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, MBS[2] housing, connector inlet: Female Luer Lock, 50 units

Type	Pore size [µm]	Sterilization[1]	Color code	Connector outlet	MF ∅ [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 ∅ [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, MBS[2] housing, connector inlet: Female Luer Lock, 500 units

Type	Pore size [µm]	Feasible sterilization[1]	Color code	Connector outlet	MF ∅ [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 ∅ [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 ∅ [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 ∅ 5 mm	Tube Connector ∅ 5 mm	26	40078----------Q
Minisart® HY Res[5]	MBS	0.45	EO	Tube Connector ∅ 5 mm	Tube Connector ∅ 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 ∅ [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 ∅ 5 mm and Minisart® HY Res has no sealed 5 µm PTEE on the inlet.


PTFE 0.20

Chemical Compatibility

	PES membrane	SFCA membrane	PTFE membrane	RC membrane	Nylon membrane	Nylon gauze	GF depth filter	Housing MBS	Housing PP	Minisart® High Flow	Minisart® NML | Ophthalsart	Minisart® plus	Minisart® GF	Minisart® HY	Minisart® PA	Acticosart	Minisart® Air	Minisart® RC	Minisart® NY	Minisart® 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	Minisart® High Flow	Minisart® NML | Ophthalsart	Minisart® plus	Minisart® GF	Minisart® HY	Minisart® PA	Acticosart	Minisart® Air	Minisart® RC	Minisart® NY	Minisart® 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	Minisart® High Flow	Minisart® NML | Ophthalsart	Minisart® plus	Minisart® GF	Minisart® HY	Minisart® PA	Acticosart	Minisart® Air	Minisart® RC	Minisart® NY	Minisart® 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%	+	+	++	+	++	++	+	-	+	-	-	-	-	-	-	-	-	+	+	+
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.

Index by Minisart® Types

Minisart® Type	Order no.	Pore size	Page
Acticosart	17840	0.45 µm	50
Minisart® Air	16596	0.2 µm	19, 48
Minisart® Air	1751A	0.2 µm	21, 49
Minisart® GF	17824	-	38, 40
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
Minisart® high flow	16533	0.45 µm	37, 39
Minisart® high flow	16537	0.45 µm	37, 39
Minisart® HY	16596	0.2 µm	19, 20, 48, 50
Minisart® HY	16599	0.2 µm	20, 50
Minisart® HY	17595	0.2 µm	20, 50
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
Minisart® NML	17597	0.2 µm	11, 13, 47, 49
Minisart® NML	16555	0.45 µm	37, 39, 47, 49
Minisart® NML	17598	0.45 µm	37, 39, 47, 49
Minisart® NML	16569	0.65 µm	37, 47
Minisart® NML	16592	0.8 µm	37, 40, 47, 49
Minisart® NML	17593	1.2 µm	37, 40, 47, 49
Minisart® NML	17594	5 µm	37, 40, 47, 49
Minisart® NY15	1776B	0.2 µm	28
Minisart® NY15	1776C	0.45 µm	28, 39
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
Minisart® PA	17710	20 µm	37, 47
Minisart® plus	17823	0.2 µm	12, 13
Minisart® plus	17829	0.45 µm	38, 39
Minisart® plus	17825	1.2 µm	40
Minisart® RC4	17821	0.2 µm	27
Minisart® RC4	17822	0.45 µm	27, 39
Minisart® RC15	17761	0.2 µm	27
Minisart® RC15	17762	0.45 µm	27, 39
Minisart® RC25	17764	0.2 µm	27
Minisart® RC25	17765	0.45 µm	27, 39
Minisart® SRP4	17844	0.2 µm	13, 20, 29
Minisart® SRP4	17820	0.45 µm	20, 30, 39
Minisart® SRP15	17558	0.2 µm	13, 20, 29
Minisart® SRP15	17573	0.2 µm	12, 13, 19, 20, 29
Minisart® SRP15	17559	0.45 µm	20, 30, 39
Minisart® SRP15	17574	0.45 µm	20, 30, 39
Minisart® SRP25	17575	0.2 µm	12, 13, 19, 20, 29, 48
Minisart® SRP25	17576	0.45 µm	20, 30, 39
Ophthalsart	17528	0.2 µm	11, 47

Index by Order Numbers

Order no.	Minisart® Type	Pore size	Page
16532	Minisart® high flow	0.2 µm	11, 13
16533	Minisart® high flow	0.45 µm	37, 39
16534	Minisart® NML	0.2 µm	11, 13, 47, 49
16537	Minisart® high flow	0.45 µm	37, 39
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
16592	Minisart® NML	0.8 µm	37, 40, 47, 49
16596	Minisart® HY	0.2 µm	19, 20, 48, 50
16596	Minisart® Air	0.2 µm	19, 48
16599	Minisart® HY	0.2 µm	20, 50
1751A	Minisart® Air	0.2 µm	21, 49
17528	Ophthalsart	0.2 µm	11, 47
17558	Minisart® SRP15	0.2 µm	13, 20, 29
17559	Minisart® SRP15	0.45 µm	20, 30, 39
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
17594	Minisart® NML	5 µm	37, 40, 47, 49
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
17823	Minisart® plus	0.2 µm	12, 13
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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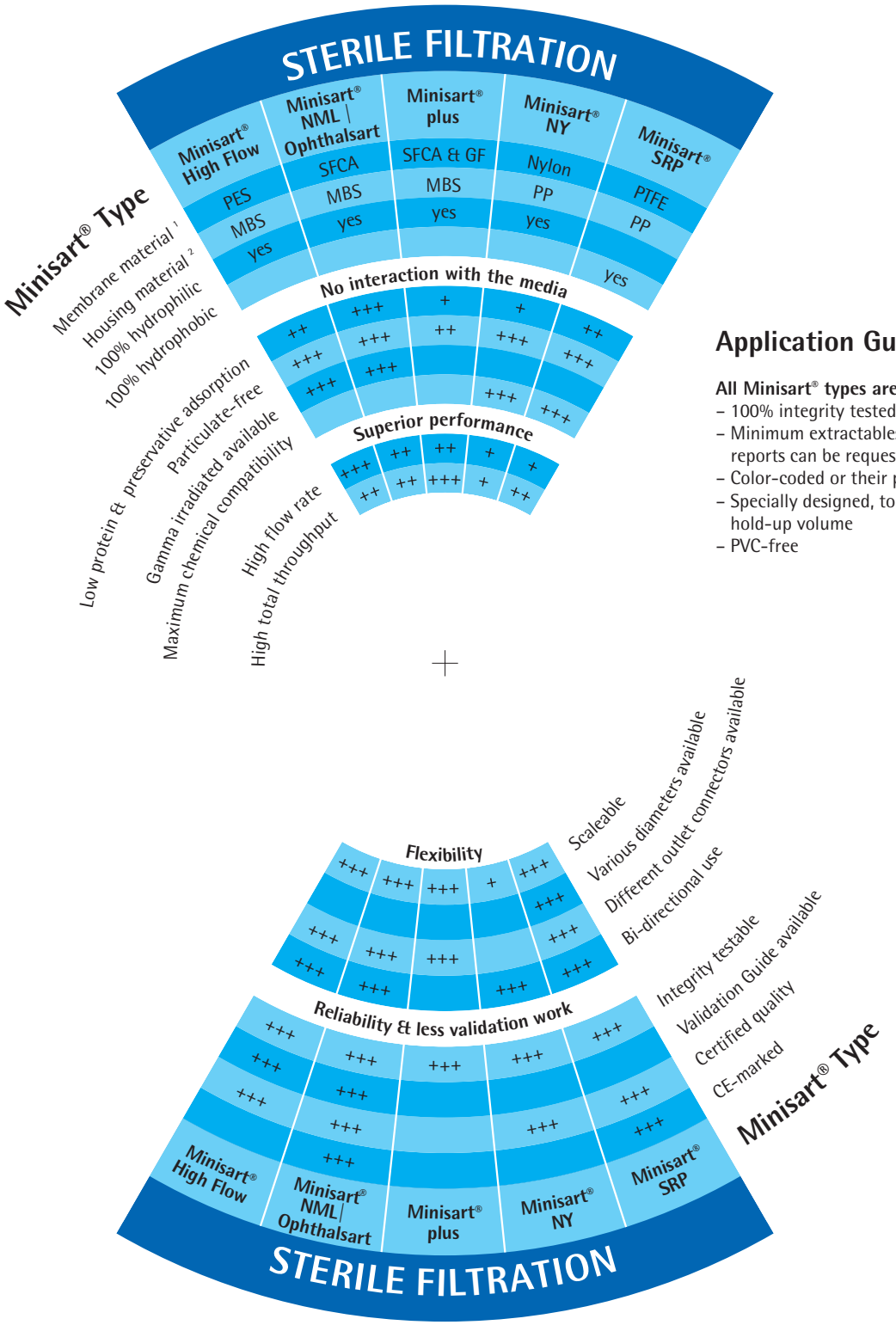

Application Guide

All Minisart® types are:

- 100% integrity tested during manufacturing
- 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

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
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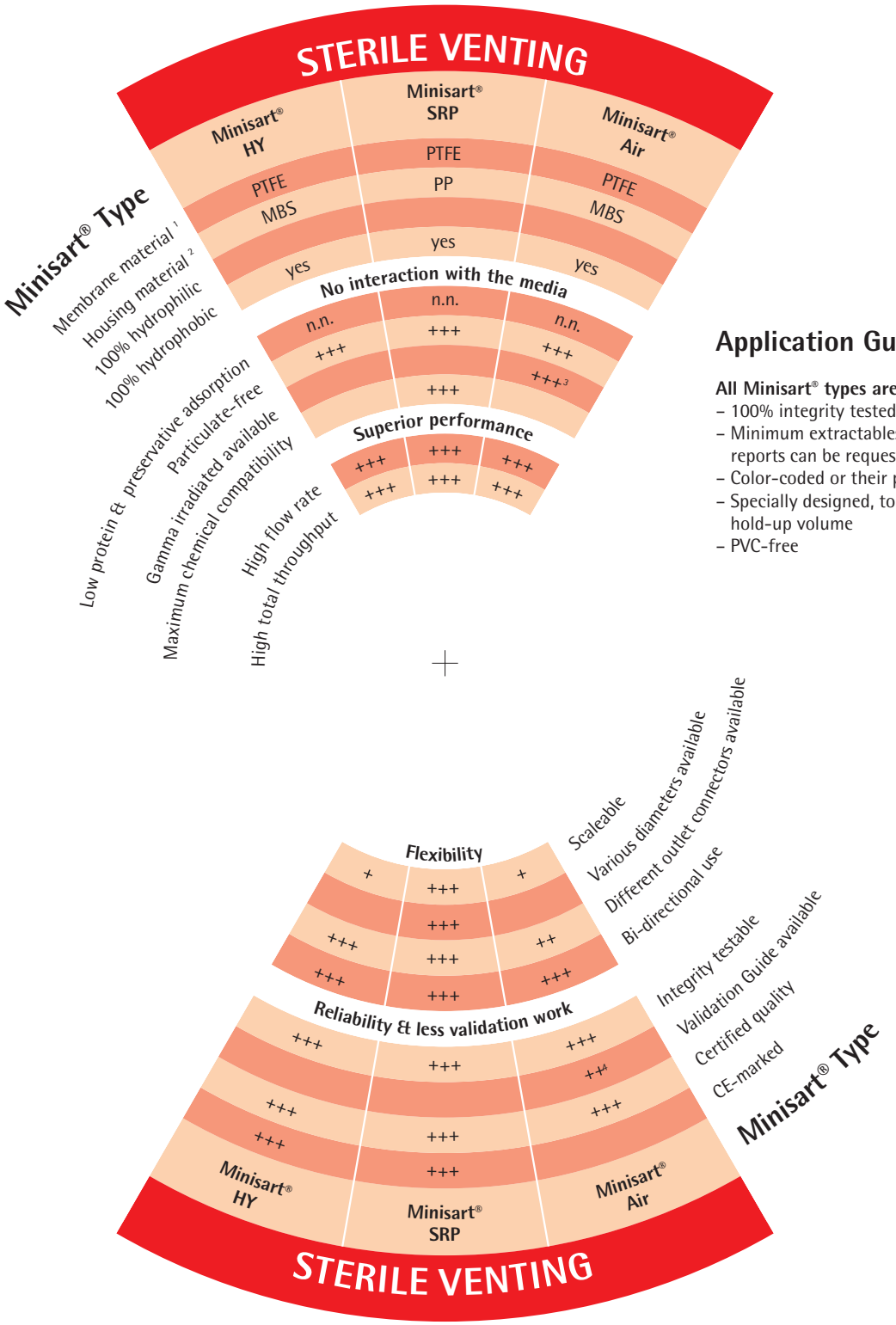
n.n. = not necessary



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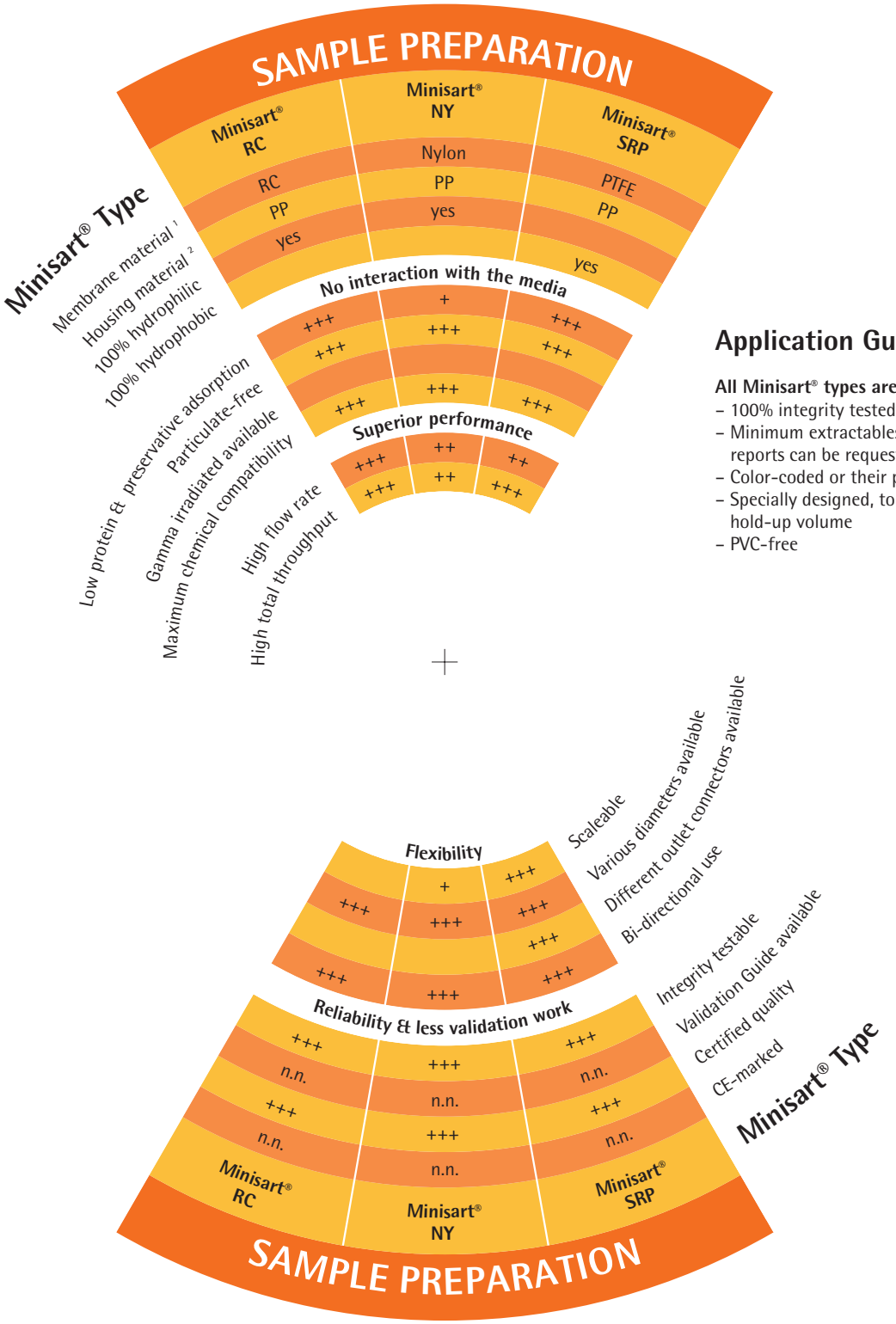

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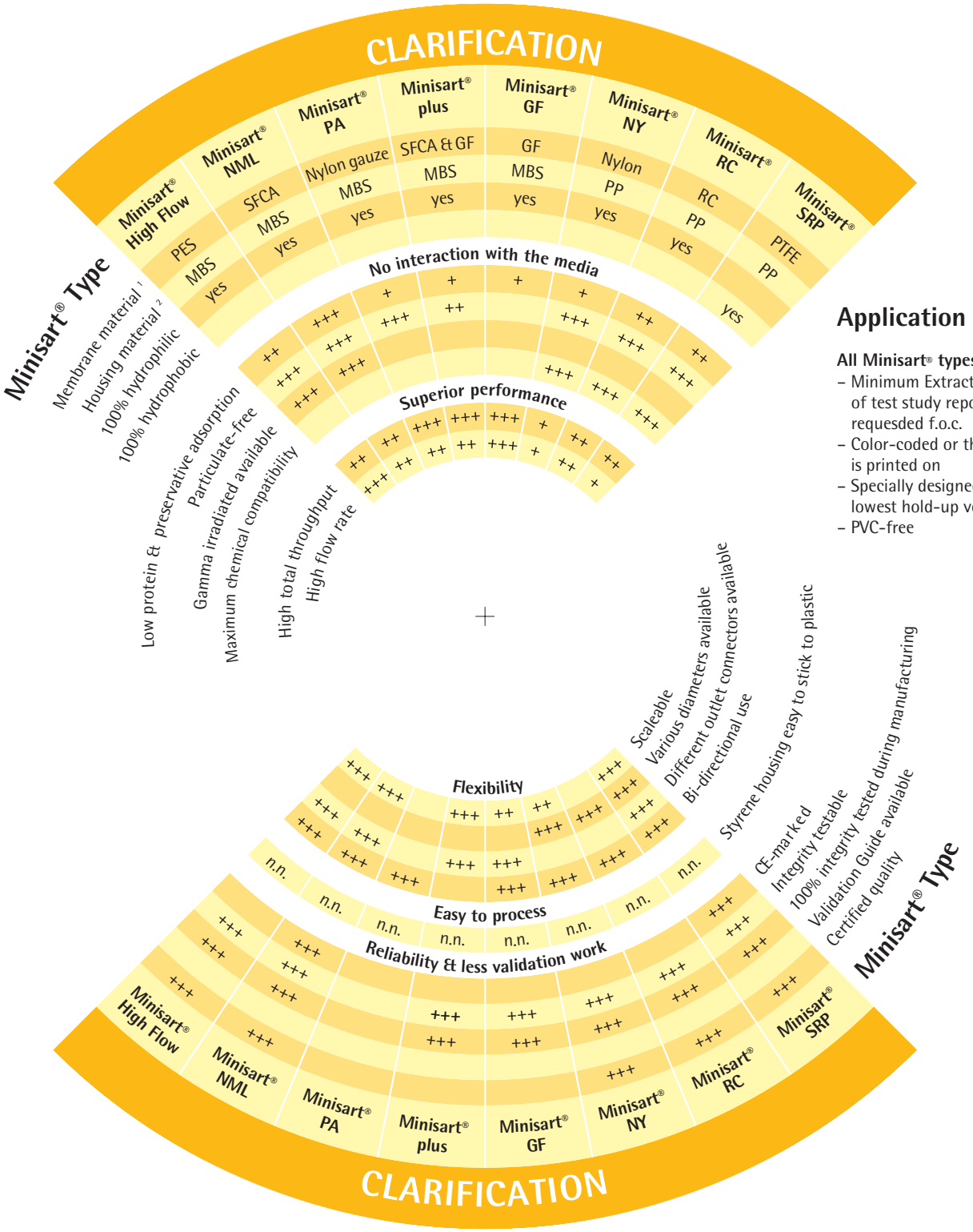

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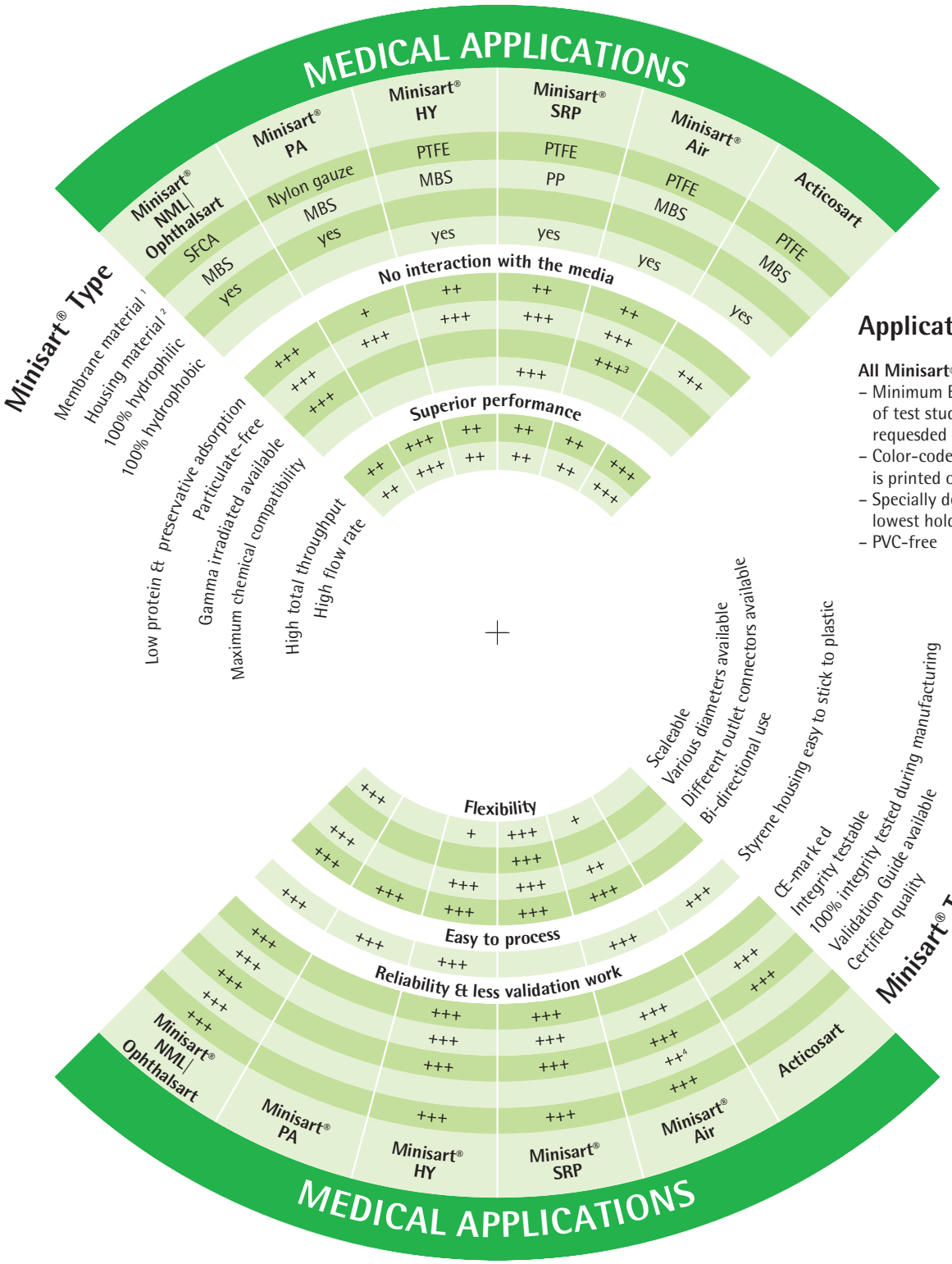

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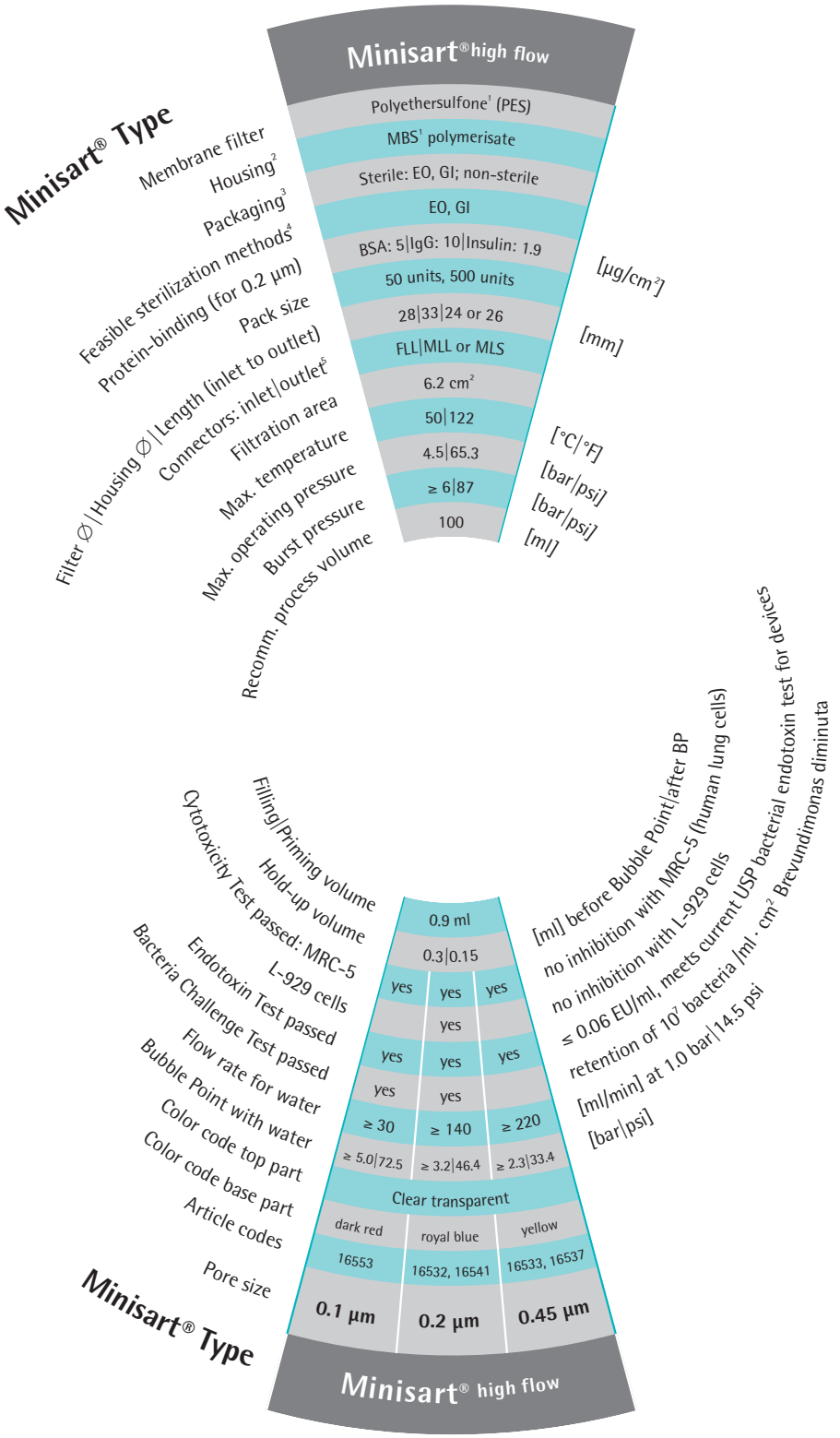

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2) MBS = Meta acrylate butadiene styrene
3) Sterile = individually, sterile packaged; EO = Ethylene oxide; GI = Gamma irradiation; non-sterile = bulk-packaged in PE bag
4) EO = Ethylene oxide; GI = Gamma irradiation
5) FLL = Female Luer Lock; MLL =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

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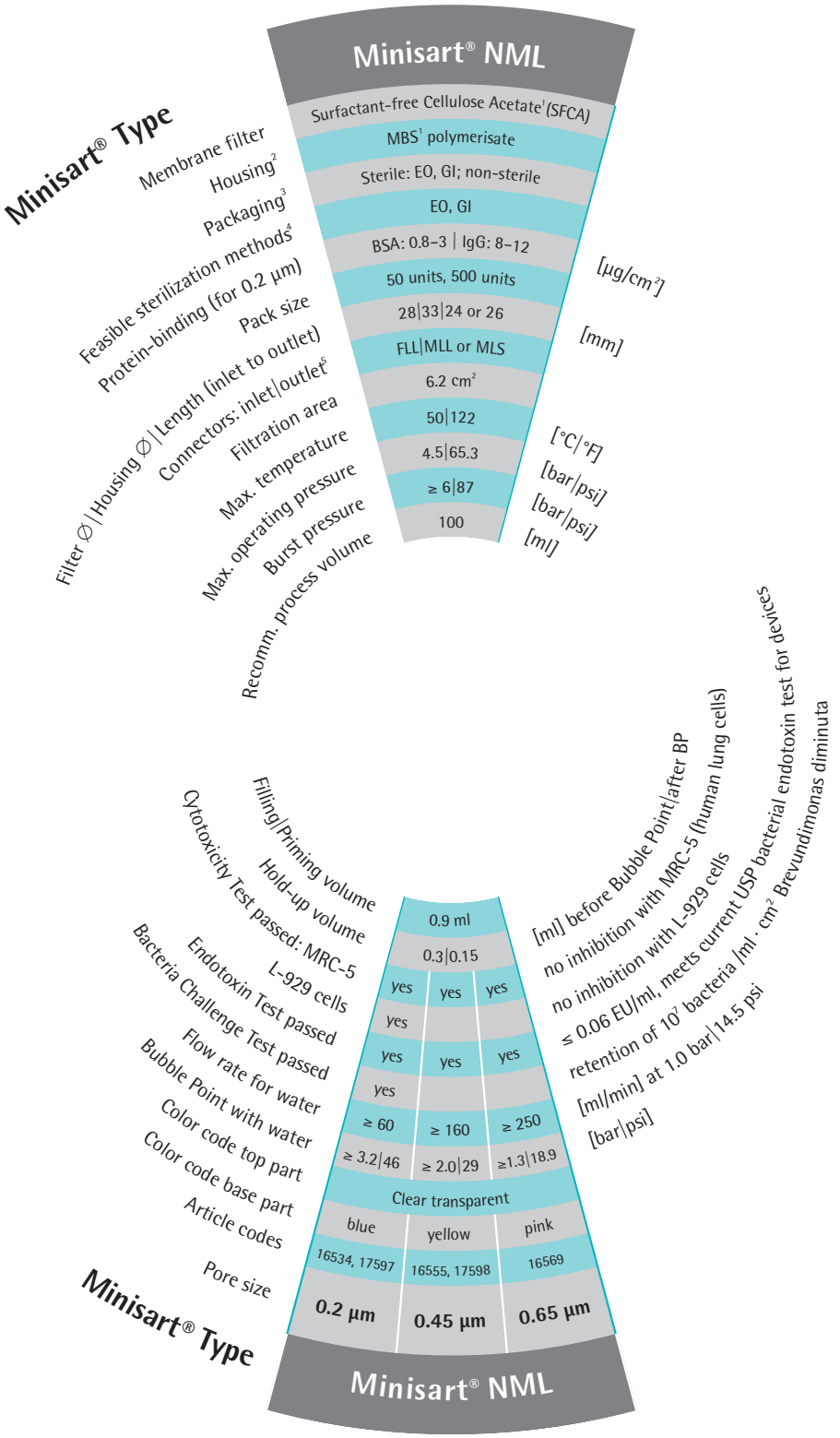

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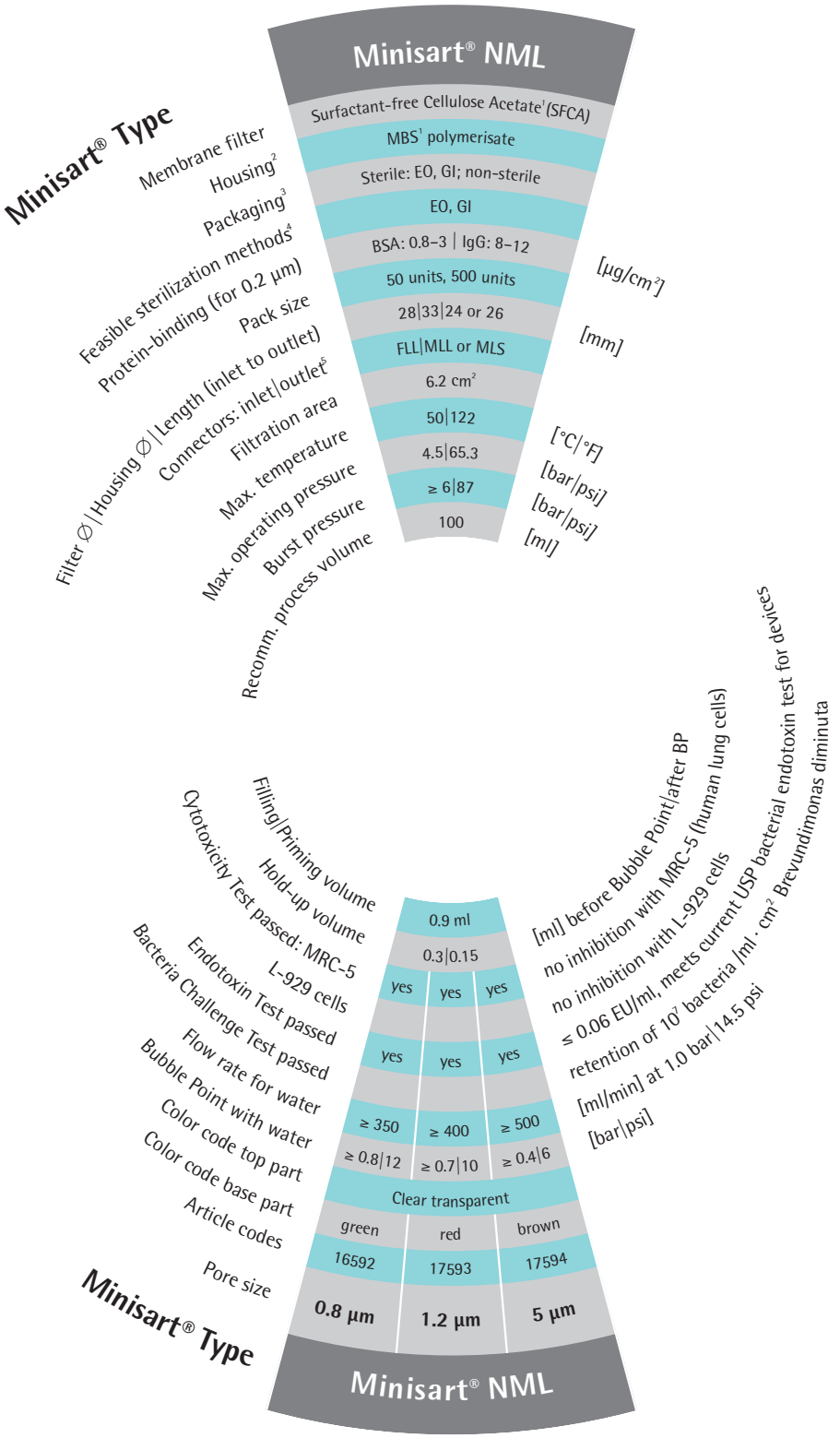

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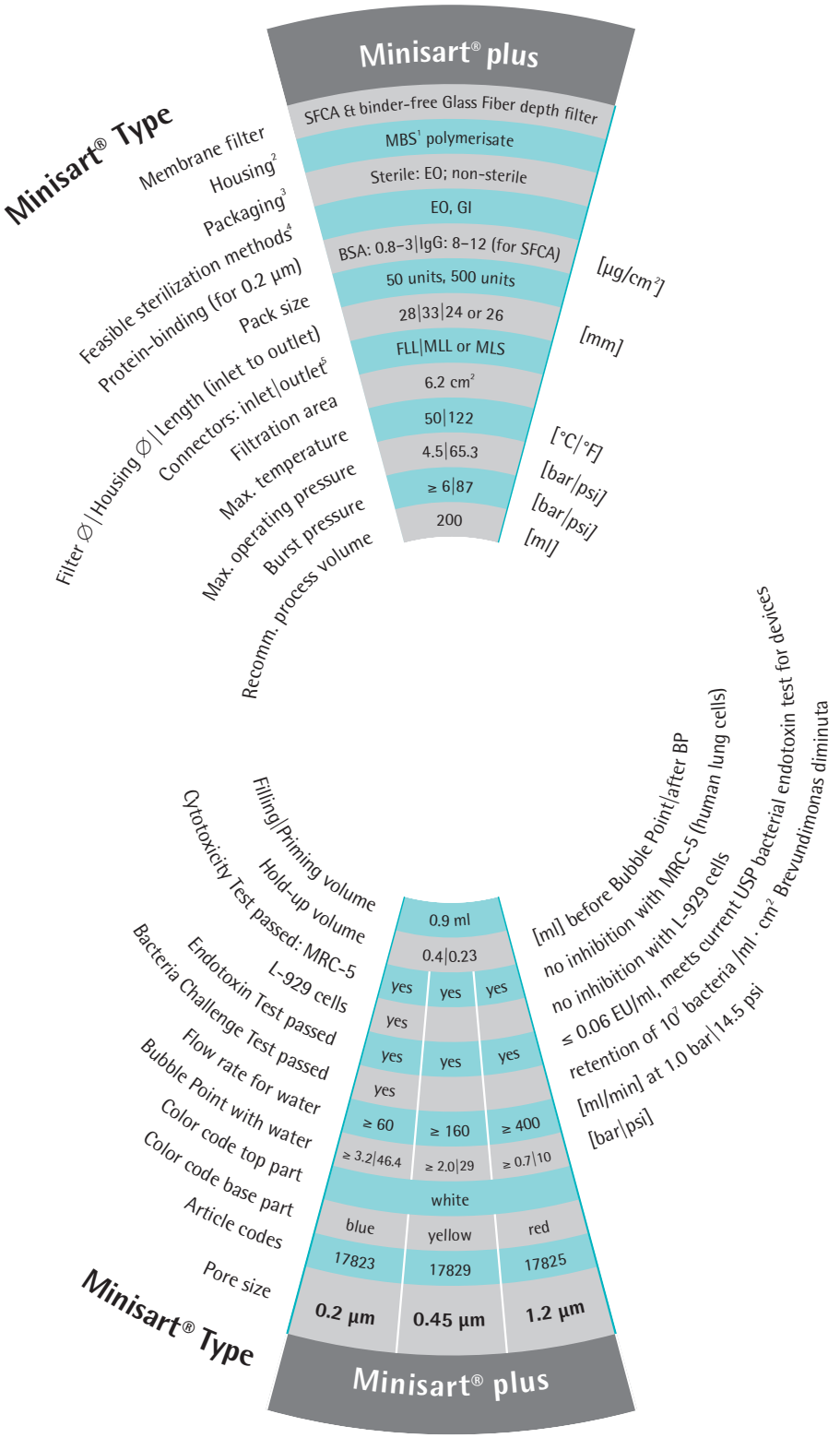

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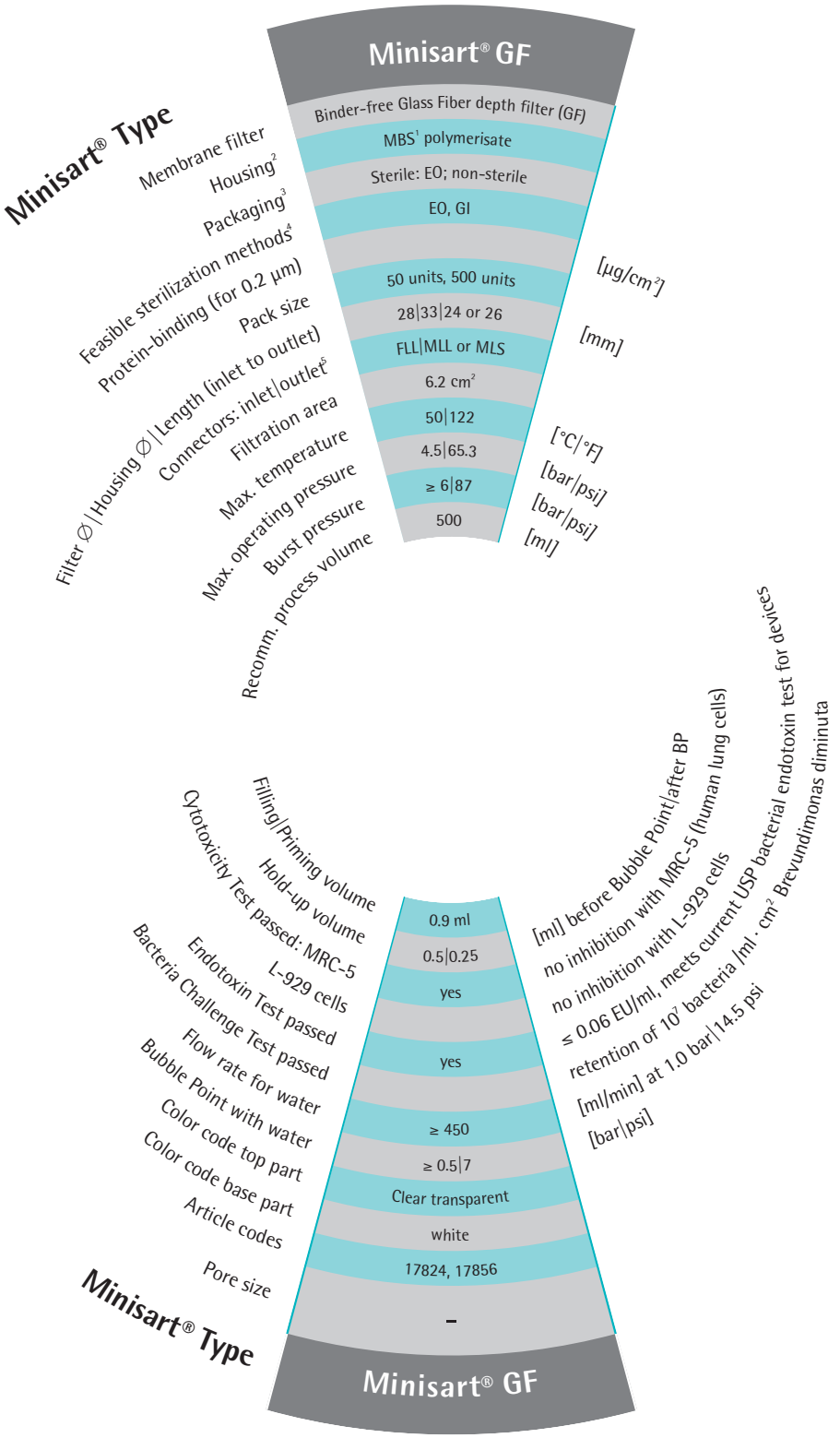

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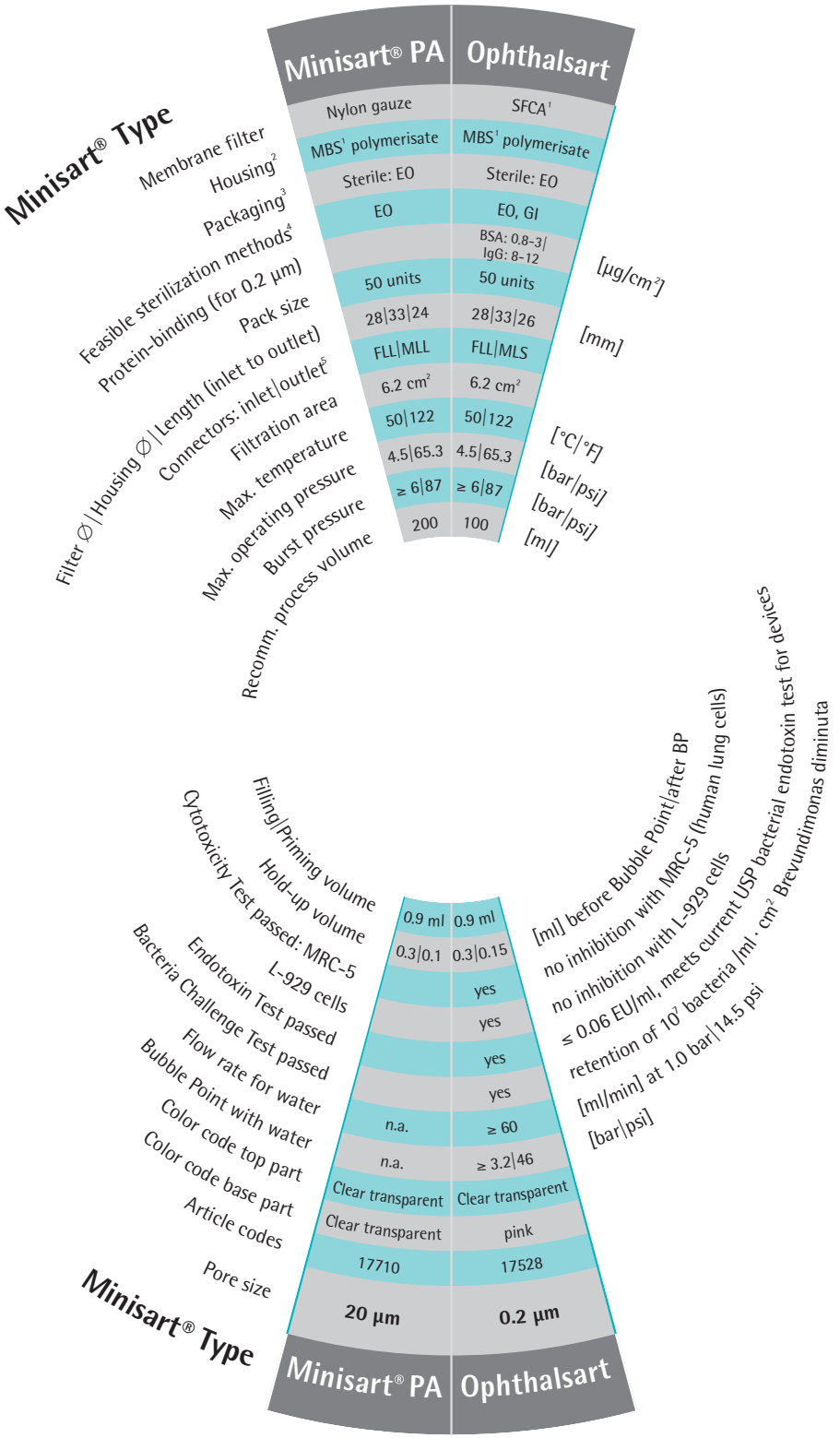

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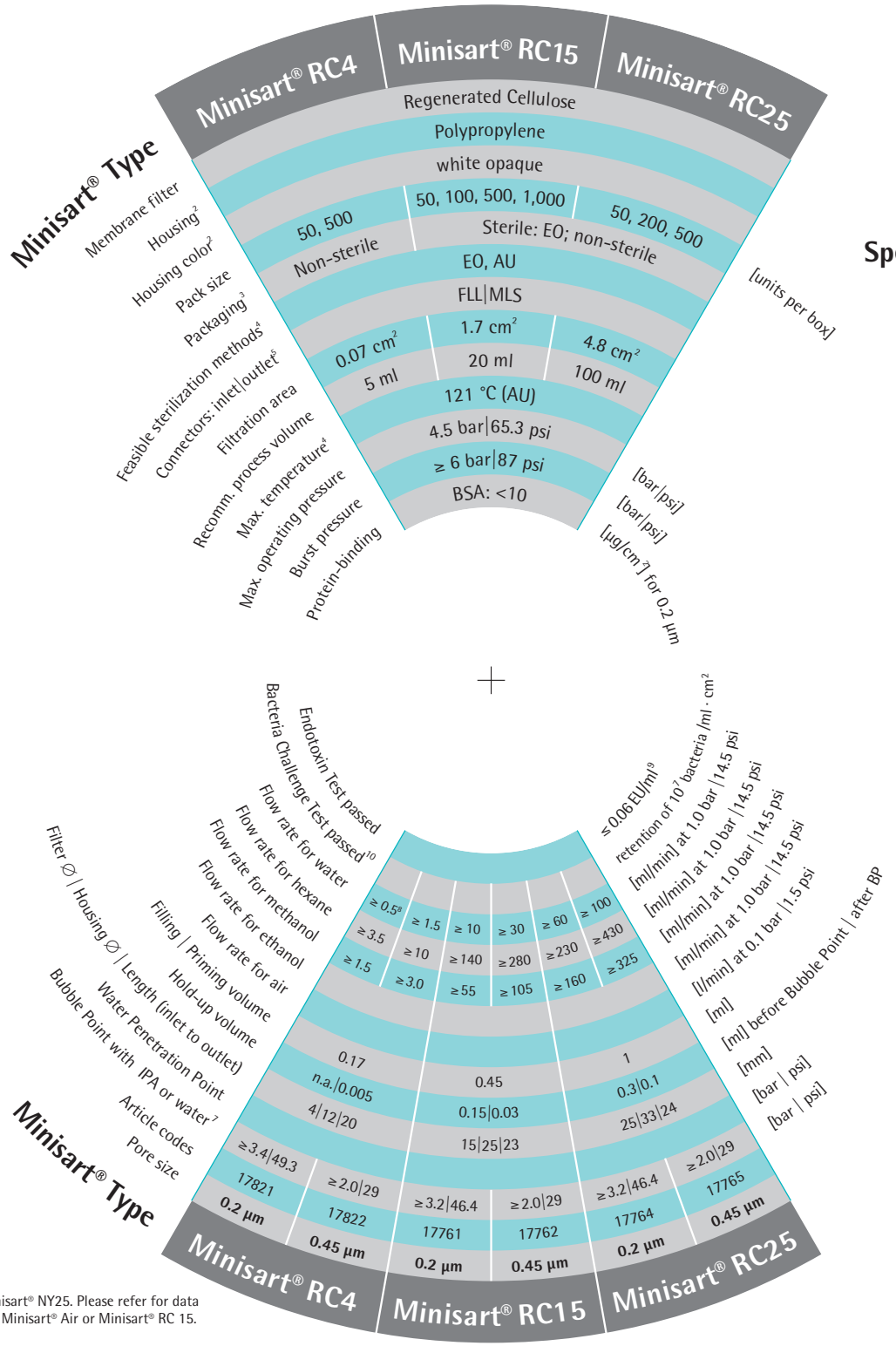

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2) MBS = Meta acrylate butadiene styrene. The color of the housing identifies the pore size.
1) On white opaque polypropylene housings the pore size is printed on.
1) For Minisart® RC4 and SRP4 the tray is color coded (blue = 0.2 µm, yellow = 0.45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

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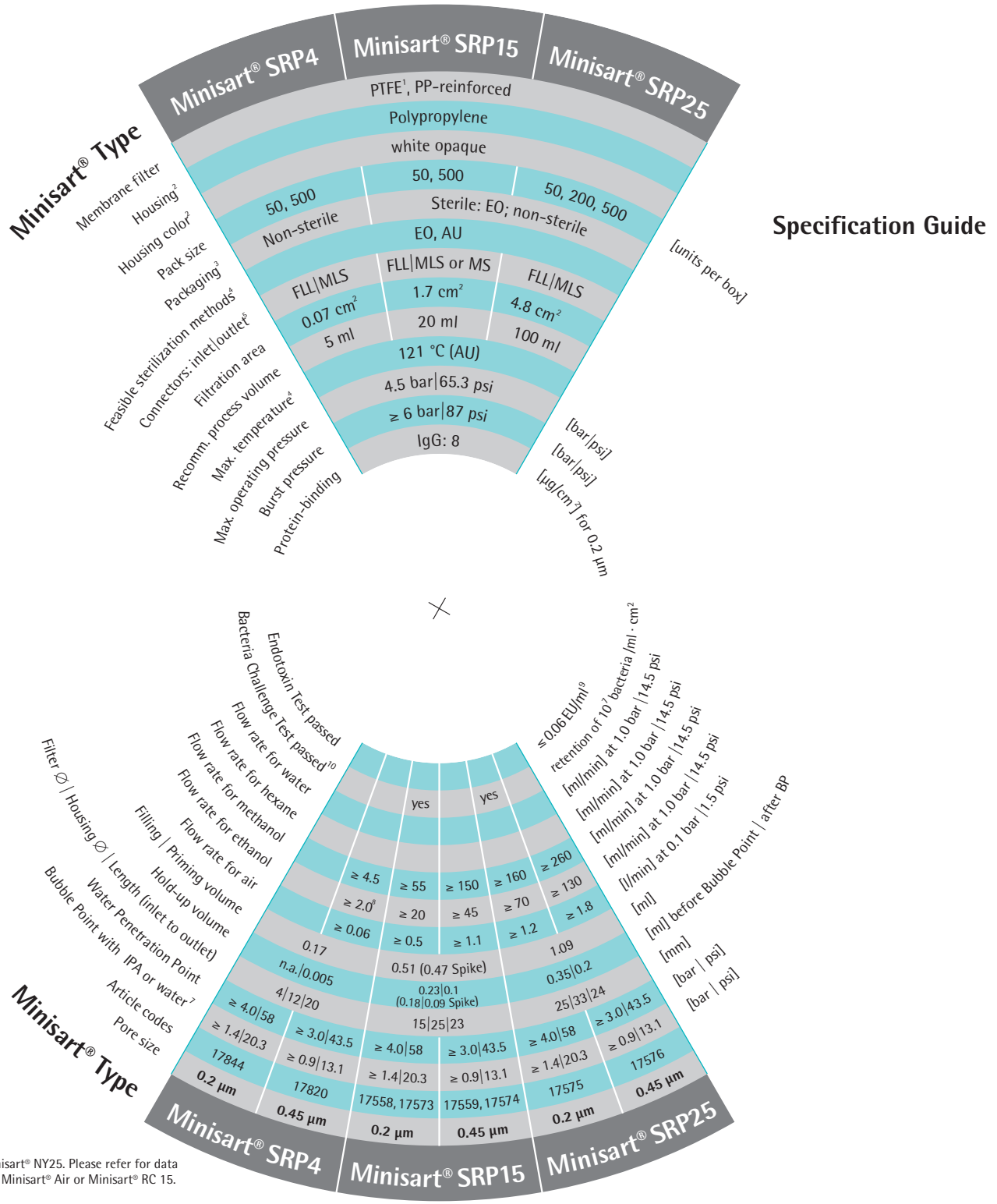

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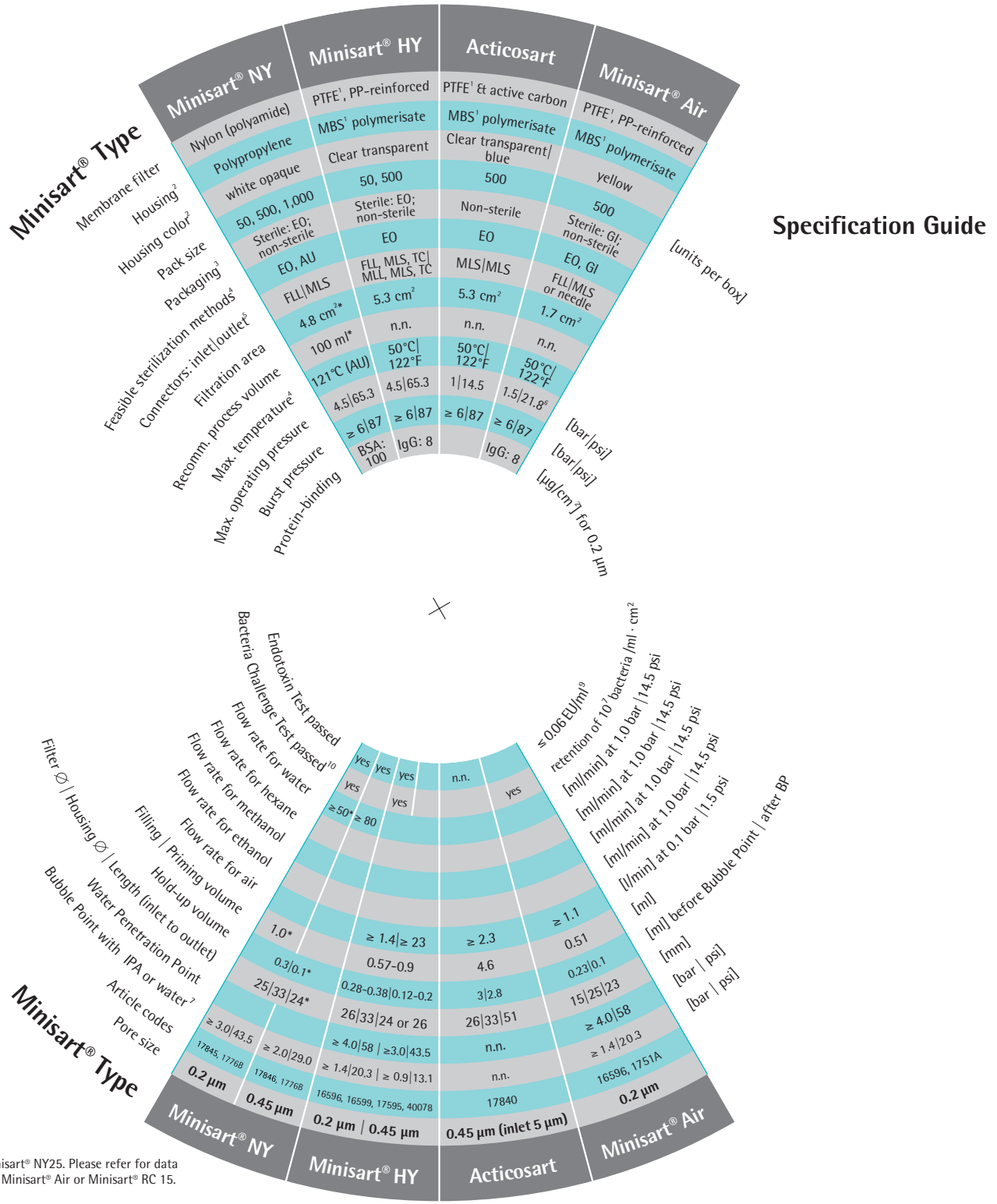

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