

Maxicaps® MR

Unique Large Scale Single-Use Filter Device



Product Information

Maxicaps® MR is a fully contained single-use assembly with up to 27 m² filtration area, designed for large scale filtration in biopharmaceutical applications. The compact and ready-to-use Maxicaps® MR comes pre-sterilized and pre-assembled with 90% less tubing and connectors compared to standard multi-capsule assemblies. Maxicaps® MR is the choice for the lowest total cost of ownership in large-scale single-use processes.

Benefits

- Ready-to-use → Pre-sterilized & pre-assembled
- Certified quality → Sterile & Sanitary delivery option
- Risk mitigation → 90% less tubings & connectors
- Space saving → Compact and organized design
- Time saving → 90% less test time – saves up to 4 hours

Introduction

Single-use filter capsules have been systematically replacing stainless steel housings and filter cartridges as a highly economical and risk-adverse choice for the biopharmaceutical industry. From capsules to complex custom assemblies, implementation of single-use filter systems reduces the time it takes for equipment setup and virtually eliminates the need for cleaning.

Conventional multi-round filter housings have now evolved into single-use Maxicaps® MR systems to meet today's advanced requirements. Until Maxicaps® MR, there has been no single-use equivalent to large-scale, multi-round filter configurations provided by stainless steel systems. Maxicaps® MR is the first ready-to-use, fully self-contained, single-use filtration unit featuring a wide choice of configurations. With 90% less tubing and only two connections, Maxicaps® MR reduces the installation time and the risk of operating errors significantly.

Single-Use Applications

- Media & feeds filtration
- Post cell harvest bioburden reduction for mAb's
- Clarification of vaccines
- Capture-column guard filtration
- Large-scale buffer preparation
- Virus filtration upstream and downstream
- Adsorptive virus pre-filtration

Features

- Filtration area of up to 27 m²
- Complete device integrity testable as a single unit
- Large variety of pre-, sterile- and virus filters
- Flexible connections: Opta®, 1.5" Tri-Clamp, AseptiQuik®* for virus filters or weldable tubing
- One single air filter for easy system venting

Delivery Conditions

Sterile

- For all gamma stable filter materials
- Assembled in a classified clean room, complete device gamma irradiated in a validated sterilization procedure

Sanitary

- For non-gamma stable filter materials
- All fluid contact materials are sterilized in validated sterilization procedures and assembled in a classified clean room following specific hygienic measures and rules of conduct

Non-Sterile

- For non-gamma stable filter materials
- Assembled in a classified clean room

Validation

Maxicaps® MR have been qualified applying the most comprehensive and innovative test regimes. Biological, chemical and physical tests combined with extensive extractable testing. A sterilization validation in order to obtain a 10⁻⁶ Sterility Assurance Level was performed to demonstrate the effectiveness of the gamma sterilization method for configurations with gamma stable filter material. The Maxicaps® filter capsules of the Sanitary delivery option are sterilized by autoclaving using a validated process following DIN|EN ISO 17665-1 regulations.

Services

Sartorius Confidence® Validation Services is the perfect complement to Maxicaps® MR.

Our services provide

- Extractables and leachables services
- Microbiological testing
- Physicochemical testing

in compliance with regulatory requirements. Our local teams of validation experts support you with our tailored and consultative approach to determine the most cost-effective solution and give you the confidence you need to succeed.

*AseptiQuik® is a registered trademark of the Colder Products Company.

Technical Specifications

Filter Families	Filtration Area	Materials	Max. Diffusion	Delivery Condition
Sartopore® Platinum				
MR3	9 m ² 96.9 ft ²	Polyethersulfone, surface modified	225 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR6	18 m ² 193.8 ft ²	Polyethersulfone, surface modified	450 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR9	27 m ² 290.7 ft ²	Polyethersulfone, surface modified	675 ml/min at 2.5 bar 36 psi	Gamma Irradiated
Sartopore® 2 0.2 µm				
MR3	5.4 m ² 58.2 ft ²	Polyethersulfone	162 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR6	10.8 m ² 116.4 ft ²	Polyethersulfone	324 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR9	16.2 m ² 174.6 ft ²	Polyethersulfone	486 ml/min at 2.5 bar 36 psi	Gamma Irradiated
Sartopore® 2 0.45µm				
MR3	5.4 m ² 58.2 ft ²	Polyethersulfone	108 ml/min at 1.7 bar 25 psi	Gamma Irradiated
MR6	10.8 m ² 116.4 ft ²	Polyethersulfone	216 ml/min at 1.7 bar 25 psi	Gamma Irradiated
MR9	16.2 m ² 174.6 ft ²	Polyethersulfone	324 ml/min at 1.7 bar 25 psi	Gamma Irradiated
Sartopore® 2 XLG				
MR3	7.2 m ² 77.4 ft ²	Polyethersulfone	207 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR6	14.4 m ² 154.8 ft ²	Polyethersulfone	414 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR9	21.6 m ² 232.2 ft ²	Polyethersulfone	621 ml/min at 2.5 bar 36 psi	Gamma Irradiated
Sartopore® 2 XLI				
MR3	7.2 m ² 77.4 ft ²	Polyethersulfone	189 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR6	14.4 m ² 154.8 ft ²	Polyethersulfone	378 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR9	21.6 m ² 232.2 ft ²	Polyethersulfone	567 ml/min at 2.5 bar 36 psi	Gamma Irradiated
Sartopore® 2 XLM				
MR3	7.2 m ² 77.4 ft ²	Polyethersulfone	180 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR6	14.4 m ² 154.8 ft ²	Polyethersulfone	360 ml/min at 2.5 bar 36 psi	Gamma Irradiated
MR9	21.6 m ² 232.2 ft ²	Polyethersulfone	540 ml/min at 2.5 bar 36 psi	Gamma Irradiated

Filter Families	Filtration Area	Materials	Max. Diffusion	Delivery Condition
Sartoguard PES 0.1 µm nom.				
MR3	7.2 m ² 77.4 ft ²	Polyethersulfone	225 ml/min at 1.5 bar 22 psi	Gamma Irradiated
MR6	14.4 m ² 154.8 ft ²	Polyethersulfone	450 ml/min at 1.5 bar 22 psi	Gamma Irradiated
MR9	21.6 m ² 232.2 ft ²	Polyethersulfone	675 ml/min at 1.5 bar 22 psi	Gamma Irradiated
Sartoguard PES 0.2 µm nom.				
MR3	7.2 m ² 77.4 ft ²	Polyethersulfone	162 ml/min at 1.2 bar 17.5 psi	Gamma Irradiated
MR6	14.4 m ² 154.8 ft ²	Polyethersulfone	324 ml/min at 1.2 bar 17.5 psi	Gamma Irradiated
MR9	21.6 m ² 232.2 ft ²	Polyethersulfone	486 ml/min at 1.2 bar 17.5 psi	Gamma Irradiated
Sartopure® GF Plus 0.65 & 1.2 µm nom.				
MR3	3.6 m ² 38.7 ft ²	Glass Fiber		Sanitary or Non-Sterile
MR6	7.2 m ² 77.4 ft ²	Glass Fiber		Sanitary or Non-Sterile
MR9	10.8 m ² 116.1 ft ²	Glass Fiber		Sanitary or Non-Sterile
Sartopure® PP3 0.45 µm nom.				
MR3	3.6 m ² 38.7 ft ²	Polypropylene		Sanitary or Non-Sterile
MR6	7.2 m ² 77.4 ft ²	Polypropylene		Sanitary or Non-Sterile
MR9	10.8 m ² 116.1 ft ²	Polypropylene		Sanitary or Non-Sterile
Sartopure® PP3 0.65, 1.2 & 3 µm nom.				
MR3	4.05 m ² 43.5 ft ²	Polypropylene		Sanitary or Non-Sterile
MR6	8.1 m ² 87 ft ²	Polypropylene		Sanitary or Non-Sterile
MR9	12.15 m ² 130.5 ft ²	Polypropylene		Sanitary or Non-Sterile
Sartopure® PP3 5, 8, 20 & 50 µm nom.				
MR3	5.85 m ² 63 ft ²	Polypropylene		Sanitary or Non-Sterile
MR6	11.7 m ² 126 ft ²	Polypropylene		Sanitary or Non-Sterile
MR9	17.55 m ² 189 ft ²	Polypropylene		Sanitary or Non-Sterile

Filter Families	Filtration Area	Materials	Max. Diffusion	Delivery Condition
Virosart® HF 20 nm nominal hollow fibre				
MR2	4.8 m ² 51.7 ft ²	Polyethersulfone surface modified	≤ 41 ml/min at 2.5 bar 36 psi	Gamma Irradiation
MR3	7.2 m ² 77.5 ft ²	Polyethersulfone surface modified	≤ 60 ml/min at 2.5 bar 36 psi	Gamma Irradiation
MR4	9.6 m ² 103.3 ft ²	Polyethersulfone surface modified	≤ 79 ml/min at 2.5 bar 36 psi	Gamma Irradiation
MR5	12 m ² 129.2 ft ²	Polyethersulfone surface modified	≤ 99 ml/min at 2.5 bar 36 psi	Gamma Irradiation
MR6	14.4 m ² 155 ft ²	Polyethersulfone surface modified	≤ 117 ml/min at 2.5 bar 36 psi	Gamma Irradiation
Virosart® Media 20 nm nominal hollow fibre				
MR3	3 m ² 32.3 ft ²	Polyethersulfone surface modified	≤ 48 ml/min at 2.5 bar 36 psi	Gamma Irradiation
MR6	6 m ² 64.6 ft ²	Polyethersulfone surface modified	≤ 97 ml/min at 2.5 bar 36 psi	Gamma Irradiation
Virosart® Max 0.1 µm				
MR3	6.3 m ² 68 ft ²	Polyamide	≤ 16 ml/min at 2.0 bar 29 psi	Sanitary or Non-Sterile
MR6	12.6 m ² 136 ft ²	Polyamide	≤ 31 ml/min at 2.0 bar 29 psi	Sanitary or Non-Sterile
MR9	18.9 m ² 203 ft ²	Polyamide	≤ 46 ml/min at 2.0 bar 29 psi	Sanitary or Non-Sterile

Max. Differential Pressure

2.5 bar | 36 psi at 20°C

Accessoires (Reusable – Need to Be Ordered Separately)

SU Valve Actuator* Order Code: BPR0202
Pressure Safety Device Order Code: 26787---PS

*3 reusable actuators are needed for each Maxicaps® MR

Delivery Condition

Sterile, for gamma stable filter material
Sanitary, for non-gamma stable filter material
Non-Sterile, for non-gamma stable filter material

Materials

Filter Material

Refer to the technical reference of the respective filter.

Maxicaps® Housing and Distribution Manifold Pipes

Polypropylene (PP)

Inlet | Outlet Tubing

Silicone (reinforced)
Thermoplastic Elastomer (TPE)

Rack

Polypropylene (PP), Polyethylene (PE)


Mounting Parts

Screws, Washer, Threaded Rod: Stainless Steel
Gaskets: Silicone
Tri Clamp: Polyamide (PA)

Venting

Sartopore® Air with hydrophobic Polyethersulfone (PES)
Pure-Fit TCL Clamp: Polyvinylidenfluorid (PVDF)
Inspection Glass: Polyethylenterephthalat (PET)

Technical References

 For further information regarding pre-, sterile- & virus filters please click [here](#).

For further information on Maxicaps® MR & Virosart® Validation Guides, please see references below:

Maxicaps® MR

Validation Guide Maxicaps® MR 2646224

Virosart® HF

Datasheet SPK2180-e
Validation Guide SPK5801-e

Virosart® Media

Datasheet DIR 2650737
Validation Guide SPK5812-e

Virosart® Max

Datasheet DIR 2650739
Validation Guide DIR 2650008

Regulatory Compliance

- Each individual Maxicaps® element is tested for integrity (membrane filters only).
- Fully validated as sterilizing grade filters according to current ASTM F838 guideline for Sartopore® filter family.
- Designed, developed and manufactured in accordance with ISO 9001 certified Quality Management System.
- Non pyrogenic according to USP Bacterial Endotoxins.
- All assembled filters and tubing meet the requirements of the current USP Class VI Biological reactivity tests.
- Non-fiber releasing: This product is manufactured with membranes which meet the criteria for a “non-fiber releasing” filter as defined in 21 CFR 210.3 (b) (6) and 211.72.
- This product is conform to Pressure Equipment Directive 2014/68/EU.

Ordering Information

T-Style Maxicaps®

549 73 07H 3 G - ■

Pore Size
07H: 0.45 µm + 0.2 µm

Number of Filter Elements per Device
MR3: 3 Filter Elements
MR6: 6 Filter Elements
MR9: 9 Filter Elements

Sartopore® 2

544 73 ■ 3 G - ■

Pore Size
06G: 0.8 µm + 0.45 µm
07H: 0.45 µm + 0.2 µm
07G: 0.8 µm + 0.2 µm (XLG)
07I: 0.35 µm + 0.2 µm (XLI)
58M: 0.2 µm + 0.1 µm (XLM)

Number of Filter Elements per Device
MR3: 3 Filter Elements
MR6: 6 Filter Elements
MR9: 9 Filter Elements

Sartoguard PES

547 73 ■ 3 G - ■

Pore Size
07F: 0.2 µm nominally
58G: 0.1 µm nominally

Number of Filter Elements per Device
MR3: 3 Filter Elements
MR6: 6 Filter Elements
MR9: 9 Filter Elements

Sartopure® PP3

505 73 ■ 3 -- ■

Retention Ratings
50P: 50 µm
20P: 20 µm
01P: 8 µm
42P: 5 µm
02P: 3 µm
03P: 1.2 µm
05P: 0.65 µm
06P: 0.45 µm

-- Non-Sterile
C- Sanitary

Number of Filter Elements per Device
MR3: 3 Filter Elements
MR6: 6 Filter Elements
MR9: 9 Filter Elements

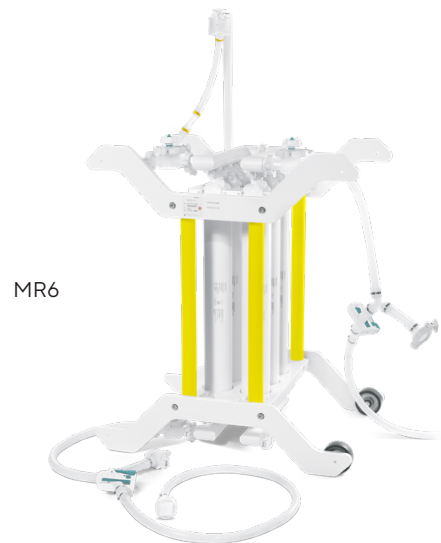
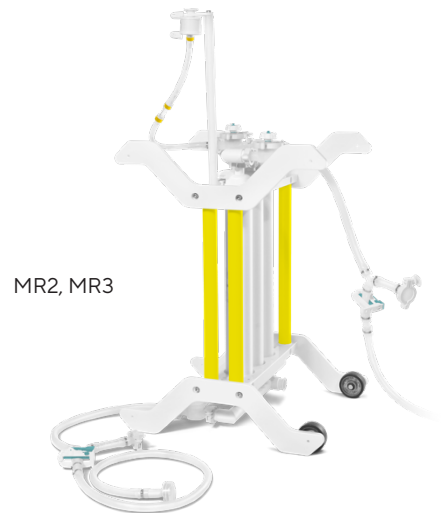
Sartopure® GF Plus

555 73 ■ 3 -- ■

Pore Size
03P: 1.2 µm
05P: 0.65 µm

-- Non-Sterile
C- Sanitary

Number of Filter Elements per Device
MR3: 3 Filter Elements
MR6: 6 Filter Elements
MR9: 9 Filter Elements



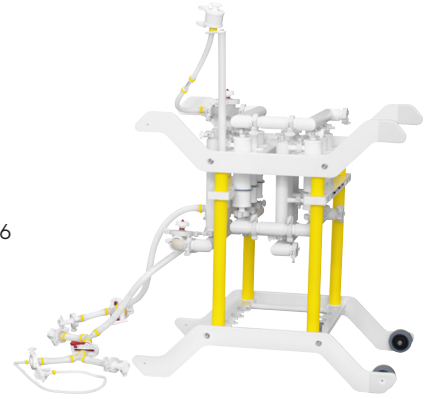
Virosart® HF

3VI-- 28- M C G- MR2

Number of Filter Elements per Device

MR2: 2 Filter Elements
MR3: 3 Filter Elements
MR4: 4 Filter Elements
MR5: 5 Filter Elements
MR6: 6 Filter Elements

MR6



Virosart® Media

3V2-- 28- I V G- MR3

Number of Filter Elements per Device

MR3: 3 Filter Elements
MR6: 6 Filter Elements

MR9



Virosart® Max

54A 73 58 N3 -- MR3

-- Non-Sterile
C- Sanitary

Number of Filter Elements per Device

MR3: 3 Filter Elements
MR6: 6 Filter Elements
MR9: 9 Filter Elements

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